

# AMP SOFT SHELL PIN AND SOCKET CONNECTORS



### Restriction on the use of Hazardous Substances (RoHS)

At Tyco Electronics, we're ready to support your RoHS requirements. We've assessed more than 1.5 million end items/components for RoHS compliance, and issued new part numbers where any change was required to eliminate the restricted materials.

Part numbers in this catalog are RoHS Compliant, unless marked otherwise. These products comply with European Union Directive 2002/95/EC, as amended 1 January 2006, that restricts the use of lead, mercury, cadmium, hexavalent chromium, PBB, and PBDE in certain electrical and electronic products sold into the EU as of 1 July 2006.

Note: For purposes of this Catalog, included within the definition of RoHS Compliant are products that are clearly "Out of Scope" of the RoHS Directive such as hand tools and other non-electrical accessories. Information regarding RoHS compliance is provided based on reasonable inquiry of our suppliers and represents our current actual knowledge based on the information provided by our suppliers. This information is subject to change. For latest compliance status, refer to our website referenced at right.

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Our comprehensive on-line RoHS Customer Support Center provides a forum to answer your questions and support your RoHS needs. A RoHS FAQ (Frequently Asked Questions) is available with links to more detailed information. You can also submit RoHS questions and receive a response within 24 hours during a normal work week. The Support Center also provides:

- Cross-Reference from Non-compliant to Compliant Products
- Ability to browse RoHS Compliant Products in our on-line catalog
- Downloadable Technical Data
- Customer Information Presentation
- More detailed information regarding the definitions used above

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RoHS  
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Introduction

AMP Soft Shell Pin and Socket Connectors provide a highly reliable and economic means of grouping multiple-lead connections in today's computer, computer/peripheral equipment, business machines, entertainment centers, appliances and other sophisticated commercial equipment. The electrical connector is an integral component in these applications. They also offer worldwide application approval because of their reliability and economy. Electrical functions have increased in complexity and new designs continually call for the maximum use of space. The Soft Shell Pin and Socket family of connectors offers the design and features to answer these modern industry requirements.

This catalog is organized by contact centerline spacing (High Density and Standard Density) to provide you with the basic information necessary to select the Soft Shell connector system best suited for your specific application. It contains general information to acquaint you with the complete family of connectors and application tooling.

Since your specific application will determine the degree of automatic, semiautomatic or manual application tooling required, complete specifications are covered on pages 207-204.

Summary Chart

Page No.	Product Name	No. of Positions	Centerline (in) mm	Wire Size (AWG)	Wire Insulation Dia. Max. (in) mm	Current Rating Max (A)*	Voltage Rating Max.	Operating Temp. Range (C)	UL94 Flammability Rating	Sealed Version Available	Approvals	
<b>High Density</b>												
9	2.5 mm Signal Double Lock (SDL)	2-13	(.098) 2.50	26-20	(.071) 1.80	3	50 VAC or VDC	-30° to +105°	V-0	No	UL, CSA, VDE	
17	Micro MATE-N-LOK 3 mm	2-24	(.118) 3.00	30-20	(.060) 1.52	5	250 VAC	-40° to +105°	V-0	No	UL, CSA, VDE	
49	Grace Inertia Connectors (GIC) 3.5	2-6	(.137) 3.50	26-18	(.106) 2.70	7	300 VAC	-30° to +105°	V-0	No	UL, CSA	
53	.062 Commercial Pin & Socket	1-9	(.145) 3.68	30-18	(.110) 2.79	7	250 VAC or VDC	-55° to +105°	V-2	No	UL, CSA	
59	Power Double Lock (PDL)	1-12 3-12 2 2	(.156) 3.96 (.256) 6.50 (.312) 7.92 (.512) 13.00	26-16	(.122) 3.10	14	300 VAC (3.96 WTW, 6.5 WTB and 7.92 WTB) 50 VAC (3.96 WTB)	-30° to +105°	V-0	No	UL, CSA, VDE	
83	Mini-Universal MATE-N-LOK	1-24	(.163) 4.14	30-16	(.126) 3.20	9.5	600 VAC or VDC	-55° to +105°	V-0 & V-2	Yes	UL, CSA, VDE (250 V Max.)	
99	Mini-Universal MATE-N-LOK 2	2-24	(.163) 4.14	30-16	(.126) 3.20	10.5	600 VAC or VDC	-55° to +105°	V-0 & V-2	No	UL, CSA, VDE	
109	MR (Miniature Rectangular)	2-36	(.165) 4.20	26-18	(.115) 2.92	9	250 VAC	-55° to +85°	V-0	No	UL, CSA	
119	VAL-U-LOK Connector System	2-24	(.165) 4.20	26-18	(.094) 2.39	9	600 VAC	-40° to +105°	V-0 & V-2	No	UL, CSA	
125	AMP-DUAC	2-24	(.165) 4.20	26-18	(.130) 3.30	9	600 VAC	-55° to +105°	V-2	No	UL, CSA	
<b>Standard Density</b>												
135	5.0 mm Power Key Connectors (PKC)	2-6	(.197) 5.00	24-16	(.122) 3.10	10	300 VAC	-30° to +105°	V-0	No	UL, CSA	
143	.093 Commercial Pin & Socket	1-15	(.198) 5.03	14-24	(.180) 4.57	13	250 VAC or VDC	-55° to +105°	V-2	No	UL, CSA	
151	Commercial MATE-N-LOK	1-16	(.200) 5.08	30-14	(.130) 3.30	19	250 VAC	-55° to +105°	V-2	No	UL, CSA	
165	.140 MATE-N-LOK	2-9	(.240) 6.10	20-10	(.180) 4.57	28	600 VAC or VDC	-55° to +105°	V-2	No	UL, CSA	
169	Universal MATE-N-LOK	1-15	(.250) 6.35	30-10	(.200) 5.08	19	600 VAC or VDC	-55° to +105°**	V-0 & V-2	Yes	UL, CSA; designed and tested to meet VDE 380 V requirements, except 6 Position Circular	
189	Universal MATE-N-LOK II	2-15	(.250) 6.35	30-10	(.200) 5.08	19	600 VAC or VDC	-55° to +105°	V-0	No	UL, CSA, VDE	
203	.156 MATE-N-LOK	3-4	(.390) 9.91	20-10	(.185) 4.70	32.5	600 VAC	-55° to +105°	V-2	No	UL	

\*Current Rating is application dependent  
\*\* 125°C Available

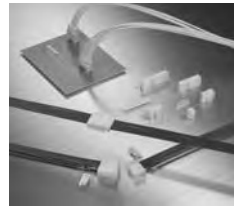
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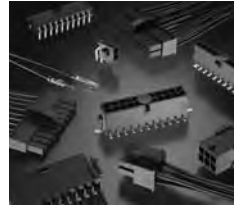
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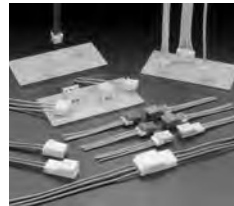
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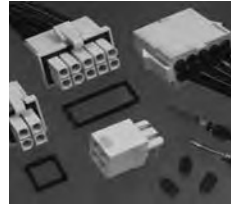
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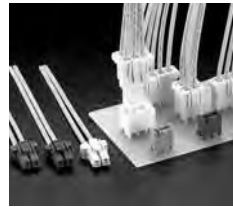
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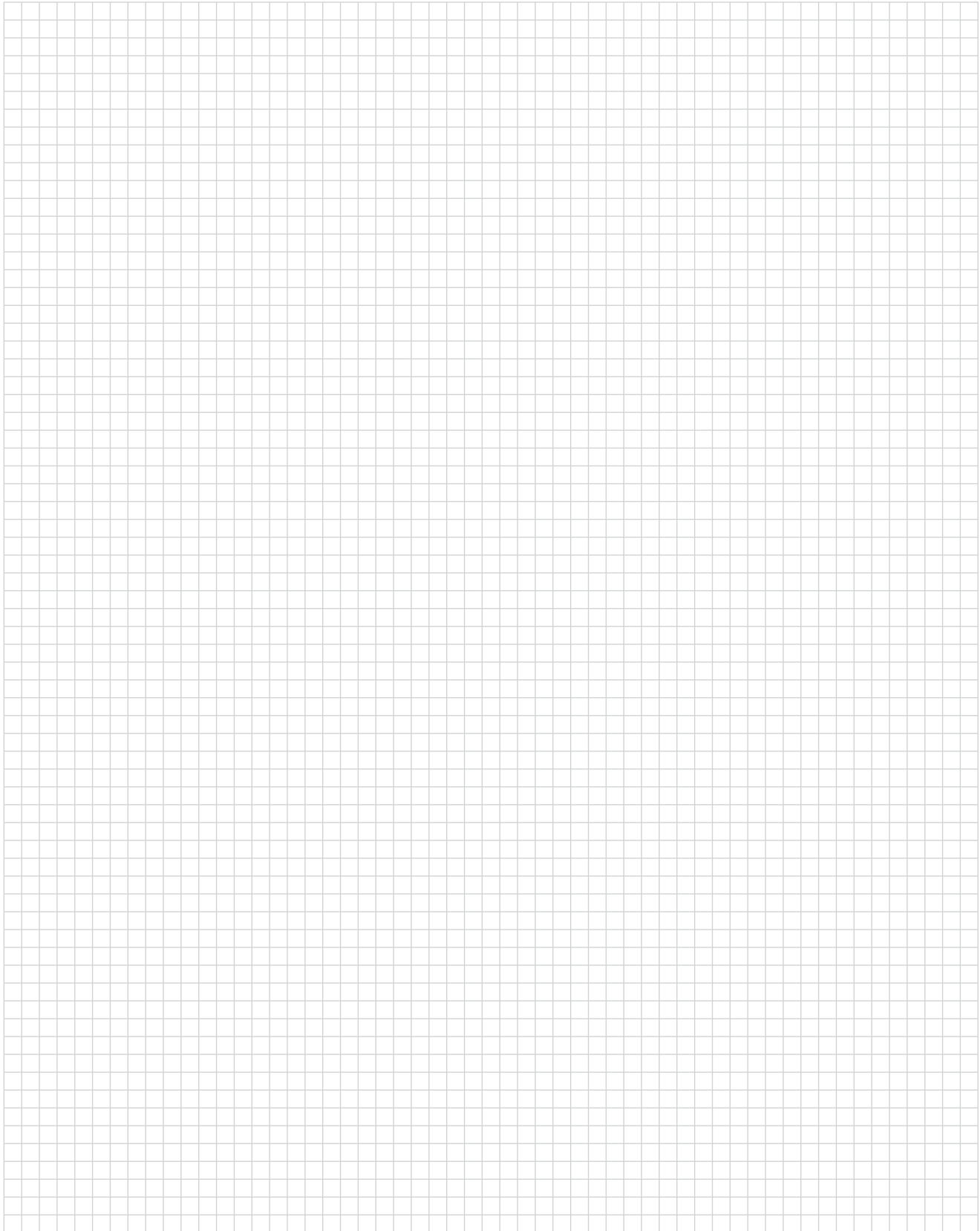
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## Engineering Notes

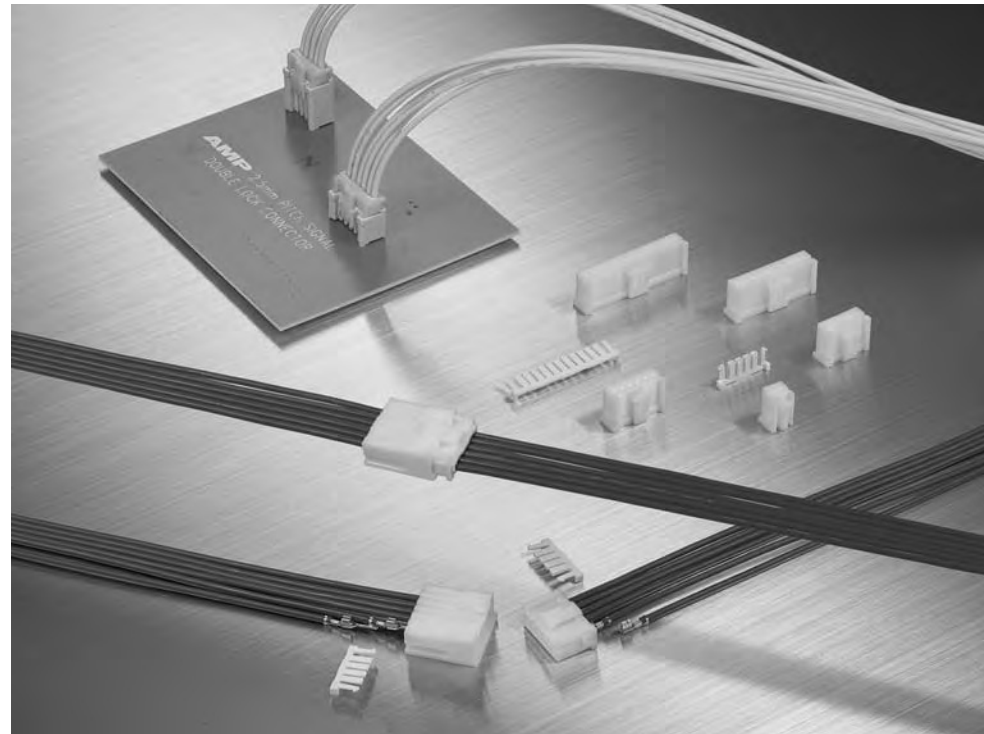
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## 2.5 mm Signal Double Lock (2.5 SDL) Connectors (Wire-to-Board and Wire-to-Wire)

### Product Facts

- Connector for signal circuits with one row of contacts on 2.5 mm centerline
- Wire-to-board and wire-to-wire connectors, consisting of plug and cap housings for wire termination and PC board-mount post headers
- Mounted to plug and cap housings for wire application, double lock plate provides for positive loading of contacts in the housing. It also helps contacts mate completely
- Double lock plate is contained within the plug and cap housing completely, which provides neat overall appearance
- Accepts 26-20 AWG wire (e.g. UL 1007, 1061, 1571, etc.) with insulation diameters of up to 1.8 mm
- PC board-mount post header is available in two styles: standard profile and high profile
- High-profile post header has locking feature at location fit to resin coating, which is applied onto the board for waterproof protection as in home appliances. It does not hamper mating and locking of post header with plug housing
- Locking structure is inner-lock type and has a clean surface
- Solder tail section of post header is provided with kinks to retain the header firmly on PC board during soldering
- Radial tape-mounted version of post header is also available that is applicable to radial mounting machines
- Recognized under the Component Program  of Underwriters Laboratories Inc., File No. E28476
- Certified by Canadian Standards Association,  File No. LR7189
- VDE Approved, File No.  B 04 11 39175013



2.5 mm Signal Double Lock Connectors (2.5 SDL) are 2.5 mm centerline, compact, one-row connectors for signal circuits.

With contacts on 2.5 mm centerline, both wire-to-wire and wire-to-board connectors are available.

The connectors consist of plug and cap housings for wire termination, double lock plates for plug and cap housings, crimp snap-in contacts, and a PC board-mount post header. A double lock plate is available for both plug and wire-to-wire cap housing to provide for positive loading. It helps prevent contacts from coming off or mating halfway. The plate is contained within the plug and cap housing completely. The plug and cap housing can be used without a double lock plate.

The connector accepts 26-20 AWG wire (e.g. UL 1007, 1061, 1571, etc.) with insu-

lation diameters of up to 1.8 mm.

The PC board-mount post header is available in two styles: standard profile and high profile.

The high-profile type connectors can be used for home appliances, which require waterproof protection. It does not hamper mating and locking of the post header with the plug housing, even if the board has resin coating on it.

The locking structure is inner-lock type and has a clean surface.

The solder tail of the loose-piece post header has kinks to secure the connector on the PC board until it is soldered.

Radial tape-mounted version of post header is also available and this is applicable to radial mounting machines.

### Performance Characteristics

**Voltage Rating**—50 VAC/DC

**Current Rating**—3 A

**Overall Resistance**—  
10 mΩ max. (initial)  
20 mΩ max. (final)

**Insulation Resistance**—  
500 Ω (500 VDC)

**Dielectric Withstanding Voltage**—  
1,100 VAC, one minute

**Contact Resistance**—20 mΩ max.

**Operating Temperature**—  
-30° ~ +105°C  
(The upper limit includes temperature rise from power carrying)

**Applicable Wire**—26-20 AWG (UL 1007, 1061, 1571)

**Wire Insulation Range**—  
0.93~1.8 mm

**PC Board Thickness**—1.6 mm

### Technical Documents

**Product Specification**

108-5459

**Application Specification**

114-5203

**Note:** Dimensions shown are metric.

## 2.5 mm Signal Double Lock (2.5 SDL) Connectors (Wire-to-Board and Wire-to-Wire) (Continued)

### Quick Reference Chart for Mating Part Numbers

No. of Pos.	Plug Connector Part No. (Wire Side)		Mating Connectors (PC Board Mount & Wire Side)			
	Housing	Double Lock Plate	Post Header Part No.		Cap Connector Part No.	
			Standard-Profile Type*	High-Profile Type	Cap Housing	Double Lock Plate
2	917686-1	917698-1	917780-1	917722-1	316086-1	917698-1
3	917687-1	917699-1	917781-1	917723-1	316087-1	917699-1
4	917688-1	917700-1	917782-1	917724-1	316088-1	917700-1
5	917689-1	917701-1	917783-1	917725-1	316089-1	917701-1
6	917690-1	917702-1	917784-1	917726-1	316090-1	917702-1
7	917691-1	917703-1	917785-1	917727-1	316091-1	917703-1
8	917692-1	917704-1	917786-1	917728-1	316092-1	917704-1
9	917693-1	917705-1	917787-1	917729-1	---	917705-1
10	917694-1	917706-1	917788-1	917730-1	316094-1	917706-1
11	917695-1	917707-1	917789-1	917731-1	---	917707-1
12	917696-1	917708-1	917790-1	917732-1	---	917708-1
13	917697-1	917709-1	917791-1	917733-1	---	917709-1

\*Included in Standard-Profile Post Header line are Radial Tape-Mounted version (2 to 8 positions).  
Refer to appropriate description in the catalog.

**Note:** All part numbers are RoHS Compliant.

### Product Family List (Including Production Plans)

Description	Number of Positions												
	2	3	4	5	6	7	8	9	10	11	12	13	
Plug Housing	●	●	●	●	●	●	●	●	●	●	●	●	
Vertical Board Mount Post Header	Standard-Profile Type		Loose Piece		●	●	●	●	●	●	●	●	
	Standard-Profile Type		Radial Tape-Mounted		●	●	●	●	●	●	●	●	
Vertical Board Mount Post Header	High-Profile Type		Loose Piece		●	●	●	●	●	●	●	●	
	High-Profile Type		Radial Tape-Mounted		●	●	●	●	●	●	●	●	
Cap Housing	●	●	●	●	●	●	●	○	●	○	○	○	
Double Lock Plate	●	●	●	●	●	●	●	●	●	●	●	●	
Horizontal Board Mount Post Header	○	○	○	○	○	○	○	○	○	○	○	○	
Horizontal Mount Post Header (Radial Tape-Mounted)	○	○	○	○	○	○	○	○	○	○	○	○	

**Note:** ● indicates products currently available; ○ indicates products planned for production.

**Note:** Dimensions shown are metric.

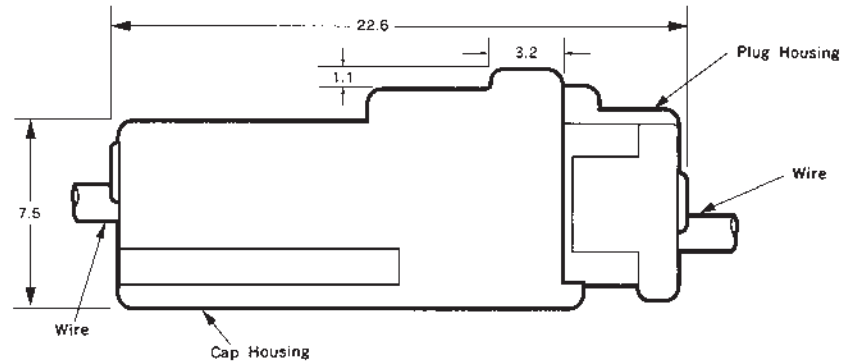
**2.5 mm Signal Double Lock (2.5 SDL) Connectors**  
(Wire-to-Board and Wire-to-Wire) (Continued)

High Density

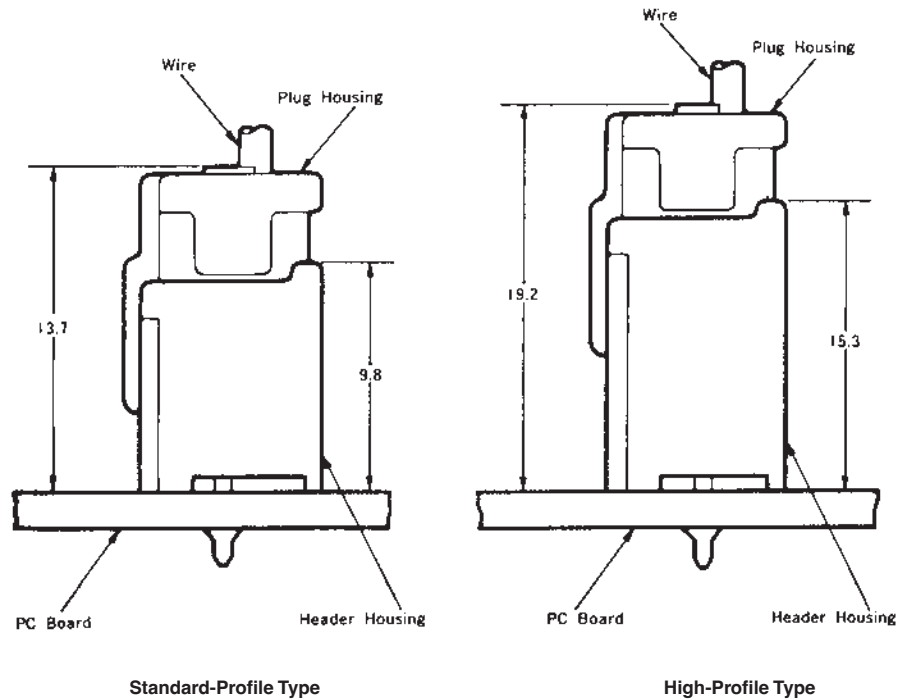
2.5 mm Signal Double Lock  
.098 [2.50] Centerline

**Mating Configurations**

**Wire-to-Wire Connections**



**Wire-to-PC Board Connections**



**Note:** Dimensions shown are metric.

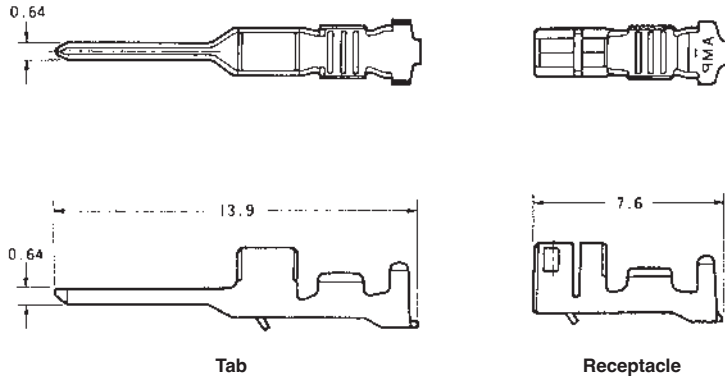
## 2.5 mm Signal Double Lock (2.5 SDL) Connectors (Wire-to-Board and Wire-to-Wire) (Continued)

### Contacts

#### Material and Finish

Pre-tinned phosphor bronze  
(0.2 mm thick)

Receptacle for Plug Housing,  
Tab for Cap Housing



Wire Range AWG	Wire Range mm <sup>2</sup>	Wire Ins. Dia.	Contact Part Number				Applicator Part Number
			Tab		Receptacle		
			Strip Form	Loose Piece	Strip Form	Loose Piece	
26-22	0.12~0.35	0.93~1.50	917765-1	316399-1	917684-1	316401-1	*
22-20	0.30~0.53	1.40~1.80	917764-1	316398-1	917683-1	316400-1	*

Hand Tool Part No.: for 26-22 AWG = 234604-1 (Instruction Sheet 411-5736)  
22-20 AWG = 234603-1 (Instruction Sheet 411-5735)

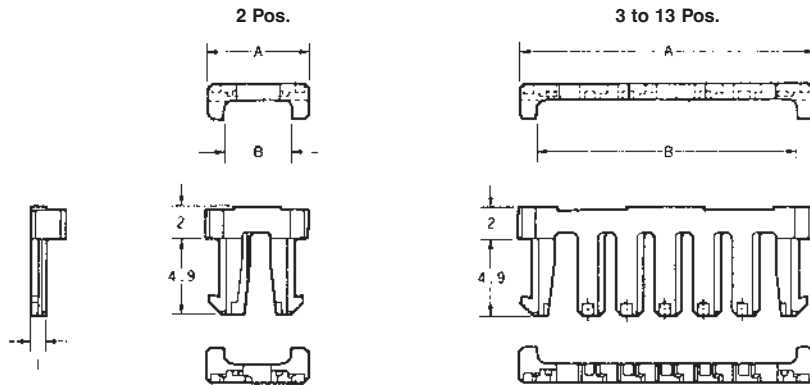
Extraction Tool Part No.: 234605-1 (Instruction Sheet 411-5737)

\* Contact the Tooling Assistance Center (TAC) at 1-800-722-1111 for Applicator Part Number.

### Double Lock Plates

#### Material

UL94V-0, 6/6 Nylon, glass filled,  
natural color



No. of Pos.	Dimensions of Double Lock Plate		Double Lock Plate Part Number	Applicable Housing Part Number	
	A	B		Plug	Cap
2	06.5	04.3	917698-1	917686-1	316086-1
3	09.0	06.8	917699-1	917687-1	316087-1
4	11.5	09.3	917700-1	917688-1	316088-1
5	14.0	11.8	917701-1	917689-1	316089-1
6	16.5	14.3	917702-1	917690-1	316090-1
7	19.0	16.8	917703-1	917691-1	316091-1
8	21.5	19.3	917704-1	917692-1	316092-1
9	24.0	21.8	917705-1	917693-1	---
10	26.5	24.3	917706-1	917694-1	316094-1
11	29.0	26.8	917707-1	917695-1	---
12	31.5	29.3	917708-1	917696-1	---
13	34.0	31.8	917709-1	917697-1	---

Extraction Tool Part No. for Double Lock Plate: 234605-1 (Instruction Sheet 411-5737)

**Note:** All part numbers are RoHS Compliant.

**Note:** Dimensions shown are metric.

## 2.5 mm Signal Double Lock (2.5 SDL) Connectors (Wire-to-Board and Wire-to-Wire) (Continued)

### Plug Housings (For Receptacle Contacts)

#### 2 to 13 Positions

#### Material

UL94V-0, 6/6 Nylon, color (see chart)

#### Related Product Data

#### Receptacle Contact Part No.

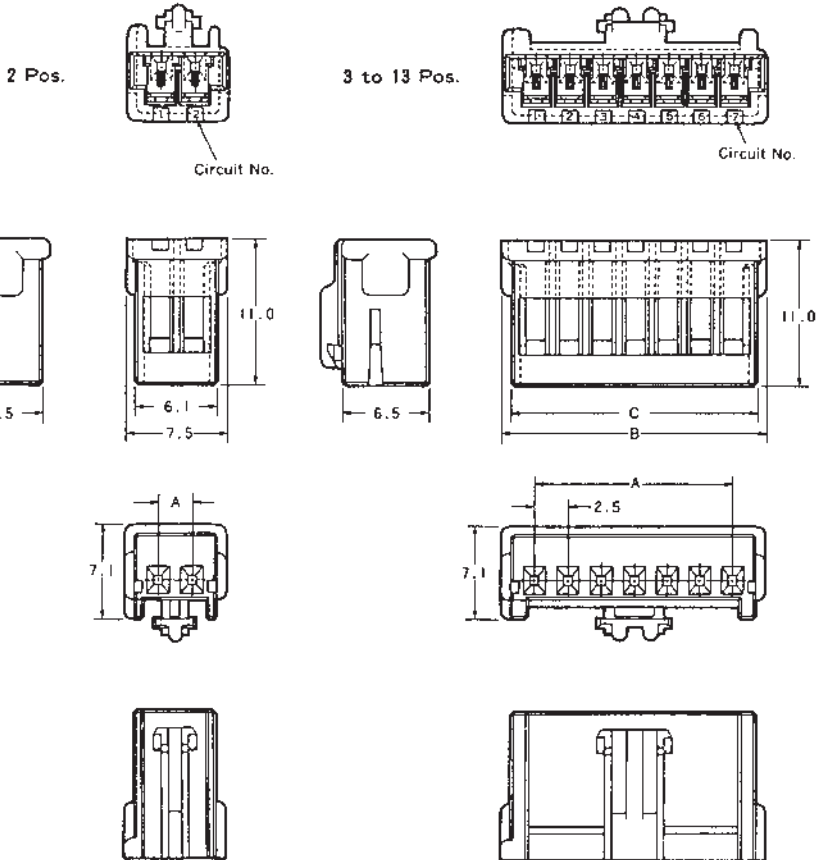
917684-1 (26-22 AWG)

917683-1 (22-20 AWG)

Double Lock Plate—page 12

Mating Cap Housings—page 14

Mating Post Headers—pages 15-16



No. of Pos.	Dimensions			Plug Housing Part Number					
	A	B	C	Natural	Red	Yellow	Green	Blue	Black
2	02.5	07.5	06.1	917686-1	917686-2	917686-4	917686-5	917686-6	917686-9
3	05.0	10.0	08.6	917687-1	917687-2	917687-4	---	917687-6	917687-9
4	07.5	12.5	11.1	917688-1	917688-2	917688-4	---	---	917688-9
5	10.0	15.0	13.6	917689-1	917689-2	---	---	917689-6	---
6	12.5	17.5	16.1	917690-1	917690-2	917690-4	---	917690-6	917690-9
7	15.0	20.0	18.6	917691-1	917691-2	917691-4	---	---	917691-9
8	17.5	22.5	21.1	917692-1	---	---	---	917692-6	---
9	20.0	25.0	23.6	917693-1	917693-2	917693-4	---	---	---
10	22.5	27.5	26.1	917694-1	---	917694-4	---	---	---
11	25.0	30.0	28.6	917695-1	---	---	---	---	---
12	27.5	32.5	31.1	917696-1	917696-2	---	---	---	---
13	30.0	35.0	33.6	917697-1	917697-2	---	---	---	---

Note: All part numbers are RoHS Compliant.

## 2.5 mm Signal Double Lock (2.5 SDL) Connectors (Wire-to-Wire)

### Cap Housings (For Tab Contacts)

#### 2 to 10 Positions

#### Material

UL94V-0, 6/6 Nylon, color (see chart)

#### Related Product Data

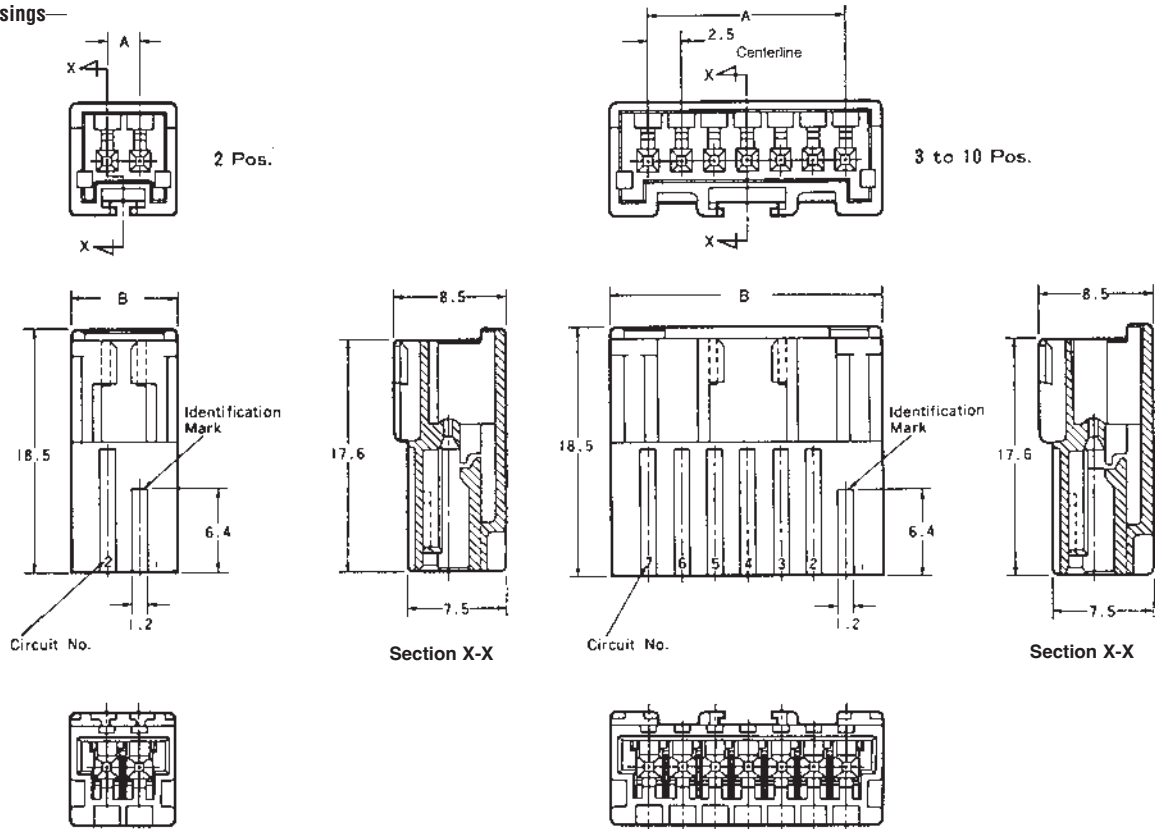
##### Tab Contact Part No.

917765-1 (26-22 AWG)

917764-1 (22-20 AWG)

##### Double Lock Plate—page 12

##### Mating Plug Housings— page 13



No. of Pos.	Dimensions		Cap Housing Part Number				
	A	B	Natural	Red	Yellow	Blue	Black
2	02.5	08.1	316086-1	316086-2	316086-4	316086-6	316086-9
3	05.0	10.6	316087-1	---	316087-4	---	316087-9
4	07.5	13.1	316088-1	316088-2	306088-4	---	316088-9
5	10.0	15.6	316089-1	316089-2	---	---	---
6	12.5	18.1	316090-1	---	---	---	---
7	15.0	20.6	316091-1	---	---	---	316091-9
8	17.5	23.1	316092-1	---	---	---	---
10	22.5	28.1	316094-1	---	316094-4	---	---

**Note:** All part numbers are RoHS Compliant.

**Note:** Dimensions shown are metric.

## 2.5 mm Signal Double Lock (2.5 SDL) Connectors (Wire-to-Wire) (Continued)

### Vertical Post Headers (For PC Board Mount)

#### Standard-Profile Type

#### Material and Finish

##### Header Housings

UL94V-0, 6/6 Nylon, glass filled, color (see chart)

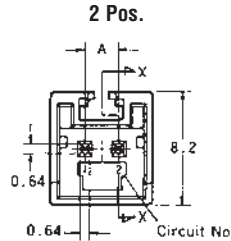
##### Post Contact

Pre-tinned copper alloy

#### Related Product Data

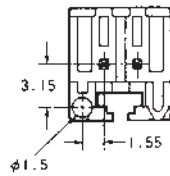
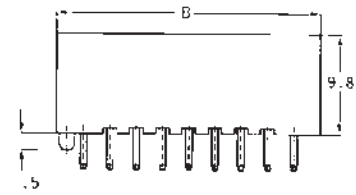
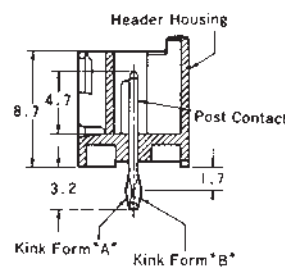
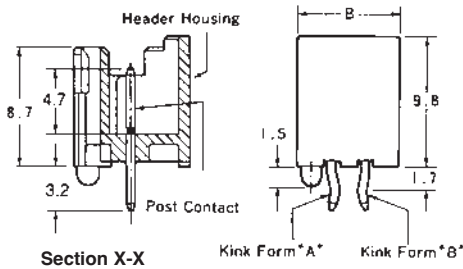
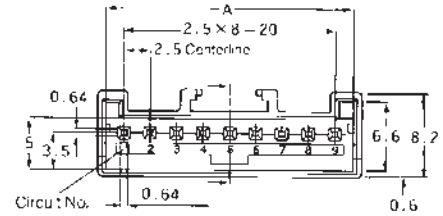
##### Mating Plug Housings—

page 13

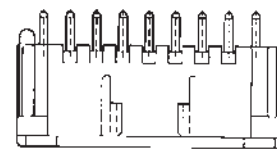
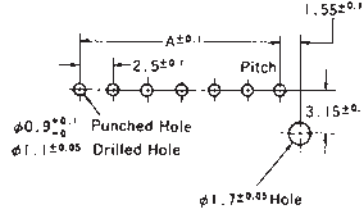
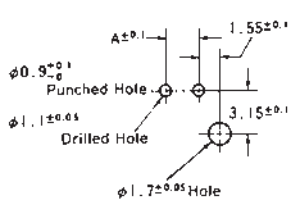
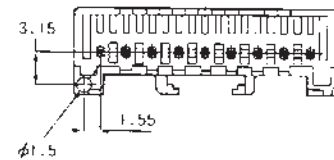


#### 3 to 13 Pos.

Designs of 5 pos. to 8 pos. header housings are slightly different, please request the drawings.



#### Section X-X



No. of Pos.	Dimensions		Post Header Part Number						Radial Tape-Mounted	(Qty.)	
	A	B	Loose Piece			Radial Tape-Mounted					
			Natural	Red	Yellow	Blue	Black	Natural			Red
2	02.5	07.5	□-917780-1*1	□-917780-2*1	---	---	□-917780-9*1	□-917894-1*3	---	---	(900)
3	05.0	10.0	□-917781-1*1	□-917781-2*1	---	---	□-917781-9*1	□-917895-1*4	□-917895-2	---	(900)
4	07.5	12.5	□-917782-1*1	□-917782-2*1	□-917782-4*1	---	□-917782-9*1	□-917896-1	---	---	(450)
5	10.0	15.0	□-917783-1*1	□-917783-2*1	---	□-917783-6	---	□-917897-1	□-917897-2	---	(450)
6	12.5	17.5	□-917784-1*1	□-917784-2*1	---	---	□-917784-9*1	□-917898-1	---	---	(450)
7	15.0	20.0	□-917785-1*1	□-917785-2	□-917785-4*1	---	---	□-917899-1*5	3-917899-2*6	□-917899-4	(450)
8	17.5	22.5	□-917786-1*1	---	---	□-917786-6*	---	□-917900-1	---	---	(450)
9	20.0	25.0	□-917787-1*1	□-917787-2	---	---	---	---	---	---	
10	22.5	27.5	□-917788-1*1	---	---	---	---	---	---	---	
11	25.0	30.0	□-917789-1*1	---	---	---	---	---	---	---	
12	27.5	32.5	□-917790-1*1	□-917790-2	---	---	---	---	---	---	
13	30.0	35.0	□-917791-1*1	□-917791-2	---	---	---	---	---	---	

\*1 Leave the □ blank, meaning it is with the boss. Enter 2 meaning it is without the boss.

\*2 Leave the □ blank, meaning it is with the boss and the kink. Enter 1 meaning it is without the boss and the kink. Enter 2 meaning it is with the boss and with the kink.

**Note: All part numbers are RoHS Compliant.**

\*3 The blue housing 917894-6 is also available.

\*4 The blue housing 917895-6 and the black housing 917895-9 are also available.

\*5 Leave the □ blank, meaning it is without the boss. Enter 3 meaning it is with the boss.

\*6 It is without the boss.

**Note: Dimensions shown are metric.**

## 2.5 mm Signal Double Lock (2.5 SDL) Connectors (Wire-to-Wire) (Continued)

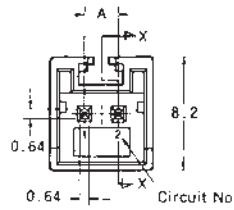
### Vertical Post Headers (For PC Board Mount)

#### High-Profile Type

#### Material and Finish

**Header Housing**—UL94V-0, 6/6 Nylon, glass filled, color (see chart)

**Post Contact**—Pre-tinned copper alloy

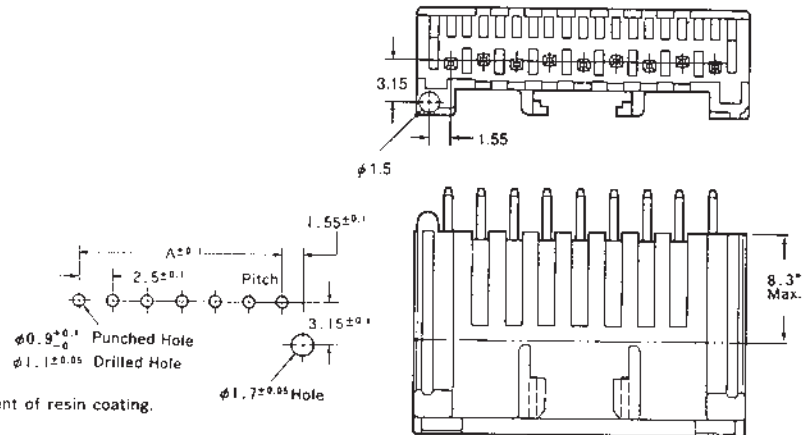
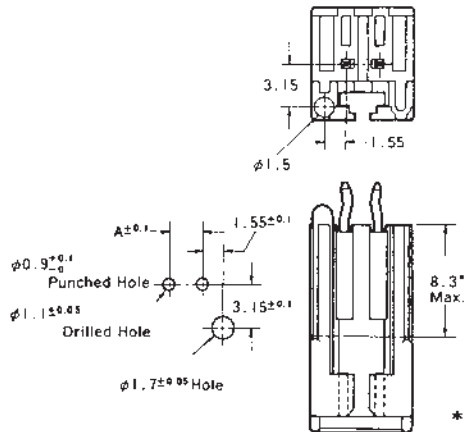
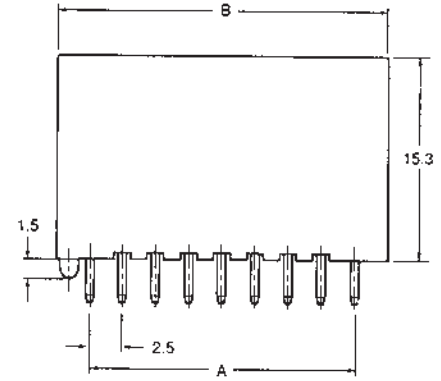
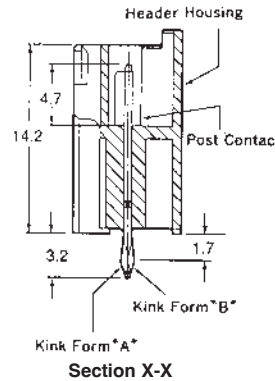
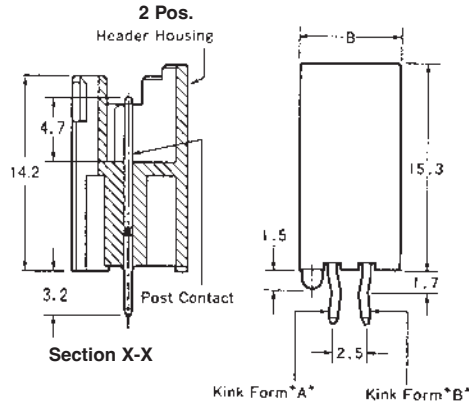
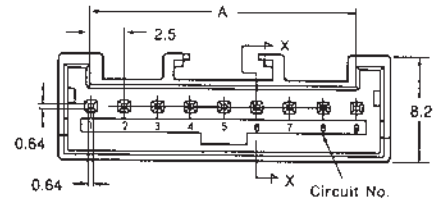


#### Related Product Data

Mating Plug Housings—page 13

3 to 13 Pos.

Designs of 5 pos. to 8 pos. header housings are slightly different, please request the drawings.



Note: Dimensions shown are metric.

No. of Pos.	Dimensions		Post Header Part Number							Radial Tape-Mounted	(Qty.)
			Loose Piece								
			Natural	Red	Yellow	Green	Blue	Black	Natural		
2	02.5	07.5	□-917722-1 <sup>*1</sup>	□-917722-2 <sup>*1</sup>	□-917722-4 <sup>*1</sup>	□-917722-5 <sup>*1</sup>	□-917722-6 <sup>*1</sup>	□-917722-9 <sup>*1</sup>	316221-1	(900) <sup>*2</sup>	
3	05.0	10.0	□-917723-1 <sup>*1</sup>	---	---	---	---	---	316222-1	(900)	
4	07.5	12.5	□-917724-1 <sup>*1</sup>	---	---	---	---	---	316223-1	(450)	
5	10.0	15.0	□-917725-1 <sup>*1</sup>	---	---	---	---	---	316224-1	(450)	
6	12.5	17.5	□-917726-1 <sup>*1</sup>	---	□-917726-4 <sup>*1</sup>	---	□-917726-6 <sup>*1</sup>	---	316225-1	(450)	
7	15.0	20.0	□-917727-1 <sup>*1</sup>	---	---	---	---	---	316226-1	(450)	
8	17.5	22.5	□-917728-1 <sup>*1</sup>	---	---	---	---	---	316227-1	(450)	
9	20.0	25.0	□-917729-1 <sup>*1</sup>	---	---	---	---	---	---	---	
10	22.5	27.5	□-917730-1 <sup>*1</sup>	---	---	---	---	---	---	---	
11	25.0	30.0	□-917731-1 <sup>*1</sup>	---	---	---	---	---	---	---	
12	27.5	32.5	□-917732-1 <sup>*1</sup>	---	---	---	---	---	---	---	
13	30.0	35.0	□-917733-1 <sup>*1</sup>	---	---	---	---	---	---	---	

\*1 Leave the □ blank, meaning it is with the boss. Enter 2 meaning it is without the boss.

\*2 The red housing 316221-2 and the yellow housing 316221-4 and the green housing 316221-5 and the blue housing 316221-6 and the black housing 316221-9 are also available.



Note: All part numbers are RoHS Compliant.

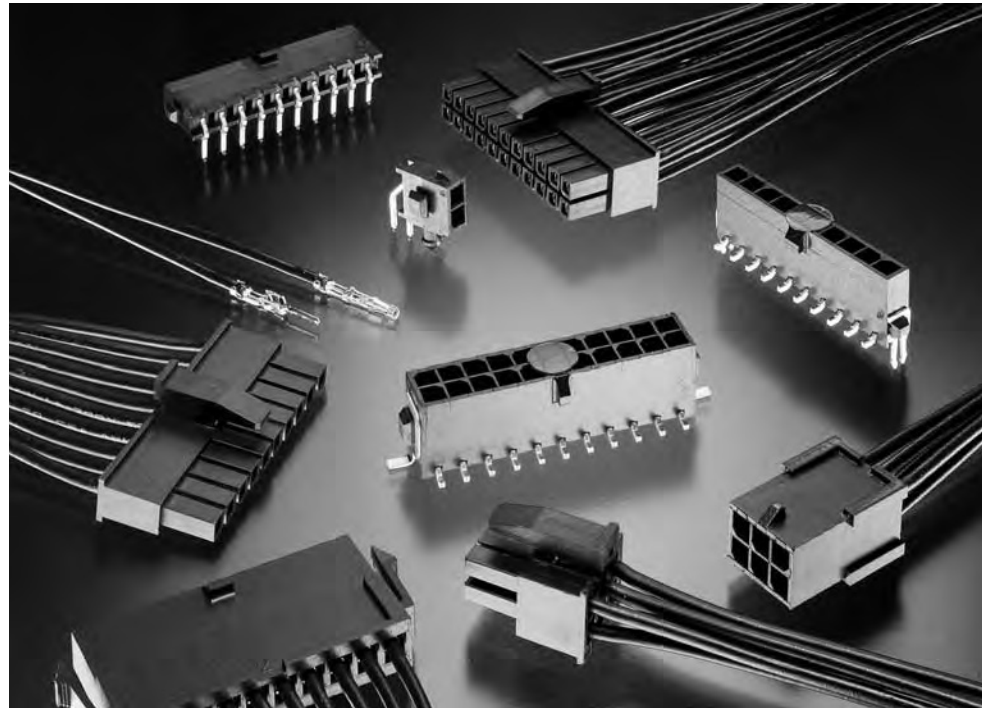
## Micro MATE-N-LOK 3 mm Connector System

High Density

Micro MATE-N-LOK 3 mm Connector System  
.118 [3.00] Centerline

### Product Facts

- Wire-to-wire and wire-to-board pin and receptacle connector system
- Contacts are on 3 mm [.118] centerline spacing
- 2-12 contact positions – single row
- 2-24 contact positions – dual row
- Panel mount or free-hanging wire-to-wire configurations
- Dual beam contact design for reliable interconnection
- Contacts accept 24-20 [0.2-0.6] and 30-26 [0.05-0.15] AWG wire with insulation diameter of .060 [1.52] maximum
- Contacts available in strip form or loose piece
- Pcb mount pin header assemblies in both vertical and right-angle styles
- Surface mount or through-hole pcb pin header attachment
- Pcb headers are IR reflow process compatible
- Recognized under the Component Program of Underwriters Laboratories Inc.  to US and Canadian Standards, File No. E28476
- Passed Tests for VDE under Registration Number 40005280/Continuous Surveillance 



The Micro MATE-N-LOK 3 mm Connector System is a wire-to-wire and wire-to-board connector system with contacts on a 3 mm [.118] centerline. Both single-row and dual-row configurations are available. Crimp, snap-in pin and receptacle contacts are used to terminate 24-20 [0.2-0.6] and 30-26 [0.05-0.15] AWG wire. Plug and receptacle housings allow wire-to-wire and wire-to-panel configurations.

Header assemblies for wire-to-board interconnections include vertical and right-angle components. These IR reflow process compatible headers are available in through-hole and surface mount configurations.

Typical uses of the Micro MATE-N-LOK 3 mm Connector System include the appliance, instrumentation, industrial machinery, home equipment, and security system industries.

### Technical Documents

#### Application Specification

114-13000 Micro MATE-N-LOK Connectors

#### Product Specification

108-1836 3 mm Micro MATE-N-LOK Connector

### Performance Characteristics

**Voltage Rating**—250 vac

**Current Rating**—5 amp max. on 20 AWG wire

**Contact Resistance**—20 milliohms max. final

**Dielectric Withstanding Voltage**—1500 VAC

**Insulation Resistance**—1000 megohms min.

**Operating Temperature**—-40°C to +105°C

**Mating Force**—1.5lb [6.67N] max per contact

**Micro MATE-N-LOK 3 mm Connector System (Continued)**

**Connector Application** . . . . . 19-21  
Crimp, Snap-In Contacts . . . . . 22

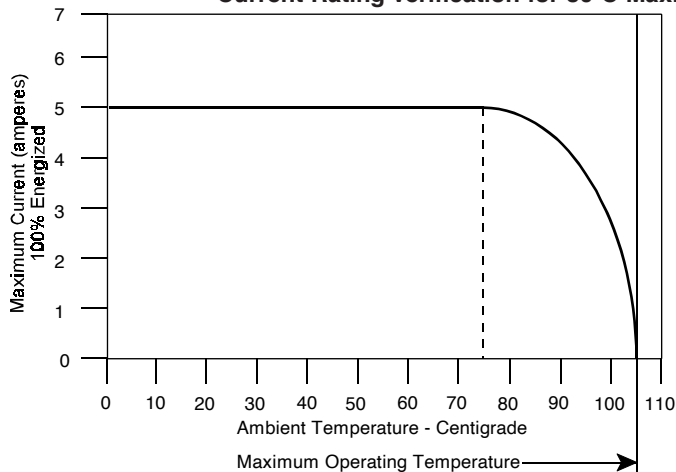
**Receptacle Housings**  
Single Row . . . . . 23  
Dual Row . . . . . 24

**Plug Housings**  
Single Row, Free-Hanging . . . . . 25  
Single Row, Panel Mount . . . . . 26  
Dual Row, Free-Hanging . . . . . 27  
Dual Row, Panel Mount . . . . . 28

**Vertical Header Assemblies**  
Low Profile Receptacle Housings,  
Right Angle Surface Mount Housings . . . . . 29  
Single Row, Through-Hole, with Retention Feature  
on Solder-tail and Polarization Feature to PCB . . . . . 30  
Single Row, Through-Hole, with Metal Through-Hole Hold-down . . . . . 31  
Single Row, Surface Mount, with Metal Through-Hole Hold-down . . . . . 32  
Single Row, Surface Mount, with Surface Mount Hold-down . . . . . 33  
Dual Row, Through-Hole, with Retention Feature on Solder-tail . . . . . 34  
Dual Row, Through-Hole, with Retention Feature  
on Solder-tail and Metal Through-Hole Hold-down . . . . . 35  
Dual Row, Surface Mount, with Metal Through-Hole Hold-down . . . . . 36  
Dual Row, Surface Mount, with Surface Mount Hold-down . . . . . 37

**Right-Angle Header Assemblies**  
Single Row, Through-Hole, with Metal Through-Hole Hold-down . . . . . 38  
Single Row, Through-Hole, with Plastic Boardlock . . . . . 39  
Single Row, Surface Mount, with Metal Through-Hole Hold-down . . . . . 40  
Single Row, Surface Mount, with Surface Mount Hold-down . . . . . 41  
Single Row, Surface Mount, with Plastic Boardlock . . . . . 42  
Dual Row, Through-Hole, with Metal Through-Hole Hold-down . . . . . 43  
Dual Row, Through-Hole, with Plastic Boardlock . . . . . 44  
Dual Row, Surface Mount, with Metal Through-Hole Hold-down . . . . . 45  
Dual Row, Surface Mount, with Plastic Boardlock . . . . . 46  
Dual Row, Surface Mount, with Surface Mount Hold-down . . . . . 47

**Current Rating Verification for 30°C Maximum Temperature Rise 100% Energized**




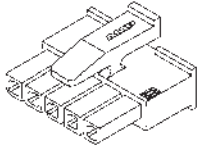

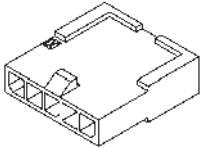
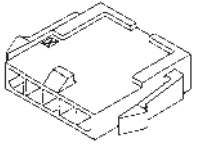
Number of Circuit Positions	Multiplication Factor	
	Wire Size (AWG)	
2 to 6	0.40	1
8 to 20	0.40	0.85
22 to 24	0.36	0.85

To determine acceptable current carrying capacity for connector size and wire gage indicated, use the Multiplication Factor from the chart above and multiply it times the Base rated Current at the maximum ambient operating temperature shown in the current rating figure.


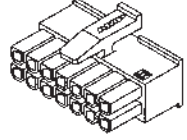

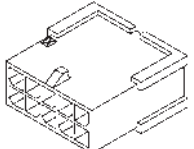
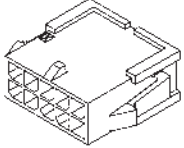
**Micro MATE-N-LOK 3 mm Connector System** (Continued)

**Connector Application —  
Wire-to-Wire and  
Wire-to-Panel**

**Single Row**

Receptacle		Plug	
Contact	Housing	Contact	Housing
 <p>□-794606-□, □-794607-□, □-794610-□, □-794611-□ Page 22</p>	 <p>□-1445022-□ Page 23</p>	 <p>□-794608-□, □-794609-□, □-794612-□, □-794613-□ Page 22</p>	 <p>Free-Hanging □-1445049-□ Page 25</p>  <p>Panel Mount □-1445048-□ Page 26</p>

**Dual Row**

Receptacle		Plug	
Contact	Housing	Contact	Housing
 <p>□-794606-□, □-794607-□, □-794610-□, □-794611-□ Page 22</p>	 <p>□-794617-□ Page 24</p>	 <p>□-794608-□, □-794609-□, □-794612-□, □-794613-□ Page 22</p>	 <p>Free-Hanging □-794616-□ Page 27</p>  <p>Panel Mount □-794615-□ Page 28</p>

High Density


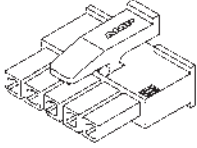
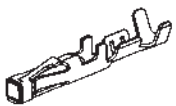
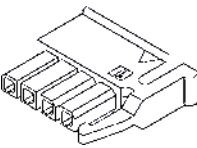
Micro MATE-N-LOK 3 mm Connector System  
.118 [3.00] Centerline

**Micro MATE-N-LOK 3 mm Connector System (Continued)**

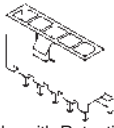
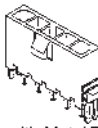
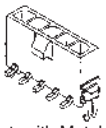
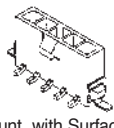
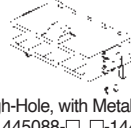
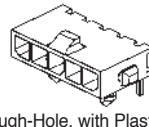
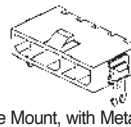
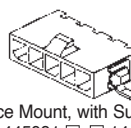

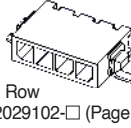
High Density

**Connector Application —  
Wire-to-PCB**

**Single Row**

Receptacle	
Contact	Housing
 <p>□-794606-□, □-794607-□, □-794610-□, □-794611-□ (Page 22)</p>	 <p>□-1445022-□ (Page 23)</p>
 <p>□-794606-□, □-794607-□, □-2029047-□, □-2029102-□, □-794610-□, □-794611-□ □-2029030-□, □-2029104-□, (Page 29) (Page 29)</p>	

**Low Profile, Single Row**


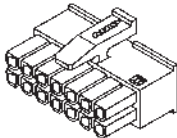
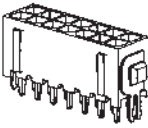
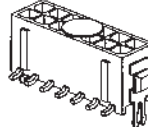
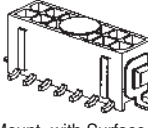
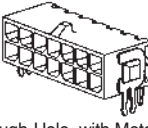
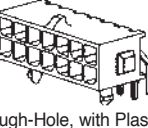
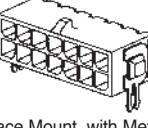
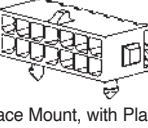
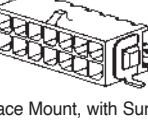
Header
 <p>Vertical Through-Hole, with Retention Feature on Solder-tail and Polarization Feature to PCB □-1445050-□, □-1445084-□, □-1445093-□ (Page 30)</p>
 <p>Vertical Through-Hole, with Metal Through-Hole Hold-down □-1445051-□, □-1445085-□, □-1445094-□ (Page 31)</p>
 <p>Vertical Surface Mount, with Metal Through-Hole Hold-down □-1445052-□, □-1445086-□, □-1445095-□ (Page 32)</p>
 <p>Vertical Surface Mount, with Surface Mount Hold-down □-1445053-□, □-1445087-□, □-1445096-□ (Page 33)</p>
 <p>Right-angle, Through-Hole, with Metal Through-Hole Hold-down □-1445054-□, □-1445088-□, □-1445097-□ (Page 38)</p>
 <p>Right-angle, Through-Hole, with Plastic Boardlock □-1445055-□, □-1445089-□, □-1445098-□ (Page 39)</p>
 <p>Right-angle, Surface Mount, with Metal Through-Hole Hold-down □-1445056-□, □-1445090-□, □-1445099-□ (Page 40)</p>
 <p>Right-angle, Surface Mount, with Surface Mount Hold-down □-1445057-□, □-1445091-□, □-1445100-□ (Page 41)</p>
 <p>Right-angle, Surface Mount, and Plastic Boardlock □-1445058-□, □-1445092-□, □-1445101-□ (Page 42)</p>
 <p>Low Profile, Single Row □-2029030-□, □-2029102-□ (Page 29)</p>



**Micro MATE-N-LOK 3 mm Connector System** (Continued)

**Connector Application —  
Wire-to-PCB**

**Dual Row**

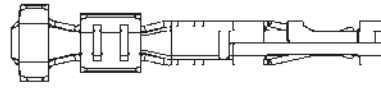
Receptacle		Header
Contact	Housing	
 <p>□-794606-□, □-794607-□, □-794610-□, □-794611-□ (Page 22)</p>	 <p>□-794617-□ (Page 24)</p>	<div style="text-align: center;">  <p>Vertical Through-Hole, with Retention Feature on Solder-tail and Optional Metal Through-Hole Hold-down □-794630-□, □-794631-□, □-794632-□, (Page 34) □-794680-□, □-794681-□, □-794682-□ (Page 35)</p> </div> <div style="text-align: center;">  <p>Vertical Surface Mount, with Metal Through-Hole Hold-down □-794633-□, □-794634-□, □-794635-□ (Page 36)</p> </div> <div style="text-align: center;">  <p>Vertical Surface Mount, with Surface Mount Hold-down □-794636-□, □-794637-□, □-794638-□ (Page 37)</p> </div> <div style="text-align: center;">  <p>Right-angle, Through-Hole, with Metal Through-Hole Hold-down □-794677-□, □-794678-□, □-794679-□ (Page 43)</p> </div> <div style="text-align: center;">  <p>Right-angle, Through-Hole, with Plastic Boardlock □-794618-□, □-794619-□, □-794620-□ (Page 44)</p> </div> <div style="text-align: center;">  <p>Right-angle, Surface Mount, with Metal Through-Hole Hold-down □-794624-□, □-794625-□, □-794626-□ (Page 45)</p> </div> <div style="text-align: center;">  <p>Right-angle, Surface Mount, with Plastic Boardlock □-794621-□, □-794622-□, □-794623-□ (Page 46)</p> </div> <div style="text-align: center;">  <p>Right-angle, Surface Mount, with Surface Mount Hold-down □-794627-□, □-794628-□, □-794629-□ (Page 47)</p> </div>

High Density

Micro MATE-N-LOK 3 mm Connector System  
.118 [3.00] Centerline

**Micro MATE-N-LOK 3 mm Connector System** (Continued)

**Crimp, Snap-In Contacts**



**Material and Finish**

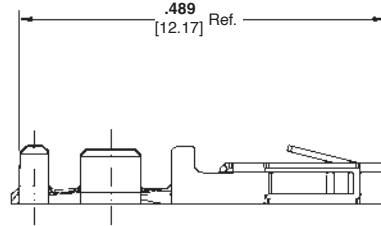
**Receptacle** — Phosphor Bronze

**Plug** — Brass

**Plating A** — .000100 (.000254) minimum bright tin entire stock over .000050 (.000127) minimum nickel entire stock

**Plating B** — .000015 (.000038) minimum gold in localized gold plate area. .000100 (.000254) minimum bright tin in localized tin plate area, both over .000050 (.000127) minimum nickel on entire stock

**Plating C** — .000030 (.000076) minimum gold in localized gold plate area. .000100 (.000254) minimum bright tin in localized tin plate area, both over .000050 (.000127) minimum nickel on entire stock



**Receptacle Contacts**

Wire Size Range AWG [mm <sup>2</sup> ]	Ins. Dia. Range	Finish	Contact Part Numbers		Tooling Part Numbers	
			Strip Form	Loose Piece	Applicator	Hand Tool
20-24 0.50 - 0.20	.035 - .060 0.89-1.52	Plating A	794606-1	794610-1	680893-□*	91501-1
		Plating B	1-794606-1	1-794610-1		
		Plating C	1-794606-2	1-794610-2		
26-30 0.12 - 0.05	.035 - .060 0.89-1.52	Plating A	794607-1	794611-1	680894-□*	91502-1
		Plating B	1-794607-1	1-794611-1		
		Plating C	1-794607-2	1-794611-2		

\*1=AMPOMATOR CLS Machine, 2=AMP-O-LECTRIC Model K Terminator, 3=AMP-O-LECTRIC Model G Terminator

**Note:** All part numbers are RoHS Compliant.

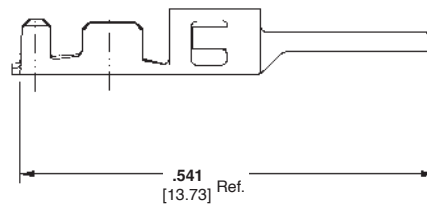
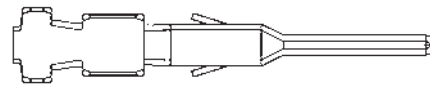
**Related Product Data**

**Connectors used with:**

Receptacle Contacts used with Receptacle Housings — pages 23-24

Plug Contacts used with Plug Housings — pages 25-28

**Application Tooling**— pages 207-210



**Plug Contacts**

Wire Size Range AWG [mm <sup>2</sup> ]	Ins. Dia. Range	Finish	Contact Part Numbers		Tooling Part Numbers	
			Strip Form	Loose Piece	Applicator	Hand Tool
20-24 0.50 - 0.20	.035 - .060 0.89-1.52	Plating A	1-794608-0	1-794612-0	1385194-□*	91501-1
		Plating B	1-794608-1	1-794612-1		
		Plating C	1-794608-2	1-794612-2		
26-30 0.12 - 0.05	.035 - .060 0.89-1.52	Plating A	1-794609-0	1-794613-0	1385377-□*	91502-1
		Plating B	1-794609-1	1-794613-1		
		Plating C	1-794609-2	1-794613-2		

\*1=AMPOMATOR CLS Machine, 2=AMP-O-LECTRIC Model K Terminator, 3=AMP-O-LECTRIC Model G Terminator

**Note:** All part numbers are RoHS Compliant.

**Contact Extraction Tools**

Part Number 843996-6 for Receptacle Contacts Part Number 1586344-1 for Plug Contacts

**Micro MATE-N-LOK 3 mm Connector System** (Continued)

High Density

Micro MATE-N-LOK 3 mm Connector System  
.118 [3.00] Centerline

**Receptacle Housings**

**Single Row**

**Material**

Nylon, Black  
Flammability Rating—UL 94V-0

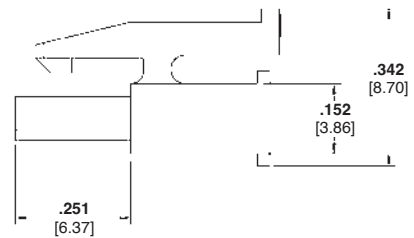
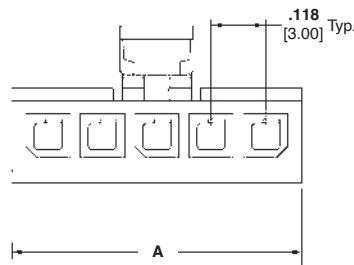
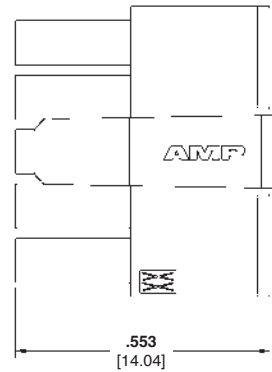
**Related Product Data**

**Contacts:**

Receptacle Contacts—page 22

**Mateable Housings and Headers:**

Single Row Plug Housings—  
pages 25-26  
Single Row Vertical Pin Header  
Assemblies—pages 30-37  
Single Row Right-Angle Pin Header  
Assemblies—pages 38-47



Number of Circuits	Dimension A	Part Numbers
2	.276 7.00	1445022-2
3	.394 10.00	1445022-3
4	.512 13.00	1445022-4
5	.630 16.00	1445022-5
6	.748 19.00	1445022-6
7	.866 22.00	1445022-7
8	.984 25.00	1445022-8
9	1.102 28.00	1445022-9
10	1.220 31.00	1-1445022-0
11	1.339 34.00	1-1445022-1
12	1.457 37.00	1-1445022-2

**Note:** All part numbers are RoHS Compliant.

**Micro MATE-N-LOK 3 mm Connector System** (Continued)

**Receptacle Housings**  
(Continued)

**Dual Row**

**Material**

Nylon, Black  
Flammability Rating—UL 94V-0

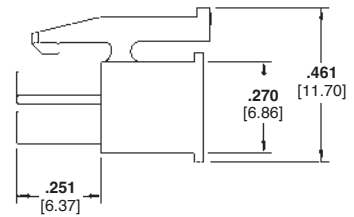
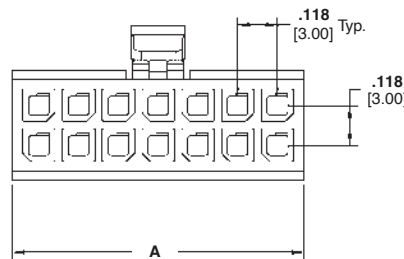
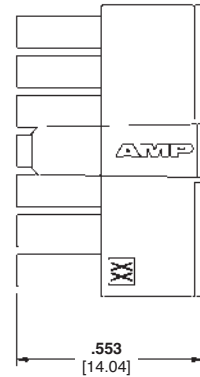
**Related Product Data**

**Contacts:**

Receptacle Contacts—page 22

**Mateable Housings and Headers:**

Dual Row Plug Housings—pages 27-28  
Dual Row Vertical Pin Header Assemblies—pages 34-37  
Dual Row Right-Angle Pin Header Assemblies—pages 43-47



Number of Circuits	Dimension A	Part Numbers
2	.157 4.00	794617-2
4	.276 7.00	794617-4
6	.394 10.00	794617-6
8	.512 13.00	794617-8
10	.630 16.00	1-794617-0
12	.748 19.00	1-794617-2
14	.866 22.00	1-794617-4
16	.984 25.00	1-794617-6
18	1.102 28.00	1-794617-8
20	1.220 31.00	2-794617-0
22	1.339 34.00	2-794617-2
24	1.457 37.00	2-794617-4

**Note:** All part numbers are RoHS Compliant.

High Density

Micro MATE-N-LOK 3 mm Connector System  
.118 [3.00] Centerline

**Micro MATE-N-LOK 3 mm Connector System** (Continued)

High Density

Micro MATE-N-LOK 3 mm Connector System  
.118 [3.00] Centerline

**Plug Housings**

**Single Row, Free-Hanging**

**Material**

Nylon, Black  
Flammability Rating—UL 94V-0

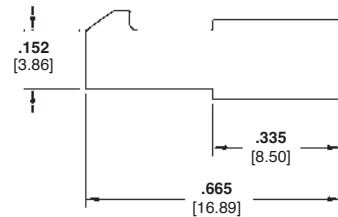
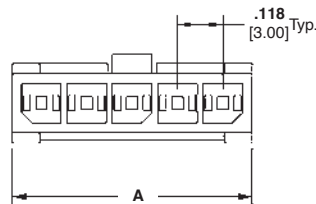
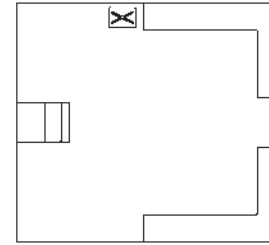
**Related Product Data**

**Contacts:**

Plug Contacts—page 22

**Mateable Housings:**

Single Row Receptacle Housings—  
page 23



Number of Circuits	Dimension A	Part Numbers
2	.270 6.85	1445049-2
3	.388 9.85	1445049-3
4	.506 12.85	1445049-4
5	.624 15.85	1445049-5
6	.742 18.85	1445049-6
7	.860 21.85	1445049-7
8	.978 24.85	1445049-8
9	1.096 27.85	1445049-9
10	1.215 30.85	1-1445049-0
11	1.333 33.85	1-1445049-1
12	1.451 36.85	1-1445049-2

**Note:** All part numbers are RoHS Compliant.

**Micro MATE-N-LOK 3 mm Connector System** (Continued)

**Plug Housings** (Continued)

**Single Row, Panel Mount**

**Material**

Nylon, Black  
Flammability Rating—UL 94V-0

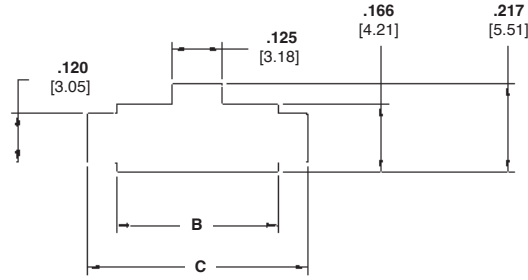
**Related Product Data**

**Contacts:**

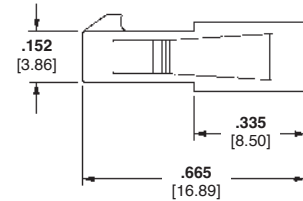
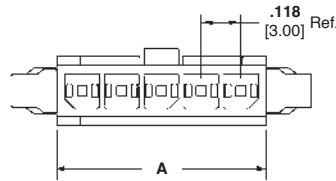
Plug Contacts—page 22

**Mateable Housings:**

Single Row Receptacle Housings—  
page 23



**Recommended Panel Cutout\***



Number of Circuits	Dimensions			Part Numbers
	A	B	C	
2	.270 6.85	.283 7.20	.428 10.88	1445048-2
3	.388 9.85	.402 10.20	.546 13.88	1445048-3
4	.506 12.85	.520 13.20	.665 16.88	1445048-4
5	.624 15.85	.638 16.20	.783 19.88	1445048-5
6	.742 18.85	.756 19.20	.901 22.88	1445048-6
7	.860 21.85	.874 22.20	1.019 25.88	1445048-7
8	.978 24.85	.992 25.20	1.137 28.88	1445048-8
9	1.096 27.85	1.110 28.20	1.255 31.88	1445048-9
10	1.215 30.85	1.228 31.20	1.373 34.88	1-1445048-0
11	1.333 33.85	1.346 34.20	1.491 37.88	1-1445048-1
12	1.451 36.85	1.465 37.20	1.609 40.88	1-1445048-2

\*Recommended panel thickness .062-.091 [1.57-2.30]. Always consult customer drawing for panel cutout dimensions.

**Note:** All part numbers are RoHS Compliant.

High Density

Micro MATE-N-LOK 3 mm Connector System  
.118 [3.00] Centerline

**Micro MATE-N-LOK 3 mm Connector System** (Continued)

**Plug Housings** (Continued)

**Dual Row, Free-Hanging**

**Material**

Nylon, Black  
Flammability Rating—UL 94V-0

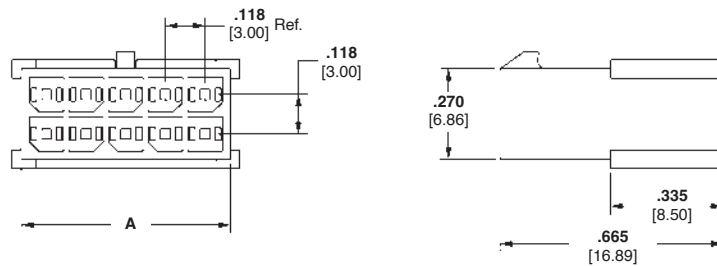
**Related Product Data**

**Contacts:**

Plug Contacts—page 22

**Mateable Housings:**

Dual Row Receptacle Housings—  
page 24



Number of Circuits	Dimension A	Part Numbers
2	.157 3.85	794616-2
4	.276 6.85	794616-4
6	.394 9.85	794616-6
8	.512 12.85	794616-8
10	.630 15.85	1-794616-0
12	.748 18.85	1-794616-2
14	.866 21.85	1-794616-4
16	.984 24.85	1-794616-6
18	1.102 27.85	1-794616-8
20	1.220 30.85	2-794616-0
22	1.339 33.85	2-794616-2
24	1.457 36.85	2-794616-4

**Note:** All part numbers are RoHS Compliant.

**Micro MATE-N-LOK 3 mm Connector System** (Continued)

**Plug Housings** (Continued)

**Dual Row, Panel Mount**

**Material**

Nylon, Black  
Flammability Rating—UL 94V-0

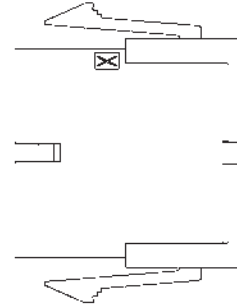
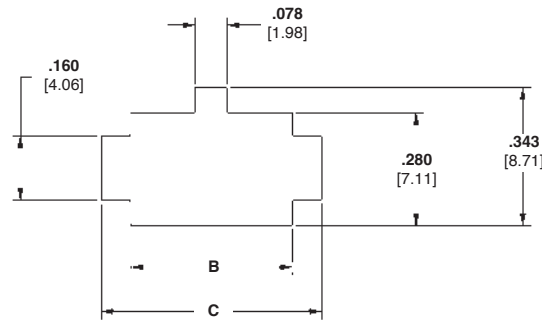
**Related Product Data**

**Contacts:**

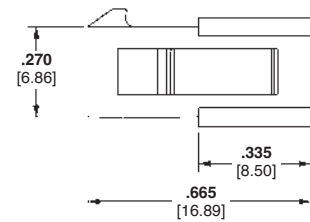
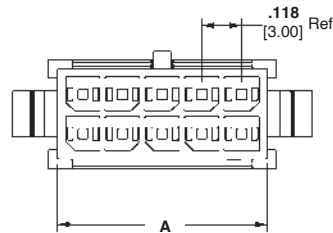
Plug Contacts—page 22

**Mateable Housings:**

Dual Row Receptacle Housings—  
page 24



**Recommended Panel Cutout\***



Number of Circuits	Dimensions			Part Numbers
	A	B	C	
2	.157 3.85	.165 4.20	.310 7.88	794615-2
4	.276 6.85	.285 7.20	.428 10.88	794615-4
6	.394 9.85	.402 10.20	.546 13.88	794615-6
8	.512 12.85	.520 13.20	.665 16.88	794615-8
10	.630 15.85	.638 16.20	.783 19.88	1-794615-0
12	.748 18.85	.756 19.20	.901 22.88	1-794615-2
14	.866 21.85	.874 22.20	1.019 25.88	1-794615-4
16	.984 24.85	.992 25.20	1.137 28.88	1-794615-6
18	1.102 27.85	1.110 28.20	1.255 31.88	1-794615-8
20	1.220 30.85	1.228 31.20	1.373 34.88	2-794615-0
22	1.339 33.85	1.346 34.20	1.491 37.88	2-794615-2
24	1.457 36.85	1.469 37.20	1.609 40.88	2-794615-4

\*Recommended panel thickness .062-.091 [1.57-2.30]. Always consult customer drawing for panel cutout dimensions.

**Note:** All part numbers are RoHS Compliant.

High Density

Micro MATE-N-LOK 3 mm Connector System  
.118 [3.00] Centerline

**Micro MATE-N-LOK 3 mm Connector System** (Continued)

High Density

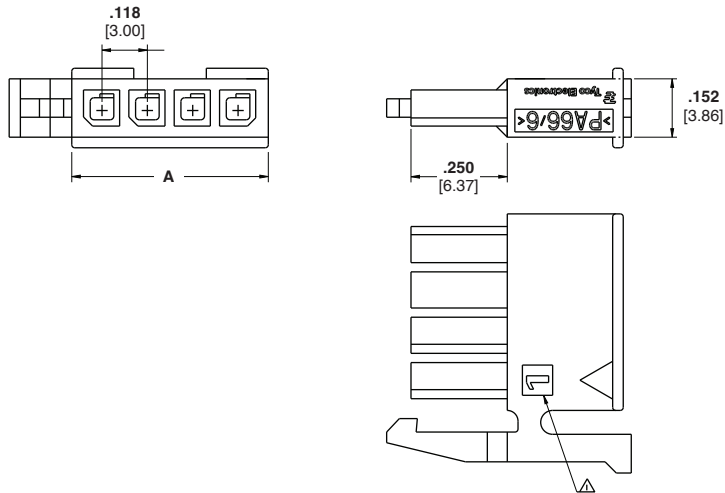
Micro MATE-N-LOK 3 mm Connector System  
.118 [3.00] Centerline

**New: Low Profile**

**Low Profile Receptacle Housings**

**Material**

Nylon, Black  
Flammability Rating—V0



Positions	Color	Dimension A	Part Numbers
2	Black	.276 7	2029047-2
3	Black	.394 10	2029047-3
4	Black	.512 13	2029047-4
2	Natural	.276 7	2029102-2
3	Natural	.394 10	2029102-3
4	Natural	.512 13	2029102-4

**Low Profile Right Angle Surface Mount Housings**

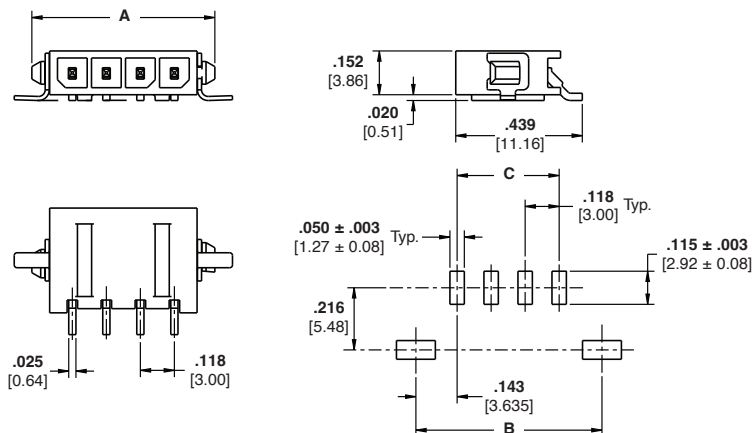
**Material**

Hight Temp Nylon, Black  
Flammability Rating—V0

**Contacts:**

Brass

**Plating A** — .0001100 (.00254)  
minimum tin over .000050 [0.00127]  
minimum nickel



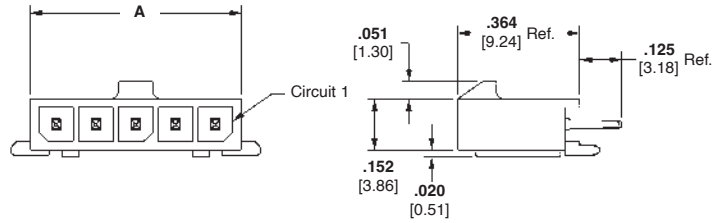
Positions	Color	Dimensions			Part Numbers
		A	B	C	
2	Black	.394 10	.410 10.4	.118 3	2029030-2
3	Black	.512 13	.528 13.4	.263 6	2029030-3
4	Black	.630 16	.646 16.4	.354 9	2029030-4
2	Natural	.394 10	.410 10.4	.118 3	2029104-2
3	Natural	.512 13	.52 13.4	.263 6	2029104-3
4	Natural	.630 16	.646 16.4	.354 9	2029104-4

**Note:** Less than 4.7mm in vertical board surface height required!

**Micro MATE-N-LOK 3 mm Connector System** (Continued)

**Vertical Header Assemblies**

**Single Row, Through-Hole, with Retention Feature on Soldertail and Polarization Feature to PCB**



**Material and Finish**

**Housing** — High Temperature Nylon, Black

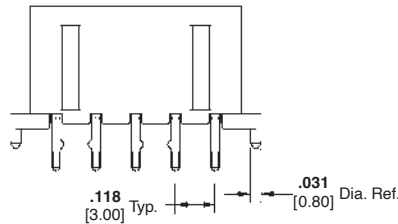
**Flammability Rating** — UL 94V-0

**Contacts** — Brass

**Plating A**—.000100 [0.00254] min. tin over .000050 [0.00127] min. nickel

**Plating B**—.000015 [0.00038] gold in mating area, .000100 [0.00254] min. tin in solder area, with entire contact underplated .000050 [0.00127] min. nickel

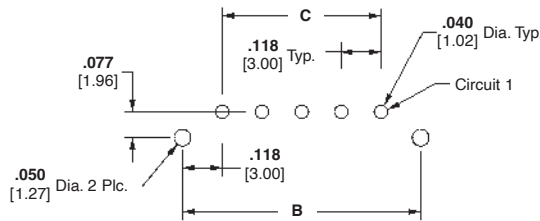
**Plating C**—.000030 [0.00076] gold in mating area, .000100 [0.00254] min. tin in solder area, with entire contact underplated .000050 [0.00127] min. nickel



**Related Product Data**

**Mateable Housings:**

Single Row Receptacle Housings—page 23



**Recommended PC Board Layout\***

Number of Circuits	Dimensions			Header Part Numbers			Mates with Receptacle Housing Part Number
	A	B	C	Plating A	Plating B	Plating C	
2	.276 7.00	.360 9.14	.118 3.00	2-1445050-2	2-1445084-2	2-1445093-2	1445022-2
3	.394 10.00	.478 12.14	.236 6.00	2-1445050-3	2-1445084-3	2-1445093-3	1445022-3
4	.512 13.00	.596 15.14	.354 9.00	2-1445050-4	2-1445084-4	2-1445093-4	1445022-4
5	.630 16.00	.714 18.14	.472 12.00	2-1445050-5	2-1445084-5	2-1445093-5	1445022-5
6	.748 19.00	.832 21.14	.591 15.00	2-1445050-6	2-1445084-6	2-1445093-6	1445022-6
7	.866 22.00	.950 24.14	.709 18.00	2-1445050-7	2-1445084-7	2-1445093-7	1445022-7
8	.984 25.00	1.069 27.14	.827 21.00	2-1445050-8	2-1445084-8	2-1445093-8	1445022-8
9	1.102 28.00	1.187 30.14	.945 24.00	2-1445050-9	2-1445084-9	3-1445093-9	1445022-9
10	1.220 31.00	1.304 33.14	1.063 27.00	3-1445050-0	3-1445084-0	3-1445093-0	1-1445022-0
11	1.339 34.00	1.423 36.14	1.181 30.00	3-1445050-1	3-1445084-1	3-1445093-1	1-1445022-1
12	1.457 37.00	1.541 39.14	1.299 33.00	3-1445050-2	3-1445084-2	3-1445093-2	1-1445022-2

\*Recommended PC Board thickness .062 [1.57]. Always consult customer drawing for PC Board layout dimensions.

**Note:** All part numbers are RoHS Compliant.

High Density

Micro MATE-N-LOK 3 mm Connector System  
.118 [3.00] Centerline

**Micro MATE-N-LOK 3 mm Connector System** (Continued)

High Density

Micro MATE-N-LOK 3 mm Connector System  
.118 [3.00] Centerline

**Vertical Header Assemblies**

(Continued)

**Single Row, Through-Hole, with Metal Through-Hole Hold-down**

**Material and Finish**

**Housing** — High Temperature Nylon, Black

**Flammability Rating** — UL 94V-0

**Contacts** — Brass

**Plating A** — .000100 [0.00254] min. tin over .000050 [0.00127] min. nickel

**Plating B** — .000015 [0.00038] gold in mating area, .000100 [0.00254] min. tin in solder area, with entire contact underplated .000050 [0.00127] min. nickel

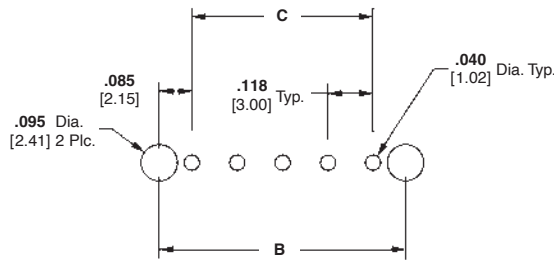
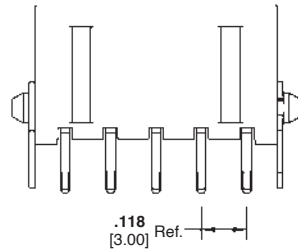
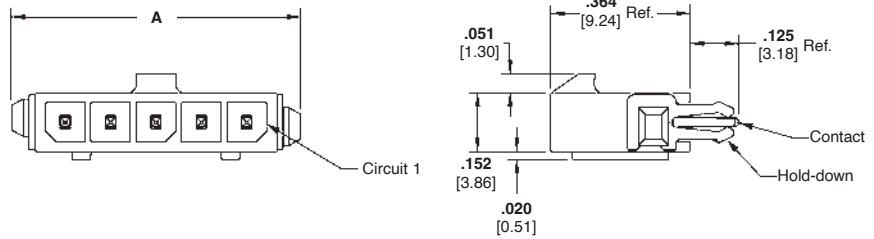
**Plating C** — .000030 [0.00076] gold in mating area, .000100 [0.00254] min. tin in solder area, with entire contact underplated .000050 [0.00127] min. nickel

**Hold-downs** — Phosphor Bronze, .000100 [0.00254] min. tin over .000050 [0.00127] min. nickel

**Related Product Data**

**Mateable Housings:**

Single Row Receptacle Housing— page 23



**Recommended PC Board Layout\***

Number of Circuits	Dimensions			Header Part Numbers			Mates with Receptacle Housing Part Number
	A	B	C	Plating A	Plating B	Plating C	
2	.399 10.14	.293 7.43	.118 3.00	2-1445051-2	2-1445085-2	2-1445094-2	1445022-2
3	.517 13.14	.411 10.43	.236 6.00	2-1445051-3	2-1445085-3	2-1445094-3	1445022-3
4	.635 16.14	.529 13.43	.354 9.00	2-1445051-4	2-1445085-4	2-1445094-4	1445022-4
5	.754 19.14	.647 16.43	.472 12.00	2-1445051-5	2-1445085-5	2-1445094-5	1445022-5
6	.871 22.14	.765 19.43	.591 15.00	2-1445051-6	2-1445085-6	2-1445094-6	1445022-6
7	.990 25.14	.883 22.43	.709 18.00	2-1445051-7	2-1445085-7	2-1445094-7	1445022-7
8	1.108 28.14	1.001 25.43	.827 21.00	2-1445051-8	2-1445085-8	2-1445094-8	1445022-8
9	1.226 31.14	1.119 28.43	.945 24.00	2-1445051-9	2-1445085-9	2-1445094-9	1445022-9
10	1.344 34.14	1.237 31.43	1.063 27.00	3-1445051-0	3-1445085-0	3-1445094-0	1-1445022-0
11	1.462 37.14	1.356 34.43	1.181 30.00	3-1445051-1	3-1445085-1	3-1445094-1	1-1445022-1
12	1.580 40.14	1.474 37.43	1.299 33.00	3-1445051-2	3-1445085-2	3-1445094-2	1-1445022-2

\*Recommended PC Board thickness .062 [1.57]. Always consult customer drawing for PC Board layout dimensions.

**Note:** All part numbers are RoHS Compliant.

**Micro MATE-N-LOK 3 mm Connector System (Continued)**

**Vertical Header Assemblies**

(Continued)

**Single Row, Surface Mount, with Metal Through-Hole Hold-down**

**Material and Finish**

**Housing** — High Temperature Nylon, Black

**Flammability Rating** — UL 94V-0

**Contacts**—Brass

**Plating A**— .000100 [0.00254] min. tin over .000050 [0.00127] min. nickel

**Plating B**— .000015 [0.00038] gold in mating area, .000100 [0.00254] min. tin in solder area, with entire contact underplated .000050 [0.00127] min. nickel

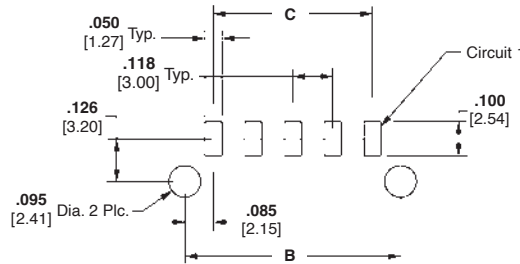
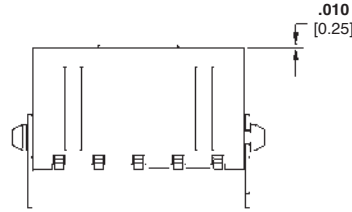
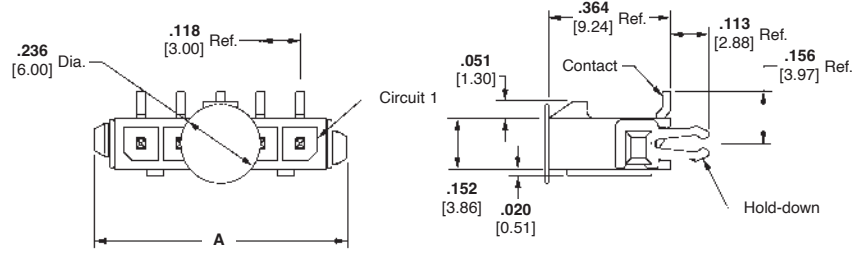
**Plating C**— .000030 [0.00076] gold in mating area, .000100 [0.00254] min. tin in solder area, with entire contact underplated .000050 [0.00127] min. nickel

**Hold-downs**—Phosphor Bronze, .000100 [0.00254] min. tin over .000050 [0.00127] min. nickel

**Related Product Data**

**Mateable Housings:**

Single Row Receptacle Housing— page 23



Recommended PC Board Layout\*

Number of Circuits	Dimensions			Header Part Numbers			Mates with Receptacle Housing Part Number
	A	B	C	Plating A	Plating B	Plating C	
2	.394 10.00	.293 7.43	.118 3.00	2-1445052-2	2-1445086-2	2-1445095-2	1445022-2
3	.512 13.00	.411 10.43	.236 6.00	2-1445052-3	2-1445086-3	2-1445095-3	1445022-3
4	.630 16.00	.529 13.43	.354 9.00	2-1445052-4	2-1445086-4	2-1445095-4	1445022-4
5	.748 19.00	.647 16.43	.472 12.00	2-1445052-5	2-1445086-5	2-1445095-5	1445022-5
6	.866 22.00	.765 19.43	.591 15.00	2-1445052-6	2-1445086-6	2-1445095-6	1445022-6
7	.984 25.00	.883 22.43	.709 18.00	2-1445052-7	2-1445086-7	2-1445095-7	1445022-7
8	1.102 28.00	1.001 25.43	.827 21.00	2-1445052-8	2-1445086-8	2-1445095-8	1445022-8
9	1.220 31.00	1.119 28.43	.945 24.00	2-1445052-9	2-1445086-9	2-1445095-9	1445022-9
10	1.339 34.00	1.237 31.43	1.063 27.00	3-1445052-0	3-1445086-0	3-1445095-0	1-1445022-0
11	1.457 37.00	1.356 34.43	1.181 30.00	3-1445052-1	3-1445086-1	3-1445095-1	1-1445022-1
12	1.575 40.00	1.474 37.43	1.299 33.00	3-1445052-2	3-1445086-2	3-1445095-2	1-1445022-2

\*Recommended PC Board thickness .062 [1.57]. Always consult customer drawing for PC Board layout dimensions.

**Note:** All part numbers are RoHS Compliant.

High Density

Micro MATE-N-LOK 3 mm Connector System  
.118 [3.00] Centerline

**Micro MATE-N-LOK 3 mm Connector System** (Continued)

High Density

Micro MATE-N-LOK 3 mm Connector System  
.118 [3.00] Centerline

**Vertical Header Assemblies**

(Continued)

**Single Row, Surface Mount, with Surface Mount Hold-down**

**Material and Finish**

**Housing** — High Temperature Nylon, Black

**Flammability Rating** — UL 94V-0

**Contacts**—Brass

**Plating A**— .000100 [0.00254] min. tin over .000050 [0.00127] min. nickel

**Plating B**— .000015 [0.00038] gold in mating area, .000100 [0.00254] min. tin in solder area, with entire contact underplated .000050 [0.00127] min. nickel

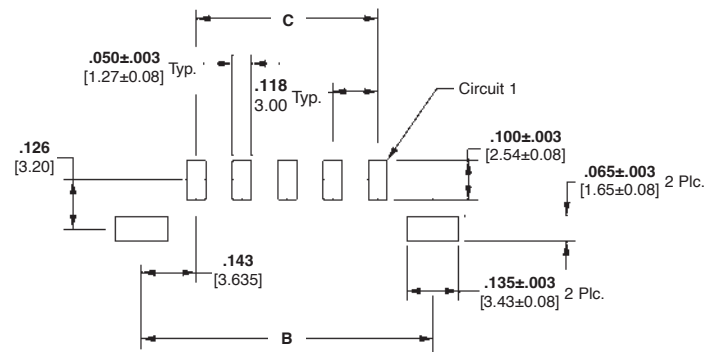
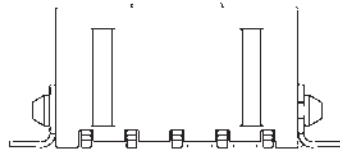
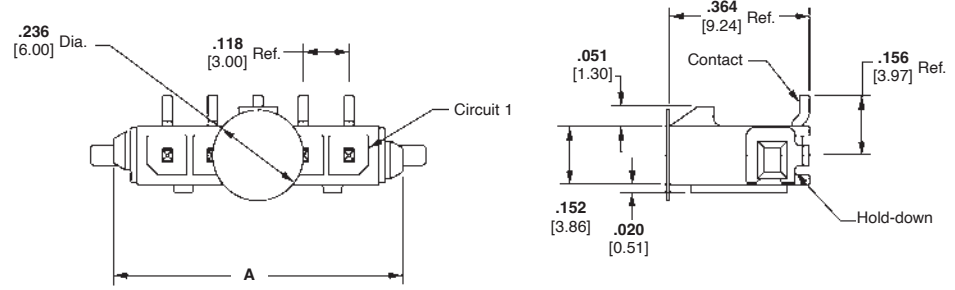
**Plating C**— .000030 [0.00076] gold in mating area, .000100 [0.00254] min. tin in solder area, with entire contact underplated .000050 [0.00127] min. nickel

**Hold-downs**—Phosphor Bronze, .000100 [0.00254] min. tin over .000050 [0.00127] min. nickel

**Related Product Data**

**Mateable Housings:**

Single Row Receptacle Housing— page 23



**Recommended PC Board Layout\***

Number of Circuits	Dimensions			Header Part Numbers			Mates with Receptacle Housing Part Number
	A	B	C	Plating A	Plating B	Plating C	
2	.394 10.00	.410 10.41	.118 3.00	2-1445053-2	2-1445087-2	2-1445096-2	1445022-2
3	.512 13.00	.528 13.41	.236 6.00	2-1445053-3	2-1445087-3	2-1445096-3	1445022-3
4	.630 16.00	.646 16.41	.354 9.00	2-1445053-4	2-1445087-4	2-1445096-4	1445022-4
5	.748 19.00	.765 19.41	.472 12.00	2-1445053-5	2-1445087-5	2-1445096-5	1445022-5
6	.866 22.00	.882 22.41	.591 15.00	2-1445053-6	2-1445087-6	2-1445096-6	1445022-6
7	.984 25.00	1.001 25.41	.709 18.00	2-1445053-7	2-1445087-7	2-1445096-7	1445022-7
8	1.102 28.00	1.119 28.41	.827 21.00	2-1445053-8	2-1445087-8	2-1445096-8	1445022-8
9	1.220 31.00	1.237 31.41	.945 24.00	2-1445053-9	2-1445087-9	2-1445096-9	1445022-9
10	1.339 34.00	1.355 34.41	1.063 27.00	3-1445053-0	3-1445087-0	3-1445096-0	1-1445022-0
11	1.457 37.00	1.473 37.41	1.181 30.00	3-1445053-1	3-1445087-1	3-1445096-1	1-1445022-1
12	1.575 40.00	1.591 40.41	1.299 33.00	3-1445053-2	3-1445087-2	3-1445096-2	1-1445022-2

\*Always consult customer drawing for PC Board layout dimensions.

**Note:** All part numbers are RoHS Compliant.

**Micro MATE-N-LOK 3 mm Connector System (Continued)**

**Vertical Header Assemblies**

(Continued)

**Dual Row, Through-Hole, with Retention Feature on Solder Tail**

**Material and Finish**

**Housing** — High Temperature Nylon, Black

**Flammability Rating** — UL 94V-0

**Contacts**—Brass

**Plating A**— .000100 [0.00254] min. tin over .000050 [0.00127] min. nickel

**Plating B**— .000015 [0.00038] gold in mating area, .000100 [0.00254] min. tin in solder area, with entire contact underplated .000050 [0.00127] min. nickel

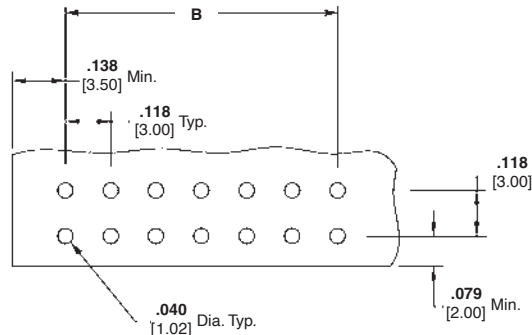
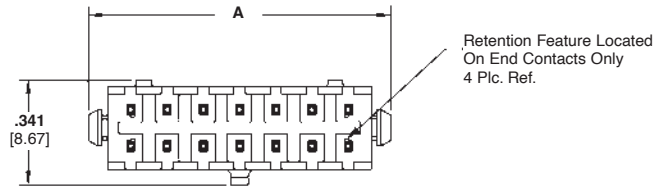
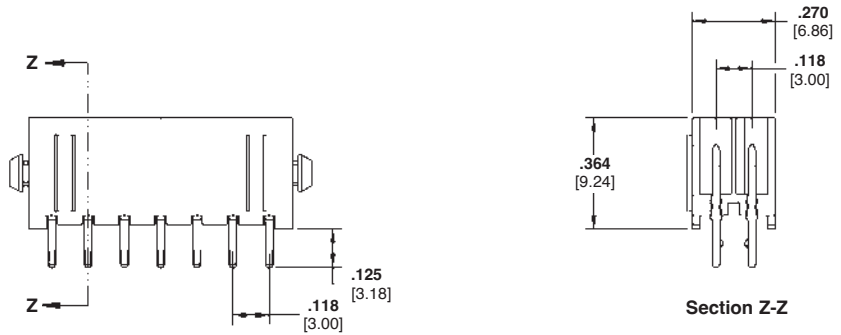
**Plating C**— .000030 [0.00076] gold in mating area, .000100 [0.00254] min. tin in solder area, with entire contact underplated .000050 [0.00127] min. nickel

**Hold-downs**—Phosphor Bronze, .000100 [0.00254] min. tin over .000050 [0.00127] min. nickel

**Related Product Data**

**Mateable Housings:**

Dual Row Receptacle Housing—page 24



**Recommended PC Board Layout\***

Number of Circuits	Dimensions		Header Part Numbers			Mates with Receptacle Housing Part Number
	A	B	Plating A	Plating B	Plating C	
2	.276 7.00	—	3-794630-2	3-794631-2	3-794632-2	794617-2
4	.394 10.00	.118 3.00	3-794630-4	3-794631-4	3-794632-4	794617-4
6	.512 13.00	.236 6.00	3-794630-6	3-794631-6	3-794632-6	794617-6
8	.630 16.00	.354 9.00	3-794630-8	3-794631-8	3-794632-8	794617-8
10	.748 19.00	.472 12.00	4-794630-0	4-794631-0	4-794632-0	1-794617-0
12	.866 22.00	.591 15.00	4-794630-2	4-794631-2	4-794632-2	1-794617-2
14	.984 25.00	.709 18.00	4-794630-4	4-794631-4	4-794632-4	1-794617-4
16	1.102 28.00	.827 21.00	4-794630-6	4-794631-6	4-794632-6	1-794617-6
18	1.220 31.00	.945 24.00	4-794630-8	4-794631-8	4-794632-8	1-794617-8
20	1.339 34.00	1.063 27.00	5-794630-0	5-794631-0	5-794632-0	2-794617-0
22	1.457 37.00	1.181 30.00	5-794630-2	5-794631-2	5-794632-2	2-794617-2
24	1.575 40.00	1.299 33.00	5-794630-4	5-794631-4	5-794632-4	2-794617-4

\*Recommended PC Board thickness .062 [1.57]. Always consult customer drawing for PC Board layout dimensions.

**Note: All part numbers are RoHS Compliant.**

**Micro MATE-N-LOK 3 mm Connector System (Continued)**

High Density

Micro MATE-N-LOK 3 mm Connector System  
.118 [3.00] Centerline

**Vertical Header Assemblies**

(Continued)

**Dual Row, Through-Hole, with Retention Feature on Soldertail and Metal Through-Hole Hold-down**

**Material and Finish**

**Housing**—High Temperature Nylon, Black

**Flammability Rating**—UL 94V-0

**Contacts**—Brass

**Plating A**— $.000100$  [0.00254] min. tin over  $.000050$  [0.00127] min. nickel

**Plating B**— $.000015$  [0.00038] gold in mating area,  $.000100$  [0.00254] min. tin in solder area, with entire contact underplated  $.000050$  [0.00127] min. nickel

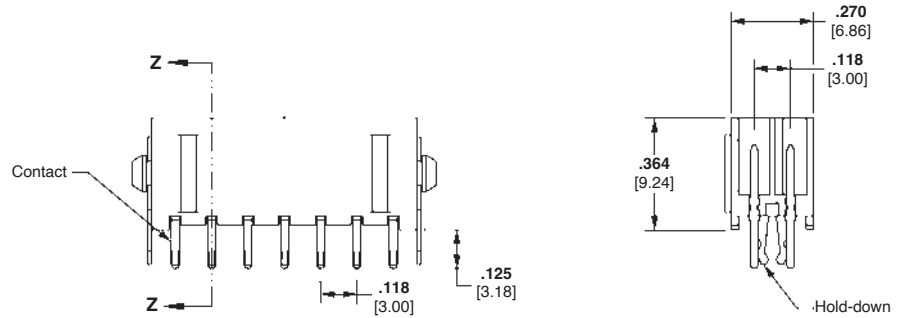
**Plating C**— $.000030$  [0.00076] gold in mating area,  $.000100$  [0.00254] min. tin in solder area, with entire contact underplated  $.000050$  [0.00127] min. nickel

**Hold-downs**—Phosphor Bronze,  $.000100$  [0.00254] min. tin over  $.000050$  [0.00127] min. nickel

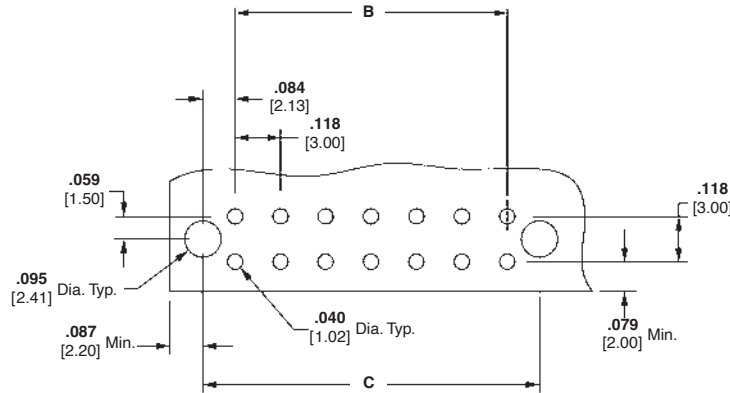
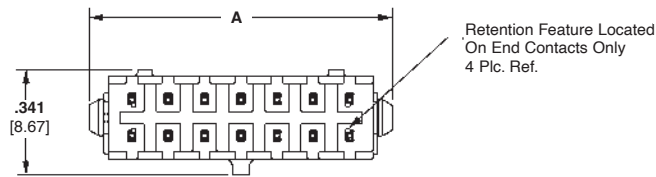
**Related Product Data**

**Mateable Housings:**

Dual Row Receptacle Housing—page 24



Section Z-Z



Recommended PC Board Layout\*

Number of Circuits	Dimensions			Header Part Numbers			Mates with Receptacle Housing Part Number
	A	B	C	Plating A	Plating B	Plating C	
2	.276 7.00	—	.169 4.30	3-794680-2	3-794681-2	3-794682-2	794617-2
4	.394 10.00	.118 3.00	.287 7.30	3-794680-4	3-794681-4	3-794682-4	794617-4
6	.512 13.00	.236 6.00	.406 10.30	3-794680-6	3-794681-6	3-794682-6	794617-6
8	.630 16.00	.354 9.00	.524 13.30	3-794680-8	3-794681-8	3-794682-8	794617-8
10	.748 19.00	.472 12.00	.642 16.30	4-794680-0	4-794681-0	4-794682-0	1-794617-0
12	.866 22.00	.591 15.00	.760 19.30	4-794680-2	4-794681-2	4-794682-2	1-794617-2
14	.984 25.00	.709 18.00	.878 22.30	4-794680-4	4-794681-4	4-794682-4	1-794617-4
16	1.102 28.00	.827 21.00	.996 25.30	4-794680-6	4-794681-6	4-794682-6	1-794617-6
18	1.220 31.00	.945 24.00	1.114 28.30	4-794680-8	4-794681-8	4-794682-8	1-794617-8
20	1.339 34.00	1.063 27.00	1.232 31.30	5-794680-0	5-794681-0	5-794682-0	2-794617-0
22	1.457 37.00	1.181 30.00	1.350 34.30	5-794680-2	5-794681-2	5-794682-2	2-794617-2
24	1.575 40.00	1.299 33.00	1.469 37.30	5-794680-4	5-794681-4	5-794682-4	2-794617-4

\*Recommended PC Board thickness  $.062$  [1.57]. Always consult customer drawing for PC Board layout dimensions.

**Note:** All part numbers are RoHS Compliant.

**Micro MATE-N-LOK 3 mm Connector System (Continued)**

**Vertical Header Assemblies**

(Continued)

**Dual Row, Surface Mount, with Metal Through-Hole Hold-down**

**Material and Finish**

**Housing**—High Temperature Nylon, Black

**Flammability Rating**—UL 94V-0

**Contacts**—Brass

**Plating A**—.000100 [0.00254] min. tin over .000050 [0.00127] min. nickel

**Plating B**—.000015 [0.00038] gold in mating area, .000100 [0.00254] min. tin in solder area, with entire contact underplated .000050 [0.00127] min. nickel

**Plating C**—.000030 [0.00076] gold in mating area, .000100 [0.00254] min. tin in solder area, with entire contact underplated .000050 [0.00127] min. nickel

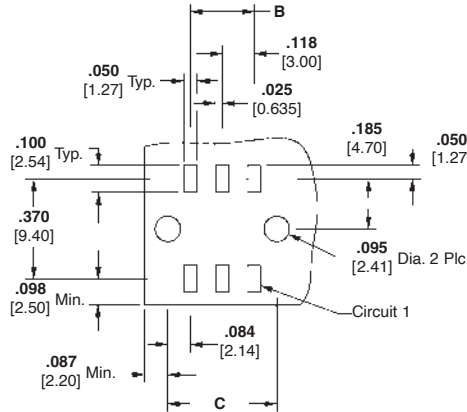
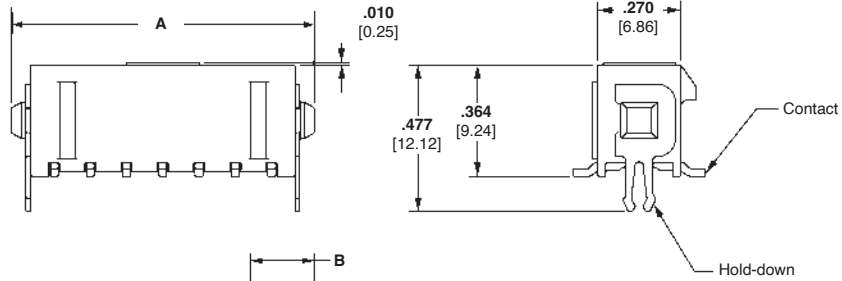
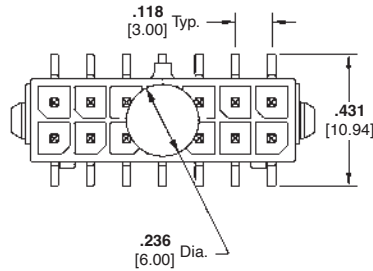
**Hold-downs**—Phosphor Bronze, .000100 [0.00254] min. tin over .000050 [0.00127] min. nickel

**Pick-up Button**—Kapton

**Related Product Data**

**Mateable Housings:**

Dual Row Receptacle Housing—page 24



**Recommended PC Board Layout\***

Number of Circuits	Dimensions			Header Part Numbers			Mates with Receptacle Housing Part Number
	A	B	C	Plating A	Plating B	Plating C	
2	.276 7.00	—	.169 4.30	3-794633-2	3-794634-2	3-794635-2	794617-2
4	.394 10.00	.118 3.00	.287 7.30	3-794633-4	3-794634-4	3-794635-4	794617-4
6	.512 13.00	.236 6.00	.406 10.30	3-794633-6	3-794634-6	3-794635-6	794617-6
8	.630 16.00	.354 9.00	.524 13.30	3-794633-8	3-794634-8	3-794635-8	794617-8
10	.748 19.00	.472 12.00	.642 16.30	4-794633-0	4-794634-0	4-794635-0	1-794617-0
12	.866 22.00	.591 15.00	.760 19.30	4-794633-2	4-794634-2	4-794635-2	1-794617-2
14	.984 25.00	.709 18.00	.878 22.30	4-794633-4	4-794634-4	4-794635-4	1-794617-4
16	1.10 28.00	2.827 21.00	.996 25.30	4-794633-6	4-794634-6	4-794635-6	1-794617-6
18	1.220 31.00	0.945 24.00	1.114 28.30	4-794633-8	4-794634-8	4-794635-8	1-794617-8
20	1.339 34.00	1.063 27.00	1.232 31.30	5-794633-0	5-794634-0	5-794635-0	2-794617-0
22	1.457 37.00	1.181 30.00	1.350 34.30	5-794633-2	5-794634-2	5-794635-2	2-794617-2
24	1.575 40.00	1.299 33.00	1.469 37.30	5-794633-4	5-794634-4	5-794635-4	2-794617-4

\*Recommended PC Board thickness .062 [1.57]. Always consult customer drawing for PC Board layout dimensions.

**Note: All part numbers are RoHS Compliant.**

High Density

Micro MATE-N-LOK 3 mm Connector System  
.118 [3.00] Centerline

**Micro MATE-N-LOK 3 mm Connector System** (Continued)

High Density

Micro MATE-N-LOK 3 mm Connector System  
.118 [3.00] Centerline

**Vertical Header Assemblies**

(Continued)

**Dual Row, Surface Mount, with Surface Mount Hold-down**

**Material and Finish**

**Housing** — High Temperature Nylon, Black

**Flammability Rating** — UL 94V-0

**Contacts** — Brass

**Plating A** — .000100 [0.00254] min. tin over .000050 [0.00127] min. nickel

**Plating B** — .000015 [0.00038] gold in mating area, .000100 [0.00254] min. tin in solder area, with entire contact underplated .000050 [0.00127] min. nickel

**Plating C** — .000030 [0.00076] gold in mating area, .000100 [0.00254] min. tin in solder area, with entire contact underplated .000050 [0.00127] min. nickel

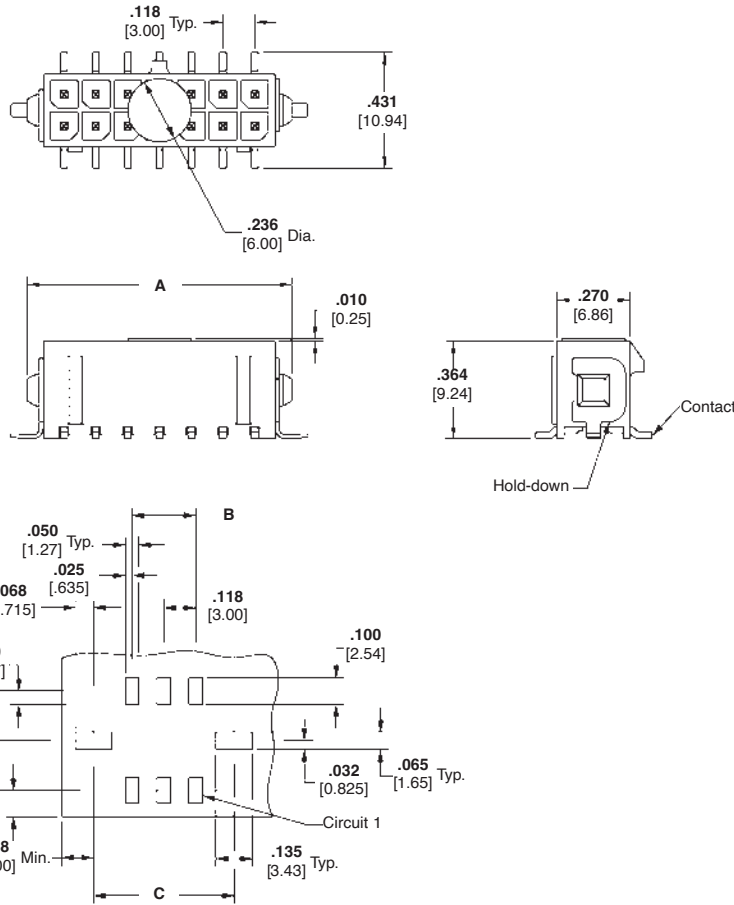
**Hold-downs** — Phosphor Bronze, .000100 [0.00254] min. tin over .000050 [0.00127] min. nickel

**Pick-up Button** — Kapton

**Related Product Data**

**Mateable Housings:**

Dual Row Receptacle Housing—page 24



Recommended PC Board Layout\*

Number of Circuits	Dimensions			Header Part Numbers			Mates with Receptacle Housing Part Number
	A	B	C	Plating A	Plating B	Plating C	
2	.276 7.00	—	.286 7.27	3-794636-2	3-794637-2	3-794638-2	794617-2
4	.394 10.00	.118 3.00	.404 10.27	3-794636-4	3-794637-4	3-794638-4	794617-4
6	.512 13.00	.236 6.00	.522 13.27	3-794636-6	3-794637-6	3-794638-6	794617-6
8	.630 16.00	.354 9.00	.640 16.27	3-794636-8	3-794637-8	3-794638-8	794617-8
10	.748 19.00	.472 12.00	.758 19.27	4-794636-0	4-794637-0	4-794638-0	1-794617-0
12	.866 22.00	.591 15.00	.876 22.27	4-794636-2	4-794637-2	4-794638-2	1-794617-2
14	.984 25.00	.709 18.00	.994 25.27	4-794636-4	4-794637-4	4-794638-4	1-794617-4
16	1.102 28.00	.827 21.00	1.112 28.27	4-794636-6	4-794637-6	4-794638-6	1-794617-6
18	1.220 31.00	.945 24.00	1.230 31.27	4-794636-8	4-794637-8	4-794638-8	1-794617-8
20	1.339 34.00	1.063 27.00	1.349 34.27	5-794636-0	5-794637-0	5-794638-0	2-794617-0
22	1.457 37.00	1.181 30.00	1.467 37.27	5-794636-2	5-794637-2	5-794638-2	2-794617-2
24	1.575 40.00	1.299 33.00	1.585 40.27	5-794636-4	5-794637-4	5-794638-4	2-794617-4

\*Always consult customer drawing for PC Board layout dimensions.

**Note:** All part numbers are RoHS Compliant.

**Micro MATE-N-LOK 3 mm Connector System** (Continued)

**Right-Angle Header Assemblies**

**Single Row, Through-Hole, with Metal Through-Hole Hold-down**

**Material and Finish**

**Housing**—High Temperature Nylon, Black

**Flammability Rating**—UL 94V-0

**Contacts**—Brass

**Plating A**— $.000100$  [0.00254] min. tin over  $.000050$  [0.00127] min. nickel

**Plating B**— $.000015$  [0.00038] gold in mating area,  $.000100$  [0.00254] min. tin in solder area, with entire contact underplated  $.000050$  [0.00127] min. nickel

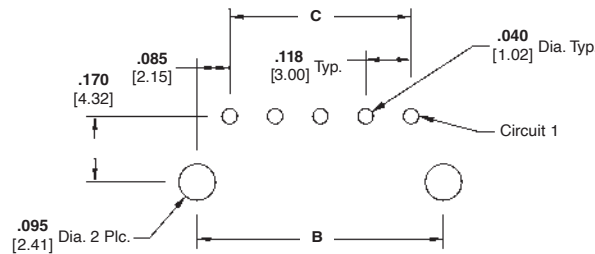
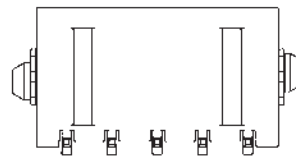
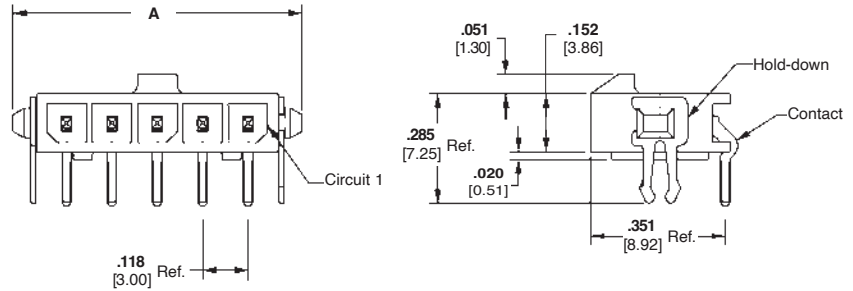
**Plating C**— $.000030$  [0.00076] gold in mating area,  $.000100$  [0.00254] min. tin in solder area, with entire contact underplated  $.000050$  [0.00127] min. nickel

**Hold-downs**—Phosphor Bronze,  $.000100$  [0.00254] min. tin over  $.000050$  [0.00127] min. nickel

**Related Product Data**

**Mateable Housings:**

Single Row Receptacle Housing—  
page 23



Recommended PC Board Layout\*

Number of Circuits	Dimensions			Header Part Numbers			Mates with Receptacle Housing Part Number
	A	B	C	Plating A	Plating B	Plating C	
2	.399 10.14	.293 7.43	.118 3.00	2-1445054-2	2-1445088-2	2-1445097-2	1445022-2
3	.517 13.14	.411 10.43	.236 6.00	2-1445054-3	2-1445088-3	2-1445097-3	1445022-3
4	.635 16.14	.529 13.43	.354 9.00	2-1445054-4	2-1445088-4	2-1445097-4	1445022-4
5	.754 19.14	.647 16.43	.472 12.00	2-1445054-5	2-1445088-5	2-1445097-5	1445022-5
6	.871 22.14	.765 19.43	.591 15.00	2-1445054-6	2-1445088-6	2-1445097-6	1445022-6
7	.990 25.14	.883 22.43	.709 18.00	2-1445054-7	2-1445088-7	2-1445097-7	1445022-7
8	1.108 28.14	1.001 25.43	.827 21.00	2-1445054-8	2-1445088-8	2-1445097-8	1445022-8
9	1.226 31.14	1.119 28.43	.945 24.00	2-1445054-9	2-1445088-9	2-1445097-9	1445022-9
10	1.344 34.14	1.237 31.43	1.063 27.00	3-1445054-0	3-1445088-0	3-1445097-0	1-1445022-0
11	1.462 37.14	1.356 34.43	1.181 30.00	3-1445054-1	3-1445088-1	3-1445097-1	1-1445022-1
12	1.580 40.14	1.474 37.43	1.299 33.00	3-1445054-2	3-1445088-2	3-1445097-2	1-1445022-2

\*Recommended PC Board thickness  $.062$  [1.57]. Always consult customer drawing for PC Board layout dimensions.

**Note:** All part numbers are RoHS Compliant.

**Micro MATE-N-LOK 3 mm Connector System** (Continued)

High Density

Micro MATE-N-LOK 3 mm Connector System  
.118 [3.00] Centerline

**Right-Angle Header Assemblies** (Continued)

**Single Row, Through-Hole, with Plastic Boardlock**

**Material and Finish**

**Housing** — High Temperature Nylon, Black

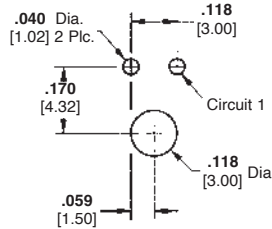
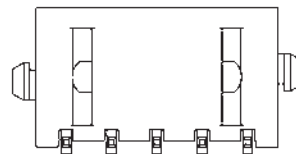
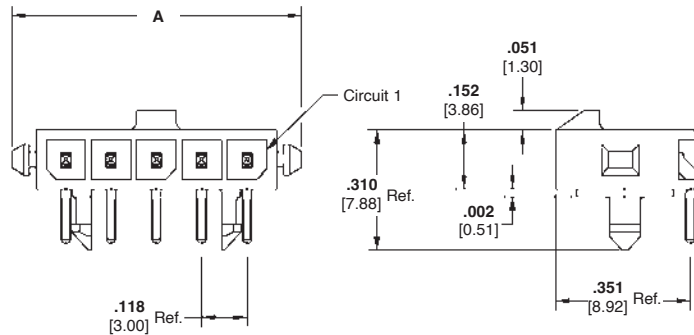
**Flammability Rating** — UL 94V-0

**Contacts**—Brass

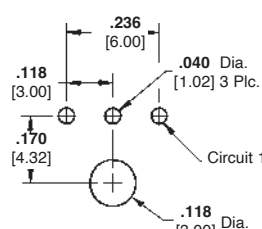
**Plating A**—.000100 [0.00254] min. tin over .000050 [0.00127] min. nickel

**Plating B**—.000015 [0.00038] gold in mating area, .000100 [0.00254] min. tin in solder area, with entire contact underplated .000050 [0.00127] min. nickel

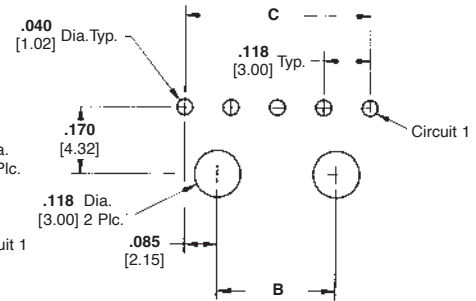
**Plating C**—.000030 [0.00076] gold in mating area, .000100 [0.00254] min. tin in solder area, with entire contact underplated .000050 [0.00127] min. nickel



**Recommended PC Board Layout 2 Position\***



**Recommended PC Board Layout 3 Position\***



**Recommended PC Board Layout 4-12 Position\***

**Related Product Data**

**Mateable Housings:**

Single Row Receptacle Housing—page 23

Number of Circuits	Dimensions			Header Part Numbers			Mates with Receptacle Housing Part Number
	A	B	C	Plating A	Plating B	Plating C	
2	.399 10.14	—	—	2-1445055-2	2-1445089-2	2-1445098-2	1445022-2
3	.517 13.14	—	—	2-1445055-3	2-1445089-3	2-1445098-3	1445022-3
4	.635 16.14	.185 4.70	.354 9.00	2-1445055-4	2-1445089-4	2-1445098-4	1445022-4
5	.754 19.14	.303 7.70	.472 12.00	2-1445055-5	2-1445089-5	2-1445098-5	1445022-5
6	.871 22.14	.421 10.70	.591 15.00	2-1445055-6	2-1445089-6	2-1445098-6	1445022-6
7	.990 25.14	.539 13.70	.709 18.00	2-1445055-7	2-1445089-7	2-1445098-7	1445022-7
8	1.108 28.14	.657 16.70	.827 21.00	2-1445055-8	2-1445089-8	2-1445098-8	1445022-8
9	1.226 31.14	.775 19.70	.945 24.00	2-1445055-9	2-1445089-9	2-1445098-9	1445022-9
10	1.344 34.14	.894 22.70	1.063 27.00	3-1445055-0	3-1445089-0	3-1445098-0	1-1445022-0
11	1.462 37.14	1.012 25.70	1.181 30.00	3-1445055-1	3-1445089-1	3-1445098-1	1-1445022-1
12	1.580 40.14	1.300 28.70	1.299 33.00	3-1445055-2	3-1445089-2	3-1445098-2	1-1445022-2

\*Recommended PC Board thickness .062 [1.57]. Always consult customer drawing for PC Board layout dimensions.

**Note: All part numbers are RoHS Compliant.**

**Micro MATE-N-LOK 3 mm Connector System (Continued)**

**Right-Angle Header Assemblies (Continued)**

**Single Row, Surface Mount, with Metal Through-Hole Hold-down**

**Material and Finish**

**Housing** — High Temperature Nylon, Black

**Flammability Rating** — UL 94V-0

**Contacts** — Brass

**Plating A** — .000100 [0.00254] min. tin over .000050 [0.00127] min. nickel

**Plating B** — .000015 [0.00038] gold in mating area, .000100 [0.00254] min. tin in solder area, with entire contact underplated .000050 [0.00127] min. nickel

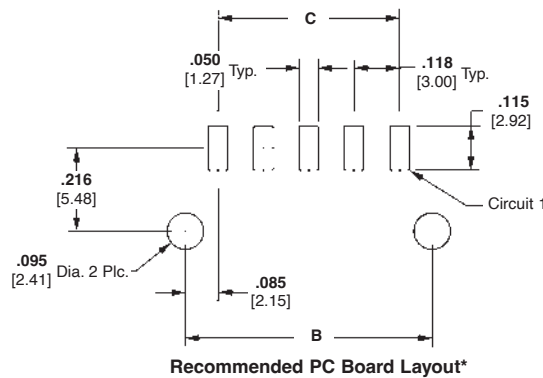
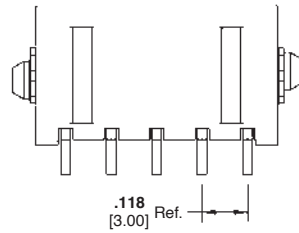
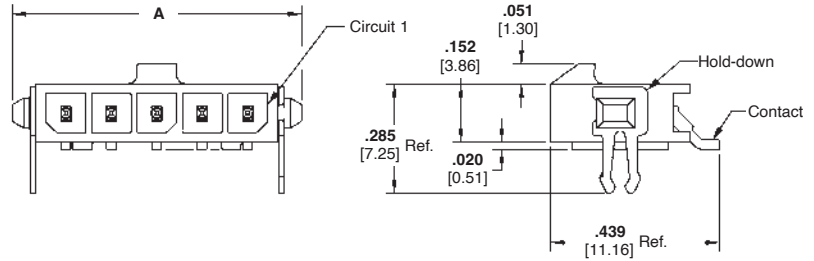
**Plating C** — .000030 [0.00076] gold in mating area, .000100 [0.00254] min. tin in solder area, with entire contact underplated .000050 [0.00127] min. nickel

**Hold-downs** — Phosphor Bronze, .000100 [0.00254] min. tin over .000050 [0.00127] min. nickel

**Related Product Data**

**Mateable Housings:**

Single Row Receptacle Housing—  
page 23



Number of Circuits	Dimensions			Header Part Numbers			Mates with Receptacle Housing Part Number
	A	B	C	Plating A	Plating B	Plating C	
2	.394 10.00	.293 7.43	.118 3.00	2-1445056-2	2-1445090-2	2-1445099-2	1445022-2
3	.512 13.00	.411 10.43	.236 6.00	2-1445056-3	2-1445090-3	2-1445099-3	1445022-3
4	.630 16.00	.529 13.43	.354 9.00	2-1445056-4	2-1445090-4	2-1445099-4	1445022-4
5	.748 19.00	.647 16.43	.472 12.00	2-1445056-5	2-1445090-5	2-1445099-5	1445022-5
6	.866 22.00	.765 19.43	.591 15.00	2-1445056-6	2-1445090-6	2-1445099-6	1445022-6
7	.984 25.00	.883 22.43	.709 18.00	2-1445056-7	2-1445090-7	2-1445099-7	1445022-7
8	1.102 28.00	1.001 25.43	.827 21.00	2-1445056-8	2-1445090-8	2-1445099-8	1445022-8
9	1.220 31.00	1.119 28.43	0.945 24.00	2-1445056-9	2-1445090-9	2-1445099-9	1445022-9
10	1.339 34.00	1.237 31.43	1.063 27.00	3-1445056-0	3-1445090-0	3-1445099-0	1-1445022-0
11	1.457 37.00	1.356 34.43	1.181 30.00	3-1445056-1	3-1445090-1	3-1445099-1	1-1445022-1
12	1.575 40.00	1.474 37.43	1.299 33.00	3-1445056-2	3-1445090-2	3-1445099-2	1-1445022-2

\*Recommended PC Board thickness .062 [1.57]. Always consult customer drawing for PC Board layout dimensions.

**Note:** All part numbers are RoHS Compliant.

High Density

Micro MATE-N-LOK 3 mm Connector System  
.118 [3.00] Centerline

**Micro MATE-N-LOK 3 mm Connector System (Continued)**

High Density

Micro MATE-N-LOK 3 mm Connector System  
.118 [3.00] Centerline

**Right-Angle Header Assemblies (Continued)**

**Single Row, Surface Mount, with Surface Mount Hold-down**

**Material and Finish**

**Housing** — High Temperature Nylon, Black

**Flammability Rating** — UL 94V-0

**Contacts**—Brass

**Plating A**—.000100 [0.00254] min. tin over .000050 [0.00127] min. nickel

**Plating B**—.000015 [0.00038] gold in mating area, .000100 [0.00254] min. tin in solder area, with entire contact underplated .000050 [0.00127] min. nickel

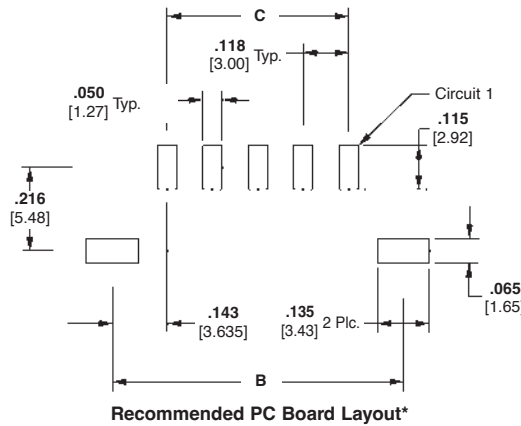
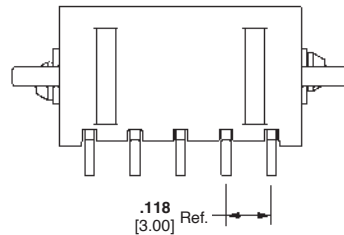
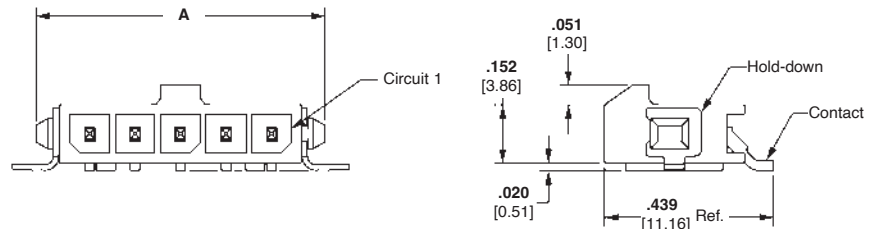
**Plating C**—.000030 [0.00076] gold in mating area, .000100 [0.00254] min. tin in solder area, with entire contact underplated .000050 [0.00127] min. nickel

**Hold-downs**—Phosphor Bronze, .000100 [0.00254] min. tin over .000050 [0.00127] min. nickel

**Related Product Data**

**Mateable Housings:**

Single Row Receptacle Housing—page 23



Number of Circuits	Dimensions			Header Part Numbers			Mates with Receptacle Housing Part Number
	A	B	C	Plating A	Plating B	Plating C	
2	.394 10.00	.410 10.41	.118 3.00	2-1445057-2	2-1445091-2	2-1445100-2	1445022-2
3	.512 13.00	.528 13.41	.236 6.00	2-1445057-3	2-1445091-3	2-1445100-3	1445022-3
4	.630 16.00	.646 16.41	.354 9.00	2-1445057-4	2-1445091-4	2-1445100-4	1445022-4
5	.748 19.00	.764 19.41	.472 12.00	2-1445057-5	2-1445091-5	2-1445100-5	1445022-5
6	.866 22.00	.882 22.41	.591 15.00	2-1445057-6	2-1445091-6	2-1445100-6	1445022-6
7	.984 25.00	1.000 25.41	.709 18.00	2-1445057-7	2-1445091-7	2-1445100-7	1445022-7
8	1.102 28.00	1.119 28.41	.827 21.00	2-1445057-8	2-1445091-8	2-1445100-8	1445022-8
9	1.220 31.00	1.237 31.41	.945 24.00	2-1445057-9	2-1445091-9	2-1445100-9	1445022-9
10	1.339 34.00	1.355 34.41	1.063 27.00	3-1445057-0	3-1445091-0	3-1445100-0	1-1445022-0
11	1.457 37.00	1.472 37.41	1.181 30.00	3-1445057-1	3-1445091-1	3-1445100-1	1-1445022-1
12	1.575 40.00	1.591 40.41	1.299 33.00	3-1445057-2	3-1445091-2	3-1445100-2	1-1445022-2

\*Always consult customer drawing for PC Board layout dimensions.

**Note: All part numbers are RoHS Compliant.**

**Micro MATE-N-LOK 3 mm Connector System (Continued)**

**Right-Angle Header Assemblies (Continued)**

**Single Row, Surface Mount, with Plastic Boardlock**

**Material and Finish**

**Housing** — High Temperature Nylon, Black

**Flammability Rating** — UL 94V-0

**Contacts**—Brass

**Plating A**—.000100 [0.00254] min. tin over .000050 [0.00127] min. nickel

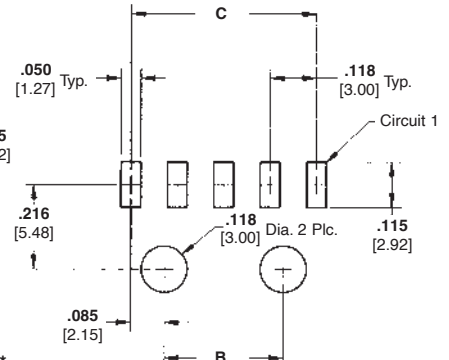
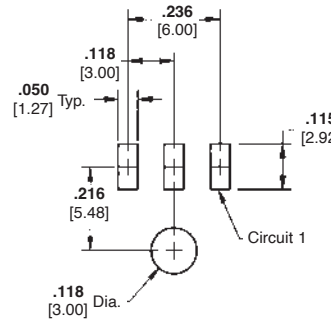
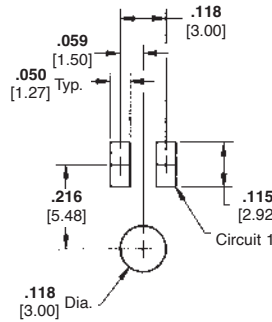
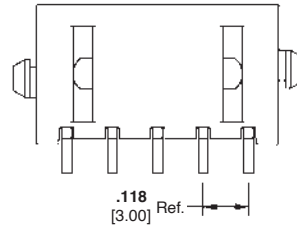
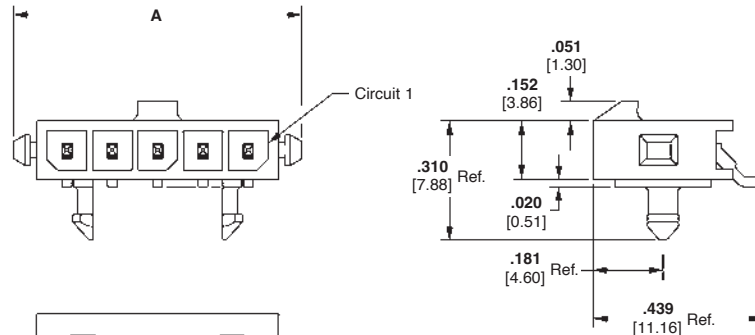
**Plating B**—.000015 [0.00038] gold in mating area, .000100 [0.00254] min. tin in solder area, with entire contact underplated .000050 [0.00127] min. nickel

**Plating C**—.000030 [0.00076] gold in mating area, .000100 [0.00254] min. tin in solder area, with entire contact underplated .000050 [0.00127] min. nickel

**Related Product Data**

**Mateable Housings:**

Single Row Receptacle Housing—page 23



Recommended PC Board Layout \*  
2 Position

Recommended PC Board Layout \*  
3 Position

Recommended PC Board Layout\*  
4-12 Positions

Number of Circuits	Dimensions			Header Part Numbers			Mates with Receptacle Housing Part Number
	A	B	C	Plating A	Plating B	Plating C	
2	.394 10.00	—	—	2-1445058-2	2-1445092-2	2-1445101-2	1445022-2
3	.512 13.00	—	—	2-1445058-3	2-1445092-3	2-1445101-3	1445022-3
4	.630 16.00	.185 4.70	.354 9.00	2-1445058-4	2-1445092-4	2-1445101-4	1445022-4
5	.748 19.00	.303 7.70	.472 12.00	2-1445058-5	2-1445092-5	2-1445101-5	1445022-5
6	.866 22.00	.421 10.70	.591 15.00	2-1445058-6	2-1445092-6	2-1445101-6	1445022-6
7	.984 25.00	.539 13.70	.709 18.00	2-1445058-7	2-1445092-7	2-1445101-7	1445022-7
8	1.102 28.00	.657 16.70	.827 21.00	2-1445058-8	2-1445092-8	2-1445101-8	1445022-8
9	1.220 31.00	.776 19.70	.945 24.00	2-1445058-9	2-1445092-9	2-1445101-9	1445022-9
10	1.339 34.00	.894 22.70	1.063 27.00	3-1445058-0	3-1445092-0	3-1445101-0	1-1445022-0
11	1.457 37.00	1.012 25.70	1.181 30.00	3-1445058-1	3-1445092-1	3-1445101-1	1-1445022-1
12	1.575 40.00	1.130 28.70	1.299 33.00	3-1445058-2	3-1445092-2	3-1445101-2	1-1445022-2

\*Recommended PC Board thickness .062 [1.57]. Always consult customer drawing for PC Board layout dimensions.

**Note:** All part numbers are RoHS Compliant.

**Micro MATE-N-LOK 3 mm Connector System** (Continued)

**Right-Angle Header Assemblies** (Continued)

**Dual Row, Through-Hole, with Metal Through-Hole Hold-down**

**Material and Finish**

**Housing** — High Temperature Nylon, Black

**Flammability Rating** — UL 94V-0

**Contacts** — Brass

**Plating A** — .000100 [0.00254] min. tin over .000050 [0.00127] min. nickel

**Plating B** — .000015 [0.00038] gold in mating area, .000100 [0.00254] min. tin in solder area, with entire contact underplated .000050 [0.00127] min. nickel

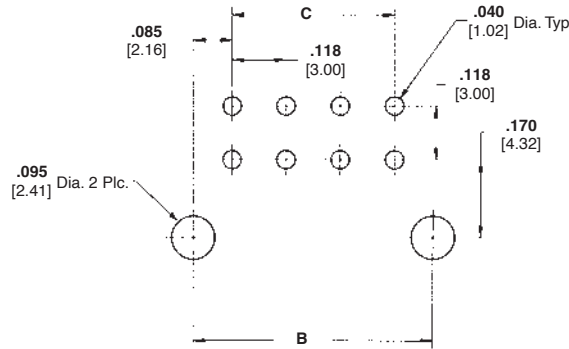
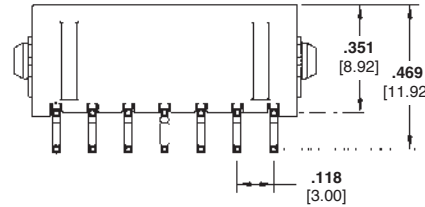
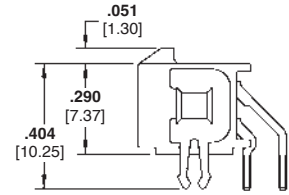
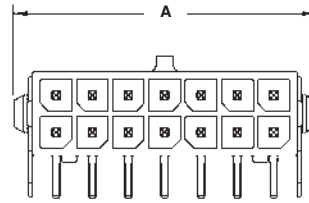
**Plating C** — .000030 [0.00076] gold in mating area, .000100 [0.00254] min. tin in solder area, with entire contact underplated .000050 [0.00127] min. nickel

**Hold-downs** — Phosphor Bronze, .000100 [0.00254] min. tin over .000050 [0.00127] min. nickel

**Related Product Data**

**Mateable Housings:**

Dual Row Receptacle Housing—page 24



Recommended PC Board Layout\*

Number of Circuits	Dimensions			Header Part Numbers			Mates with Receptacle Housing Part Number
	A	B	C	Plating A	Plating B	Plating C	
2	.276 7.00	.169 4.30	—	3-794677-2	3-794678-2	3-794679-2	794617-2
4	.394 10.00	.287 7.30	.118 3.00	3-794677-4	3-794678-4	3-794679-4	794617-4
6	.512 13.00	.406 10.30	.236 6.00	3-794677-6	3-794678-6	3-794679-6	794617-6
8	.630 16.00	.524 13.30	.354 9.00	3-794677-8	3-794678-8	3-794679-8	794617-8
10	.748 19.00	.642 16.30	.472 12.00	4-794677-0	4-794678-0	4-794679-0	1-794617-0
12	.866 22.00	.760 19.30	.591 15.00	4-794677-2	4-794678-2	4-794679-2	1-794617-2
14	.984 25.00	.878 22.30	.709 18.00	4-794677-4	4-794678-4	4-794679-4	1-794617-4
16	1.102 28.00	.996 25.30	.827 21.00	4-794677-6	4-794678-6	4-794679-6	1-794617-6
18	1.220 31.00	1.114 28.30	.945 24.00	4-794677-8	4-794678-8	4-794679-8	1-794617-8
20	1.339 34.00	1.232 31.30	1.063 27.00	5-794677-0	5-794678-0	5-794679-0	2-794617-0
22	1.457 37.00	1.350 34.30	1.181 30.00	5-794677-2	5-794678-2	5-794679-2	2-794617-2
24	1.575 40.00	1.469 37.30	1.299 33.00	5-794677-4	5-794678-4	5-794679-4	2-794617-4

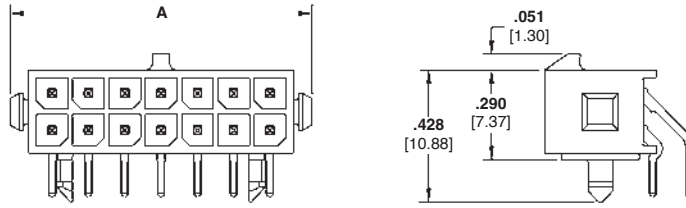
\*Recommended PC Board thickness .062 [1.57]. Always consult customer drawing for PC Board layout dimensions.

**Note:** All part numbers are RoHS Compliant.

**Micro MATE-N-LOK 3 mm Connector System (Continued)**

**Right-Angle Header Assemblies (Continued)**

**Dual Row, Through-Hole, with Plastic Boardlock**



**Material and Finish**

**Housing** — High Temperature Nylon, Black

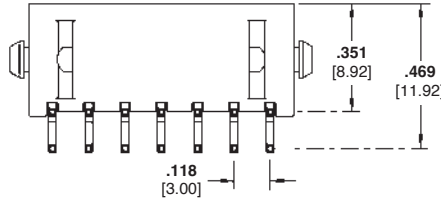
**Flammability Rating** — UL 94V-0

**Contacts**—Brass

**Plating A**—.000100 [0.00254] min. tin over .000050 [0.00127] min. nickel

**Plating B**—.000015 [0.00038] gold in mating area, .000100 [0.00254] min. tin in solder area, with entire contact underplated .000050 [0.00127] min. nickel

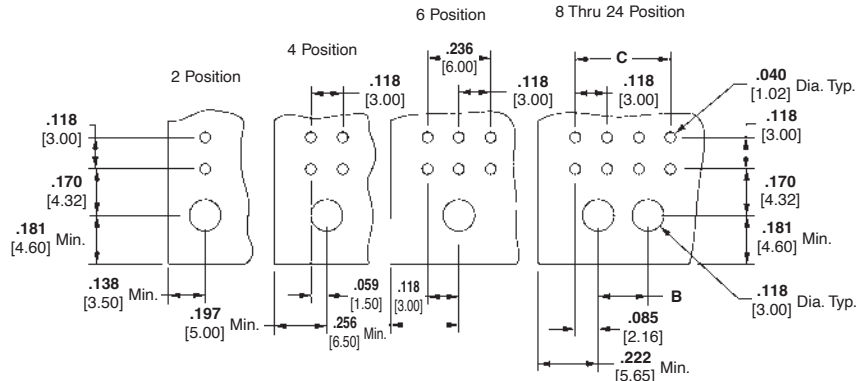
**Plating C**—.000030 [0.00076] gold in mating area, .000100 [0.00254] min. tin in solder area, with entire contact underplated .000050 [0.00127] min. nickel



**Related Product Data**

**Mateable Housings:**

Dual Row Receptacle Housing—page 24



**Recommended PC Board Layout\***

Number of Circuits	Dimensions			Header Part Numbers			Mates with Receptacle Housing Part Number
	A	B	C	Plating A	Plating B	Plating C	
2	.276 7.00	—	—	3-794618-2	3-794619-2	3-794620-2	794617-2
4	.394 10.00	—	.118 3.00	3-794618-4	3-794619-4	3-794620-4	794617-4
6	.512 13.00	—	.236 6.00	3-794618-6	3-794619-6	3-794620-6	794617-6
8	.630 16.00	.185 4.70	.354 9.00	3-794618-8	3-794619-8	3-794620-8	794617-8
10	.748 19.00	.303 7.70	.472 12.00	4-794618-0	4-794619-0	4-794620-0	1-794617-0
12	.866 22.00	.421 10.70	.591 15.00	4-794618-2	4-794619-2	4-794620-2	1-794617-2
14	.984 25.00	.539 13.70	.709 18.00	4-794618-4	4-794619-4	4-794620-4	1-794617-4
16	1.102 28.00	.657 16.70	.827 21.00	4-794618-6	4-794619-6	4-794620-6	1-794617-6
18	1.220 31.00	.776 19.70	.945 24.00	4-794618-8	4-794619-8	4-794620-8	1-794617-8
20	1.339 34.00	.894 22.70	1.063 27.00	5-794618-0	5-794619-0	5-794620-0	2-794617-0
22	1.457 37.00	1.012 25.70	1.181 30.00	5-794618-2	5-794619-2	5-794620-2	2-794617-2
24	1.575 40.00	1.130 28.70	1.299 33.00	5-794618-4	5-794619-4	5-794620-4	2-794617-4

\*Recommended PC Board thickness .062 [1.57]. Always consult customer drawing for PC Board layout dimensions.

**Note: All part numbers are RoHS Compliant.**

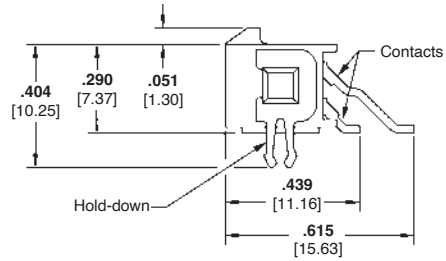
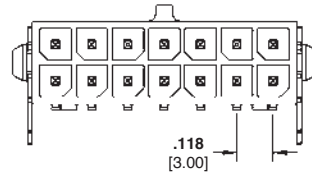
**Micro MATE-N-LOK 3 mm Connector System** (Continued)

High Density

Micro MATE-N-LOK 3 mm Connector System  
.118 [3.00] Centerline

**Right-Angle Header Assemblies** (Continued)

**Dual Row, Surface Mount, with Metal Through-Hole Hold-down**



**Material and Finish**

**Housing** — High Temperature Nylon, Black

**Flammability Rating** — UL 94V-0

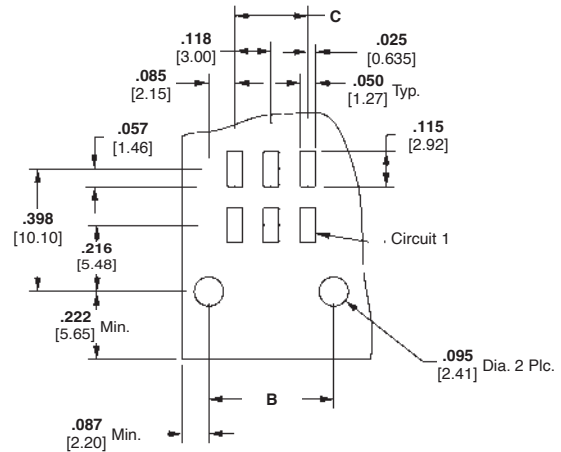
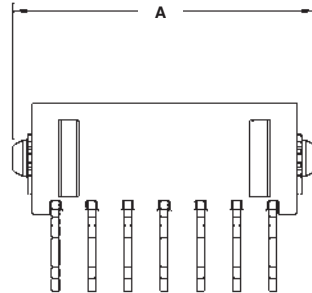
**Contacts**—Brass

**Plating A**—.000100 [0.00254] min. tin over .000050 [0.00127] min. nickel

**Plating B**—.000015 [0.00038] gold in mating area, .000100 [0.00254] min. tin in solder area, with entire contact underplated .000050 [0.00127] min. nickel

**Plating C**—.000030 [0.00076] gold in mating area, .000100 [0.00254] min. tin in solder area, with entire contact underplated .000050 [0.00127] min. nickel

**Hold-downs**—Phosphor Bronze, .000100 [0.00254] min. tin over .000050 [0.00127] min. nickel



**Recommended PC Board Layout\***

**Related Product Data**

**Mateable Housings:**

Dual Row Receptacle Housing—page 24

Number of Circuits	Dimensions			Header Part Numbers			Mates with Receptacle Housing Part Number
	A	B	C	Plating A	Plating B	Plating C	
2	.276 7.00	.169 4.30	—	3-794624-2	3-794625-2	3-794626-2	794617-2
4	.394 10.00	.287 7.30	.118 3.00	3-794624-4	3-794625-4	3-794626-4	794617-4
6	.512 13.00	.406 10.30	.236 6.00	3-794624-6	3-794625-6	3-794626-6	794617-6
8	.630 16.00	.524 13.30	.354 9.00	3-794624-8	3-794625-8	3-794626-8	794617-8
10	.748 19.00	.642 16.30	.472 12.00	4-794624-0	4-794625-0	4-794626-0	1-794617-0
12	.866 22.00	.760 19.30	.591 15.00	4-794624-2	4-794625-2	4-794626-2	1-794617-2
14	.984 25.00	.878 22.30	.709 18.00	4-794624-4	4-794625-4	4-794626-4	1-794617-4
16	1.102 28.00	.996 25.30	.827 21.00	4-794624-6	4-794625-6	4-794626-6	1-794617-6
18	1.220 31.00	1.114 28.30	.945 24.00	4-794624-8	4-794625-8	4-794626-8	1-794617-8
20	1.339 34.00	1.232 31.30	1.063 27.00	5-794624-0	5-794625-0	5-794626-0	2-794617-0
22	1.457 37.00	1.350 34.30	1.181 30.00	5-794624-2	5-794625-2	5-794626-2	2-794617-2
24	1.575 40.00	1.469 37.30	1.299 33.00	5-794624-4	5-794625-4	5-794626-4	2-794617-4

\*Recommended PC Board thickness .062 [1.57]. Always consult customer drawing for PC Board layout dimensions.

**Note:** All part numbers are RoHS Compliant.

**Micro MATE-N-LOK 3 mm Connector System (Continued)**

**Right-Angle Header Assemblies (Continued)**  
**Dual Row, Surface Mount, with Plastic Boardlock**

**Material and Finish**

**Housing** — High Temperature Nylon, Black

**Flammability Rating** — UL 94V-0

**Contacts** — Brass

**Plating A** — .000100 [0.00254] min. tin over .000050 [0.00127] min. nickel

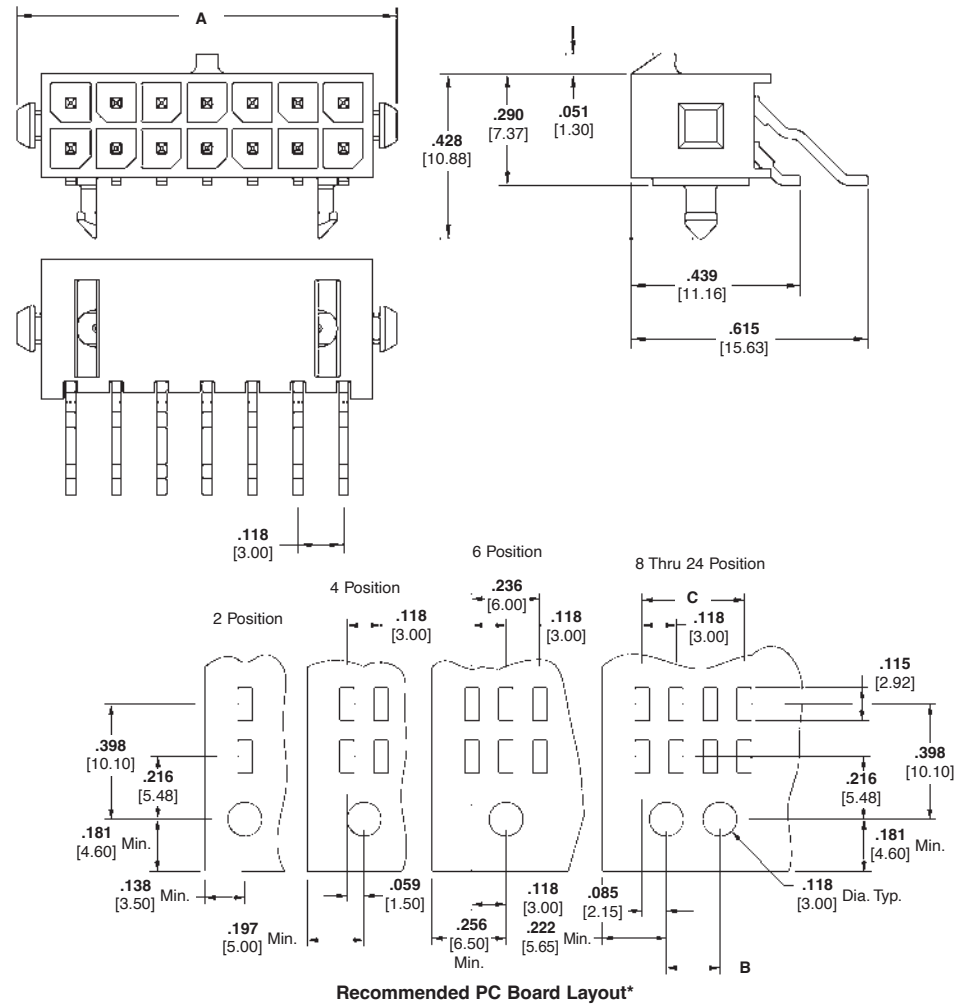
**Plating B** — .000015 [0.00038] gold in mating area, .000100 [0.00254] min. tin in solder area, with entire contact underplated .000050 [0.00127] min. nickel

**Plating C** — .000030 [0.00076] gold in mating area, .000100 [0.00254] min. tin in solder area, with entire contact underplated .000050 [0.00127] min. nickel

**Related Product Data**

**Mateable Housings:**

Dual Row Receptacle Housing—page 24



Number of Circuits	Dimensions			Header Part Numbers			Mates with Receptacle Housing Part Number
	A	B	C	Plating A	Plating B	Plating C	
2	.276 7.00	—	—	3-794621-2	3-794622-2	3-794623-2	794617-2
4	.394 10.00	—	.118 3.00	3-794621-4	3-794622-4	3-794623-4	794617-4
6	.512 13.00	—	.236 6.00	3-794621-6	3-794622-6	3-794623-6	794617-6
8	.630 16.00	.185 4.70	.354 9.00	3-794621-8	3-794622-8	3-794623-8	794617-8
10	.748 19.00	.303 7.70	.472 12.00	4-794621-0	4-794622-0	4-794623-0	1-794617-0
12	.866 22.00	.421 10.70	.591 15.00	4-794621-2	4-794622-2	4-794623-2	1-794617-2
14	.984 25.00	.539 13.70	.709 18.00	4-794621-4	4-794622-4	4-794623-4	1-794617-4
16	1.102 28.00	.657 16.70	.827 21.00	4-794621-6	4-794622-6	4-794623-6	1-794617-6
18	1.220 31.00	.776 19.70	.945 24.00	4-794621-8	4-794622-8	4-794623-8	1-794617-8
20	1.339 34.00	.894 22.70	1.063 27.00	5-794621-0	5-794622-0	5-794623-0	2-794617-0
22	1.457 37.00	1.012 25.70	1.181 30.00	5-794621-2	5-794622-2	5-794623-2	2-794617-2
24	1.575 40.00	1.130 28.70	1.299 33.00	5-794621-4	5-794622-4	5-794623-4	2-794617-4

\*Recommended PC Board thickness .062 [1.57]. Always consult customer drawing for PC Board layout dimensions.

**Note: All part numbers are RoHS Compliant.**

**Micro MATE-N-LOK 3 mm Connector System (Continued)**

**Right-Angle Header Assemblies (Continued)**

**Dual Row, Surface Mount, with Surface Mount Hold-down**

**Material and Finish**

**Housing** — High Temperature Nylon, Black

**Flammability Rating** — UL 94V-0

**Contacts**—Brass

**Plating A**—.000100 [0.00254] min. tin over .000050 [0.00127] min. nickel

**Plating B**—.000015 [0.00038] gold in mating area, .000100 [0.00254] min. tin in solder area, with entire contact underplated .000050 [0.00127] min. nickel

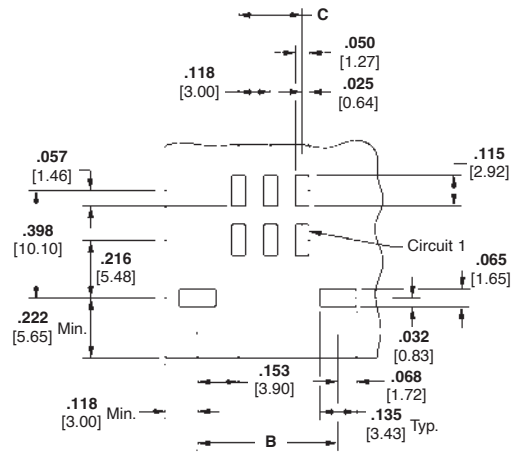
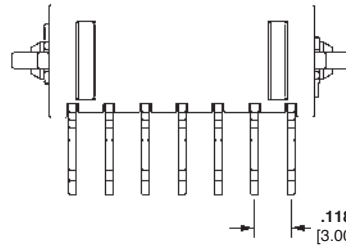
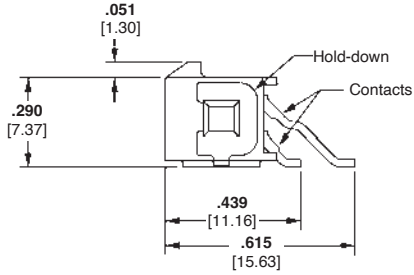
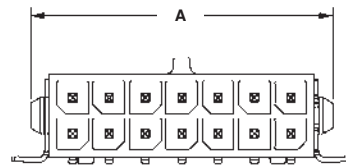
**Plating C**—.000030 [0.00076] gold in mating area, .000100 [0.00254] min. tin in solder area, with entire contact underplated .000050 [0.00127] min. nickel

**Hold-downs**—Phosphor Bronze, .000100 [0.00254] min. tin over .000050 [0.00127] min. nickel

**Related Product Data**

**Mateable Housings:**

Dual Row Receptacle Housing—page 24



**Recommended PC Board Layout\***

Number of Circuits	Dimensions			Header Part Numbers			Mates with Receptacle Housing Part Number
	A	B	C	Plating A	Plating B	Plating C	
2	.276 7.00	.276 7.27	—	3-794627-2	3-794628-2	3-794629-2	794617-2
4	.394 10.00	.394 10.27	.118 3.00	3-794627-4	3-794628-4	3-794629-4	794617-4
6	.512 13.00	.512 13.27	.236 6.00	3-794627-6	3-794628-6	3-794629-6	794617-6
8	.630 16.00	.630 16.27	.354 9.00	3-794627-8	3-794628-8	3-794629-8	794617-8
10	.748 19.00	.748 19.27	.472 12.00	4-794627-0	4-794628-0	4-794629-0	1-794617-0
12	.866 22.00	.866 22.27	.591 15.00	4-794627-2	4-794628-2	4-794629-2	1-794617-2
14	.984 25.00	.984 25.27	.709 18.00	4-794627-4	4-794628-4	4-794629-4	1-794617-4
16	1.102 28.00	1.102 28.27	.827 21.00	4-794627-6	4-794628-6	4-794629-6	1-794617-6
18	1.220 31.00	1.220 31.27	.945 24.00	4-794627-8	4-794628-8	4-794629-8	1-794617-8
20	1.339 34.00	1.339 34.27	1.063 27.00	5-794627-0	5-794628-0	5-794629-0	2-794617-0
22	1.457 37.00	1.457 37.27	1.181 30.00	5-794627-2	5-794628-2	5-794629-2	2-794617-2
24	1.575 40.00	1.575 40.27	1.299 33.00	5-794627-4	5-794628-4	5-794629-4	2-794617-4

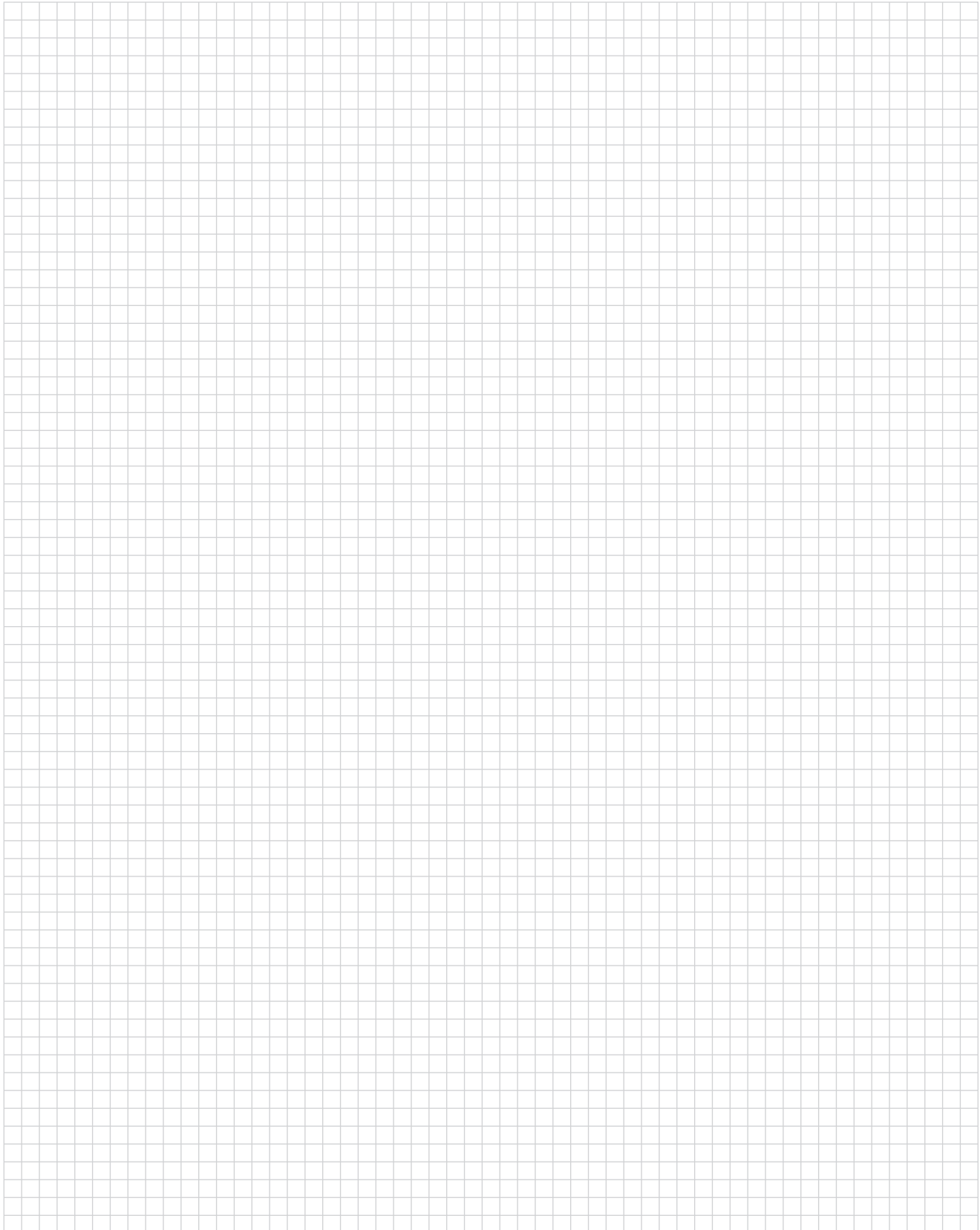
\*Always consult customer drawing for PC Board layout dimensions.

**Note:** All part numbers are RoHS Compliant.

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## Engineering Notes

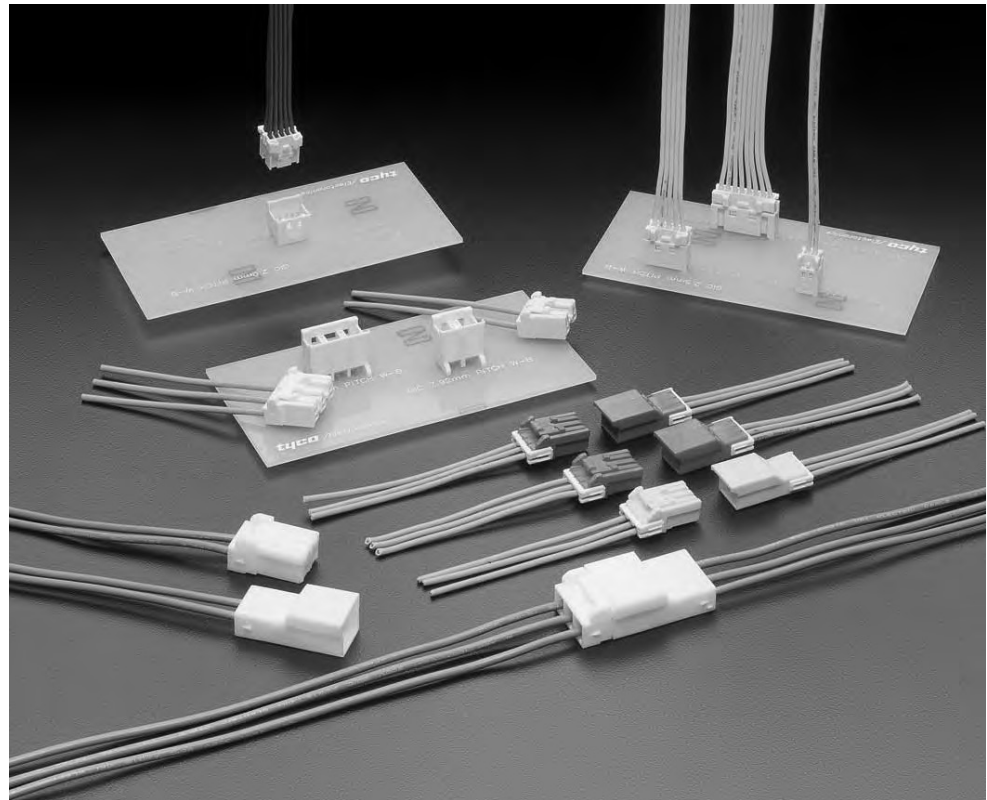
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## Grace Inertia Connectors (GIC), 3.5 mm Centerline (Wire-to-Wire Connectors)

### Product Facts

- Small wire-to-wire connectors (3.5 mm centerline) can handle 18 AWG wire
- Locking mechanism helps prevent connectors from being disconnected during movement or transportation
- Four kinds of keying per color-coded housing
- Improved housing shape offers easier mating
- Complies with lead free requirements
- Recognized under the Component Program of Underwriters Laboratories Inc., File No. E28476
- Certified by Canadian Standards Association, File No. E28476



### Performance Characteristics

**Voltage Rating**—300 VAC  
**Current Rating**—7 A (max.)  
**Centerline**—3.5 mm  
**Applicable Wire**—26 to 18 AWG  
**Temperature Rating**—  
 -30°C to 105°C

This connector employs the inertia locking mechanism, which simultaneously locks when mated to help prevent mismatching. It is widely used for large-sized household electric appliances, such as refrigerators, washing machines, or dispensers. Depending on the working environment, a locking sound is difficult to confirm during mating of a connector. However, this connector supports secure mating operation even in such a working environment.

### Material and Finish

**Housing**—6/6 Nylon UL94V-0  
 (CTI 600 V or more)  
**Terminal**—Pre-tin Copper alloy

### Technical Documents

**Product Specification**  
 108-5810  
**Application Specification**  
 114-5306

**Note:** All dimensions shown are metric.

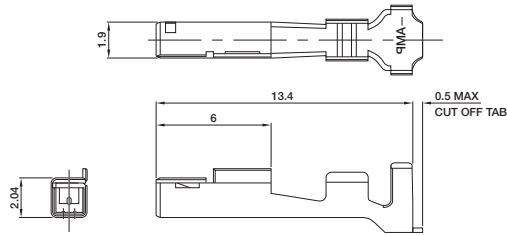
## Grace Inertia Connectors (GIC), 3.5 mm Centerline (Wire-to-Wire Connectors) (Continued)

### Contacts

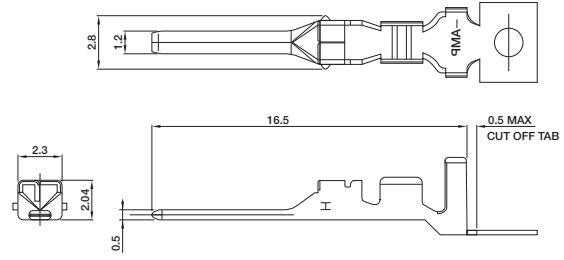
#### Material and Finish

Pre-tinned Copper Alloy

#### Receptacle Contact (For Plug Housing)



#### Tab Contact (For Cap Housing)



Wire Range		Insulation Dia. mm	Contact Part Number		Tool Part Number	
AWG	mm <sup>2</sup>		Receptacle	Tab	Terminator/Applicator	CERTI-CRIMP Hand Tool
26-22	0.13-0.34	1.3-2.0	1612334-1	1612335-1	**	--
22-18	0.3-0.9	1.5-2.7	1565079-1	1565080-1	**	1596277-1

\*Cut the contact carrier strip when using a hand tool.

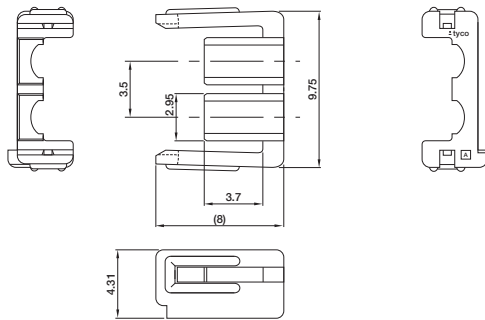
\*\* Contact the Tooling Assistance Center (TAC) at 1-800-722-1111 for Terminator or Applicator Part Numbers.

### Double Lock Plates

#### Material

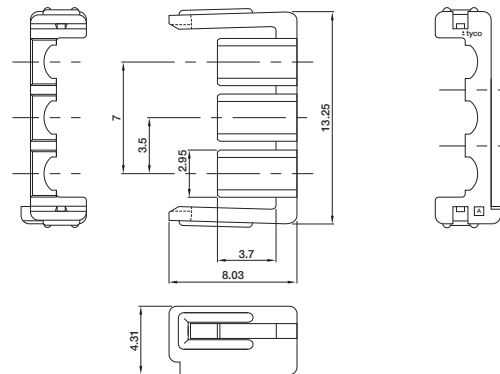
6/6 Nylon glass filled (UL94V-0)

#### 2 Position



P/N 1565089-1  
\*Two four-positions are used.

#### 3 Position



P/N 1565090-1  
\*Two six-positions are used.

**Note:** All dimensions shown are metric.

**Note:** All part numbers are RoHS Compliant.

## Grace Inertia Connectors (GIC), 3.5 mm Centerline (Wire-to-Wire Connectors) (Continued)

High Density

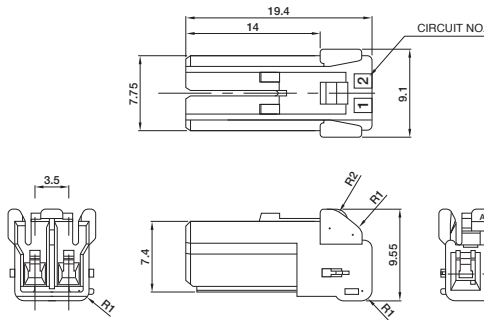
Grace Inertia Connectors  
.137 [3.50] Centerline

### 2 Position

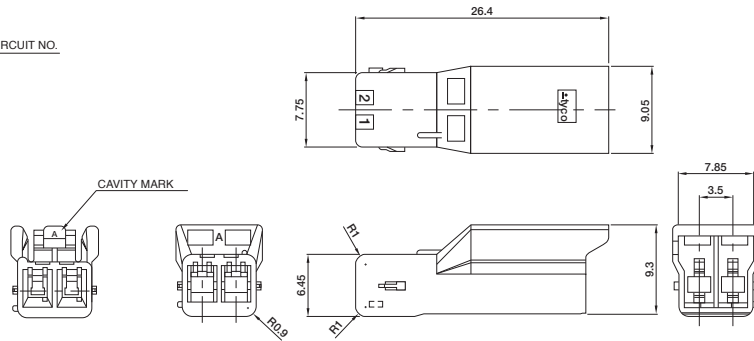
#### Material

6/6 Nylon, UL94V-0 (CTI 600 V or more)

Plug Housing (For Receptacles)



Cap Housing (For Tabs)



#### Related Product Data

Receptacle and Tab Contacts—page 50

Double Lock Plate—page 50

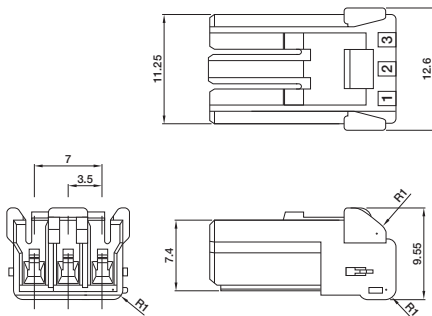
Color	Keying	Part Number	
		Plug Housing	Cap Housing
Natural	A	1565081-1	1565085-1
Red	B	1-1565081-2	1-1565085-2
Blue	C	2-1565081-3	2-1565085-3
Yellow	D	3-1565081-4	3-1565085-4

### 3 Position

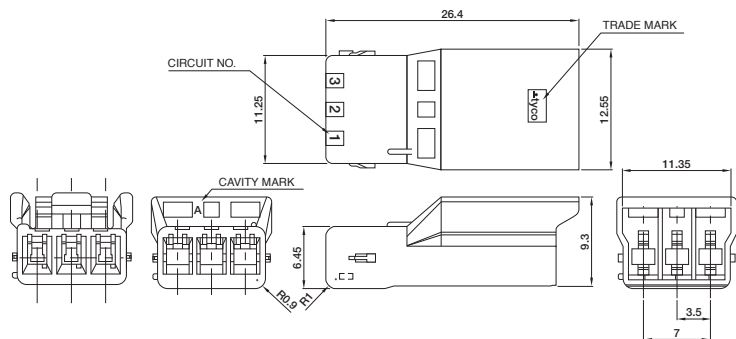
#### Material

6/6 Nylon, UL94V-0 (CTI 600 V or more)

Plug Housing (For Receptacles)



Cap Housing (For Tabs)



Color	Keying	Part Number	
		Plug Housing	Cap Housing
Natural	A	1565082-1	1565086-1
Red	B	1-1565082-2	1-1565086-2
Blue	C	2-1565082-3	2-1565086-3
Yellow	D	3-1565082-4	3-1565086-4

**Note:** All dimensions shown are metric.

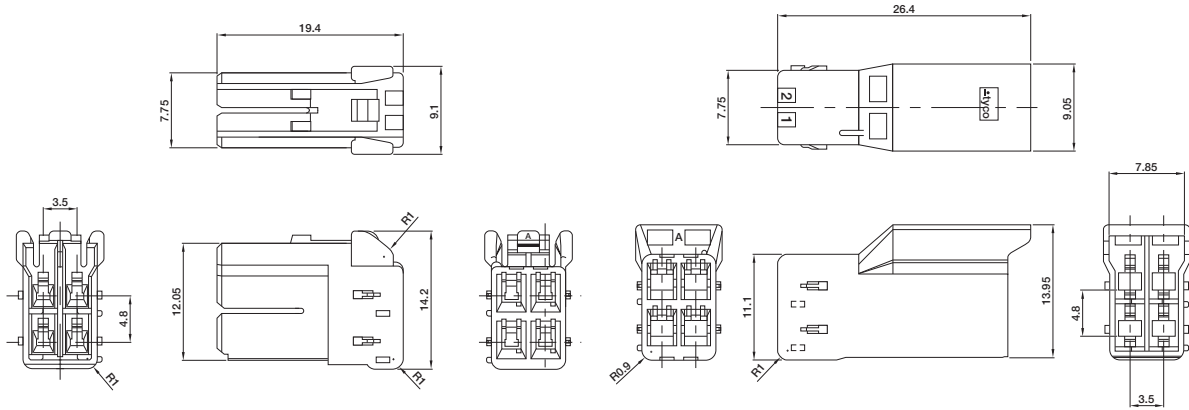
**Note:** All part numbers are RoHS Compliant.

## Grace Inertia Connectors (GIC), 3.5 mm Centerline (Wire-to-Wire Connectors) (Continued)

### 4 Position

Plug Housing (For Receptacles)

Cap Housing (For Tabs)



### Material

6/6 Nylon, UL94V-0 (CTI 600 V or more)

### Related Product Data

Receptacle and Tab Contacts—page 50

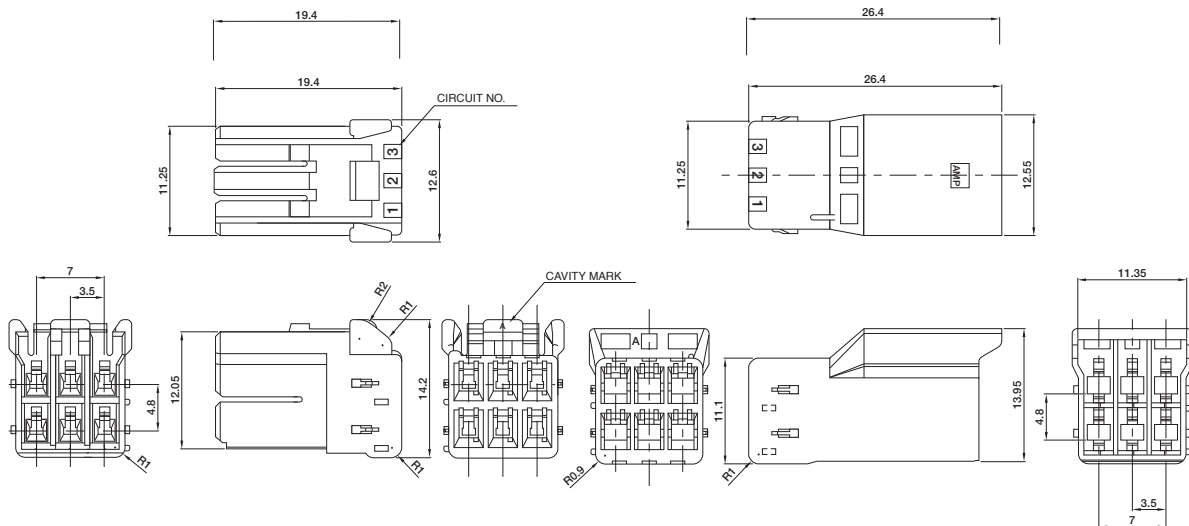
Double Lock Plate—page 50

Color	Keying	Part Number	
		Plug Housing	Cap Housing
Natural	A	1565083-1	1565087-1
Red	B	1-1565083-2	1-1565087-2
Blue	C	2-1565083-3	2-1565087-3
Yellow	D	3-1565083-4	3-1565087-4

### 6 Position

Plug Housing (For Receptacles)

Cap Housing (For Tabs)



### Material

6/6 Nylon, UL94V-0 (CTI 600 V or more)

Color	Keying	Part Number	
		Plug Housing	Cap Housing
Natural	A	1565084-1	1565088-1
Red	B	1-1565084-2	1-1565088-2
Blue	C	2-1565084-3	2-1565088-3
Yellow	D	3-1565084-4	3-1565088-4

**Note:** All dimensions shown are metric.

**Note:** All part numbers are RoHS Compliant.

## .062 [1.57] Commercial Pin and Socket Connectors

### Product Facts

- Polarized
- Cavity identification
- Low contact-mating force
- Dual locking lances
- Detent and positive locking
- Contacts available in brass and phosphor bronze with tin and gold plating
- Panel mount and free-hanging styles
- “F” crimp contacts
- Applicator and hand tool available
- Economical commercial-grade connectors
- Compatible with high-speed application machinery and most other manufacturers’ soft shells
- Wire range 30 to 18 AWG [0.05 to 0.9 mm<sup>2</sup>]
- Accepts wires with insulation diameters as large as .110 [2.79]
- Housings available in 1 to 9 positions
- .062 plug and receptacle housings accept pin or socket contacts. The preferred convention is to use socket contacts with receptacle housings
- Not for interrupting current
- Recognized under the Component Program of Underwriters Laboratories Inc., File No. E28476
- Certified by Canadian Standards Association, File No. LR 7189



### Performance Characteristics

The .062 Commercial Pin and Socket Connectors performance characteristics found on pages 53-54 are based on free-hanging and panel mount connectors, loaded with contacts crimped on stranded wire.

**Durability**—10 mating cycles

**Dielectric Withstanding Voltage**—1.0 kVAC

**Insulation Resistance**—1000 megohms min. initial

**Voltage Rating**—250 V AC or DC

**Connector Mating**—2.5 lb. [11.1 N] max. per contact

**Connector Unmating**—0.3 lb. [1.3 N] min. per contact

**Contact Insertion Force**—4.0 lb. [17.8 N] max. per contact

**Contact Retention**—7 lb. [31.1 N] min.

15 lb. [66.6 N] min. for contacts 770983-1 and 794380-1

### Technical Documents

#### Product Specification

108-1037 .062 Commercial Pin and Socket Connectors

#### Application Specification

114-1013 .062 Commercial Pin and Socket Connectors

**.062 [1.57] Commercial Pin and Socket Connectors** (Continued)

**Performance Characteristics**  
(Continued)

**Maximum Current**—Maximum current rating of .062 Commercial Pin and Socket connectors is limited by the maximum operating temperature of the housings which is 105°C including the temperature rise of the contacts which is a maximum of 30°C. There are several variables which have a direct effect on this maximum current-carrying capability for a given connector and must be considered for each application. These variables are:

**Wire Size**—Larger wire will carry more current since it has less internal resistance to current flow and thus generates less heat. Longer wire lengths also enhance current-carrying capabilities since the wire conducts heat away from the connector.

**Connector Size**—In general, the more circuits in a connector, the less current can be carried.

**Ambient Temperature**—The higher the ambient temperature, the less current can be carried in any given connector.

**Related Product Data**

**Product Specification** —  
108-1037

**Application Specification** —  
114-1013

**Current Rating Verification for 30°C Maximum Temperature Rise 100% Energized**

**Wire-to-Wire**

**.062 Commercial Pin and Socket Connectors Calculated Current Table**

Number of Circuits	Wire Gauge			
	18	20	22	24
2	7.00	6.00	5.00	4.00
3	7.00	6.00	5.00	4.00
4	6.00	6.00	5.00	4.00
4	6.00	5.00	4.00	3.00
6	6.00	5.00	4.00	3.00
9	5.00	4.00	4.00	3.00

Values are based on initial Temperature Rise versus Current Testing and are intended to be a guide in the selection of a connector family. All applications should be tested by the end user. The values listed are per circuit for fully loaded housings being 100% energized. **Note:** All combinations were not tested, and this chart contains interpolated and extrapolated values.

**Minimum Wire Lengths for T-Rise vs. Current Testing**

AWG	Min. Length (in.)	AWG	Min. Length (in.)
30	2.6	18	9.4
28	3.2	16	11.3
26	4.1	14	13.7
24	5.1	12	16.4
20	7.8	10	19.3

**Note:** If wire lengths used are less than those listed above, the current-carrying ability of the system will be reduced due to less heat being conducted away from the connector. The customer should fully test all applications.

**Termination Resistance/Contact Crimp Tensile Force**

Wire Size		Termination Resistance		Contact Crimp Tensile Force	
AWG	mm <sup>2</sup>	Test Current (Amps)	Resistance Milliohms (Max. Init.)	Force (Min.)	
				lbs.	N
24	0.2	1.5	3.50	10	44.5
22	0.3–0.4	3.0	3.50	10	44.5
20	0.5–0.6	4.5	3.00	13	57.8
18	0.8–0.9	6.0	3.00	14	62.3

**Note:** This is the total resistance between wire crimps of a mated pin and socket.

High Density

.062 [1.57] Commercial Pin and Socket Connectors  
.145 [3.68] Centerline

**.062 [1.57] Commercial Pin and Socket Connectors** (Continued)

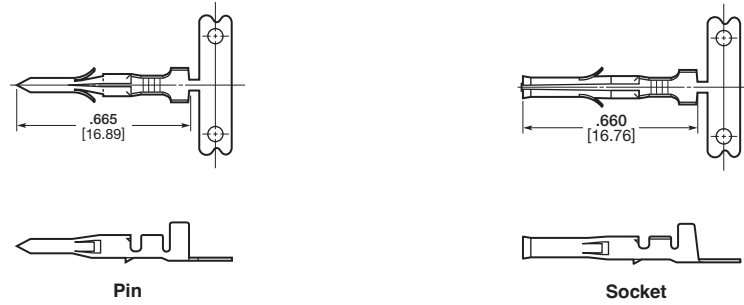
**Contacts**

Pin Diameter .062 [1.57]

**Material**

.008 [0.20] Stock Thickness

Pin and socket contacts can be used in either plug or receptacle housings. It is preferred to use socket contacts in receptacle housings.



**Related Product Data**

**Performance Characteristics**—pages 53-54

**Housings**—pages 56-57

**Panel Cutouts**—page 57

**Technical Documents**—pages 53 and 205-206

**Application Tooling**—pages 207-210

**Product Specification**—108-1037-1

Wire Size AWG	mm <sup>2</sup>	Ins. Dia.	Material & Finish	Contact Part Numbers				HDM Applicator Part No.	Hand Tool Part No.
				Pin		Socket			
				Strip Form	Loose Pieces	Strip Form	Loose Pieces		
30-24	0.05-0.2	.060 1.52 Max.	Brass Pre-tin	640391-1	794018-1	640392-1	794019-1	466686-1 <sup>3</sup> 466686-2 <sup>3</sup> 466686-3 <sup>3</sup>	90870-1
			Brass, Select Gold <sup>1</sup>	640391-5 <sup>1</sup>	—	640392-5 <sup>1</sup>	—		
			Phos. Brz., Pre-tin	—	—	640392-2	—		
24-18	0.2-0.9	.050-.110 1.27-2.79	Brass Pre-tin	350629-1	794017-1	350628-1	794016-1	687996-1 <sup>3</sup> 687996-2 <sup>3</sup> 687996-3 <sup>3</sup>	90869-1
			Phos. Brz., Pre-tin	350629-8	—	350628-2	—		
			Brass, Select Gold <sup>1</sup>	350629-5 <sup>1</sup>	—	350628-5 <sup>1</sup>	—		
			Phos. Brz., Select Gold <sup>1</sup>	—	—	350628-6 <sup>1</sup>	—		

<sup>1</sup>Select Gold—.000030 [.000762] min. in mating area over .000050 [.00127] nickel.

<sup>2</sup>Lanceless Socket for Overmolding.

<sup>3</sup>HDM Applicator part number ending in -1 is used on AMPOMATOR CLS Machine with T or G Terminators, -2 is used on AMP-O-LECTRIC Model K Machine, -3 is used on AMP-O-LECTRIC Model G Machine. See pages 207-210 for further information.

<sup>4</sup>Contact Retention 15 lbs. [66.6 N] min.

**Note:** Phosphor bronze contacts should be used in high-temperature/humidity cycling applications.

**Note:** All part numbers are RoHS Compliant.



**Contact Insertion Tool  
(for Pins and Sockets)**  
Part No. 91002-1  
IS 408-7347



**Contact Extraction Tool**  
Part No. 318831-1  
IS 408-4370

High Density

.062 [1.57] Commercial Pin and Socket Connectors  
.145 [3.68] Centerline

**.062 [1.57] Commercial Pin and Socket Connectors** (Continued)

**Housings**

**Free-Hanging or Panel Mount**

.145 [3.68] Centerline spacing

**Material**

**Housing**—Nylon, natural color

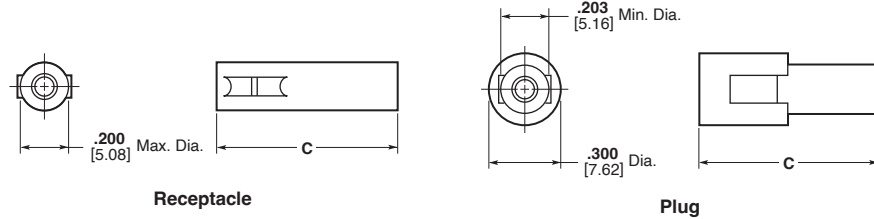
**Flammability Rating**—UL94V-2

**Related Product Data**

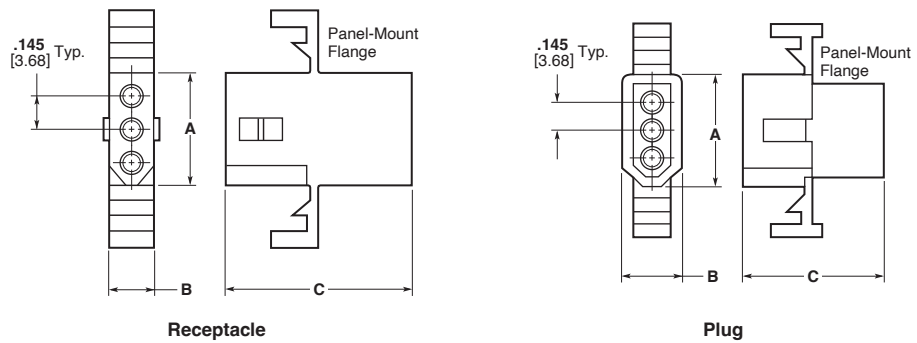
**Contacts**—page 55

**Product Specification**—  
108-1037

**1 Circuit**



**2, 3, and 4 Circuit, In-Line**



No. of Circuits	Dimensions						Receptacle Part Numbers		Plug Part Numbers	
	Receptacle			Plug			Panel Mount	Free-Hanging	Panel Mount	Free-Hanging
	A	B	C	A	B	C				
1	—	—	.785 19.94	—	—	.750 19.05	—	770277-1	—	770278-1
2	.340 8.64	.199 5.05	.820 20.83	.440 11.18	.300 7.62	.780 19.81	770343-1	770342-1 770419-1 <sup>1</sup>	770341-1	770340-1
3	.490 12.45	.199 5.05	.785 19.94	.590 14.99	.300 7.62	.750 19.05	770326-1	770333-1	770332-1	770331-1
4 (In-Line)	.635 16.13	.199 5.05	.785 19.94	.733 18.62	.300 7.62	.750 19.05	770335-1	770274-1	770334-1	770275-1
4 (Matrix)	.345 8.76	.345 8.76	.878 22.30	.445 11.30	.445 11.30	.868 22.04	770441-1	770442-1	770443-1	770433-1
6	.345 8.76	.495 12.57	.785 19.94	.445 11.30	.600 15.24	.750 19.05	770354-1	770356-1	770353-1	770355-1
9	.490 12.45	.495 12.57	.790 20.07	.590 14.99	.600 15.24	.750 19.05	770427-1	770429-1	770426-1	770428-1

<sup>1</sup>Positive Lock

**Note:** All part numbers are RoHS Compliant.

High Density  
Commercial Pin and Socket Connectors  
.145 [3.68] Centerline

**.062 [1.57] Commercial Pin and Socket Connectors** (Continued)

**Housings**

**Free-Hanging or Panel Mount**

.145 [3.68] Centerline spacing

**Material**

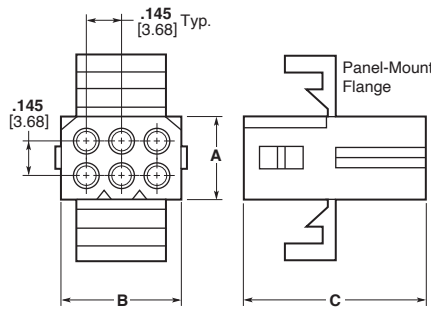
**Housing** — Nylon, natural color

**Flammability Rating** — UL94V-2

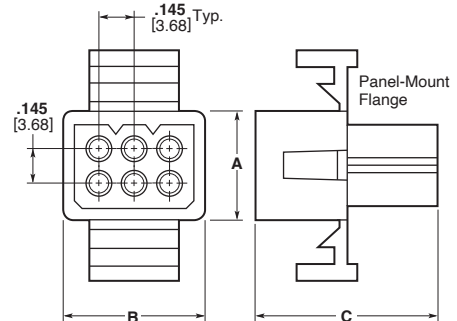
**Related Product Data**

**Contacts** — page 55

**4, 6, and 9 Circuit, Matrix**



Receptacle



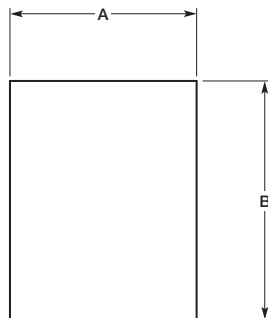
Plug

**Recommended Panel Cutouts**

Maximum panel thickness is .060 [1.52].

**Related Product Data**

**Product Specification** — 108-1037



No. of Circuits	Panel Cutout Dimensions			
	Receptacle		Plug	
	A	B	A	B
2	.265	.505	.318	.609
	6.73	12.83	8.08	15.47
3	.265	.650	.318	.754
	6.73	16.51	8.08	19.15
4 (In-Line)	.260	.785	.312	.865
	6.60	19.94	7.92	21.97
4 (Matrix)	.400	.506	.465	.615
	10.16	12.85	11.81	15.62
6	.505	.552	.607	.615
	12.83	14.02	15.42	15.62
9	.552	.650	.615	.752
	14.02	16.51	15.62	19.10

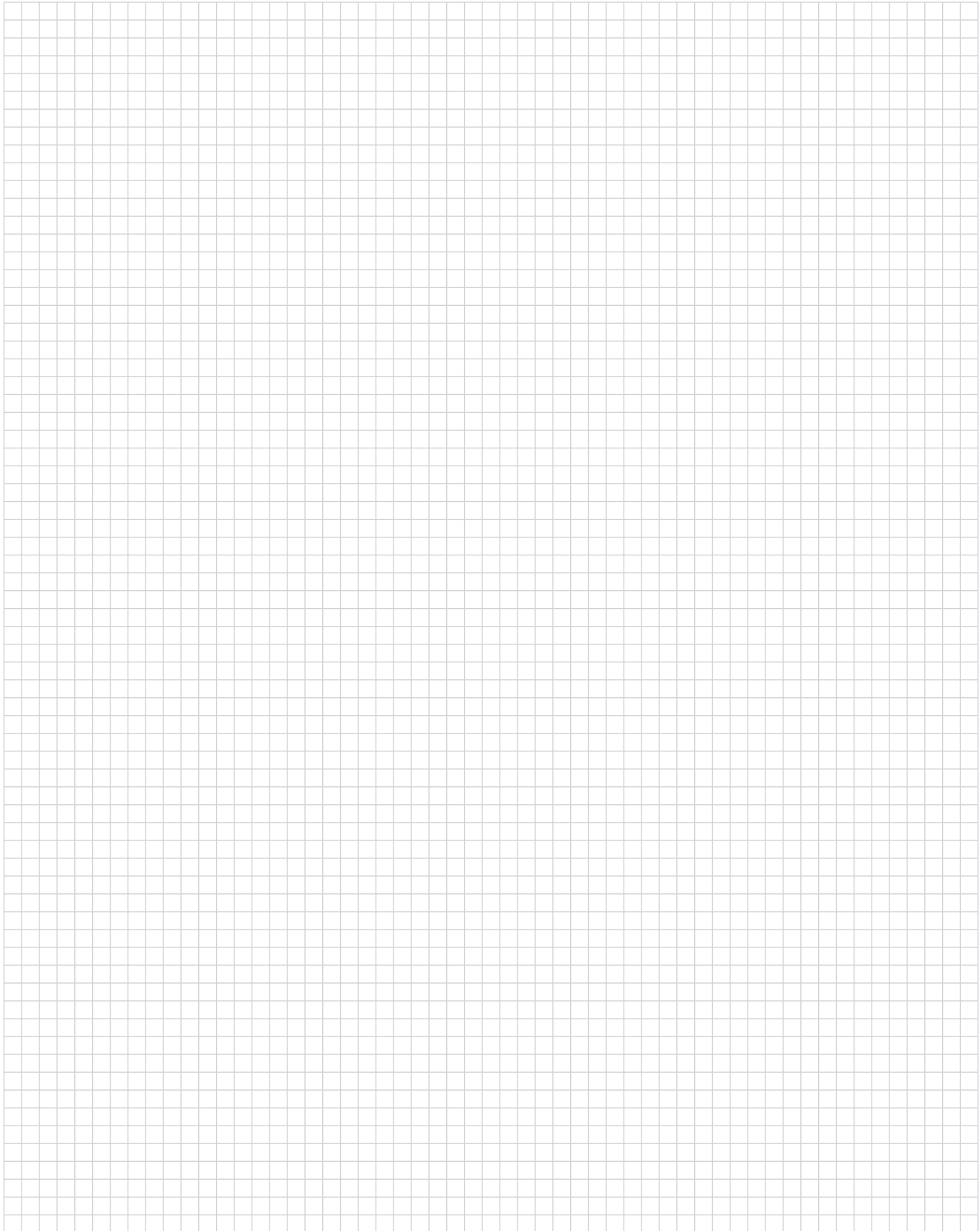
**Note:** The panel should be punched so that the housing enters in the same direction as the punch.

**Note:** All part numbers are RoHS Compliant.

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## Engineering Notes

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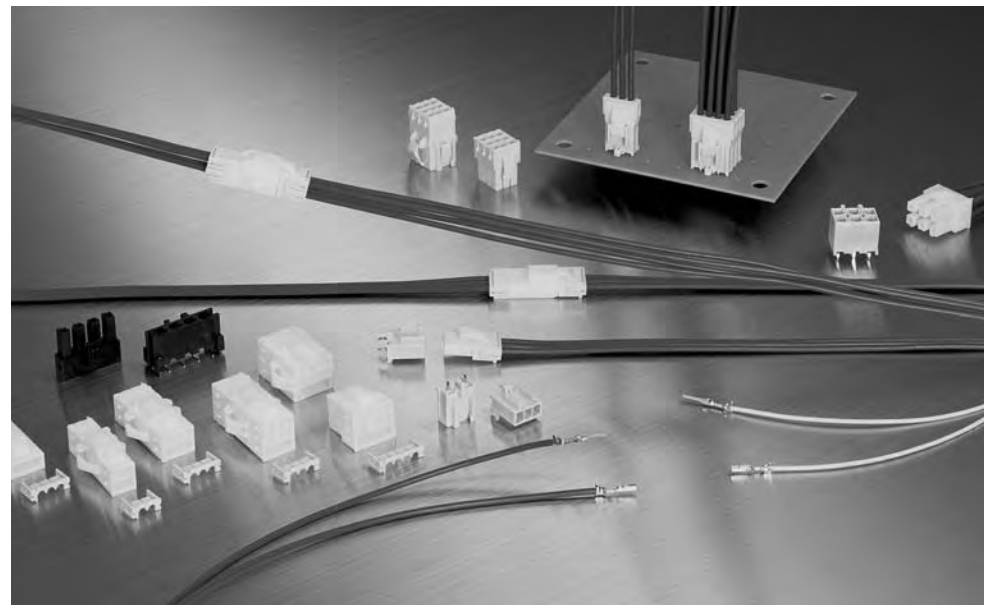
## Power Double Lock (PDL) Connectors (Wire-to-Board and Wire-to-Wire)

High Density

Power Double Lock (PDL) Connectors  
.156 [3.96], .256 [6.50], .312 [7.92] and .512 [13.00] Centerlines

### Product Facts

- Power circuit connectors of compact design
- Uses double lock plate on the wire side that helps prevent partial mating of contacts
- Double lock plate compatible with high-count positions of more than 3 rows
- Tab and receptacle contacts resist scooping of contacts at mating / unmating
- Locking of plug to cap housings and plug to board-mounted headers made by the semi-inner locking system that helps preclude the possibility of disengagement by external pressure
- Both wire-to-wire and wire-to-board applications available from the same Series lineup
- Board-mounted header compatible with resin coating, causing no hindrance with the plug locking function
- Design complies with a range of safety standards
- The housing lance design provides no lance on contacts and helps prevent entanglement of contacts with one another
- Fully polarized
- The following contact centerline by row centerline arrangements available:
  - For wire-to-wire application:  
3.96 mm x 4.6 mm  
6.5 mm x 6.5 mm
  - For wire-to-board application:  
3.96 mm x 4.6 mm  
7.92 mm x 4.6 mm  
6.5 mm x 6.5 mm
- Recognized under the Component Program of Underwriters Laboratories Inc., File No. E28476 
- Certified by Canadian Standards Association, File No. LR7189 
- VDE Approved, File No. B 04 11 39175010 



Power Double Lock Connectors are compact connectors designed for use in power circuit applications and are ideally suited for wiring in refrigerators, air conditioners, washing machines, gas equipment, copying machines and automatic vending machines. These connectors can be used alone by inserting wire-terminated crimp snap-in contacts into the housing. However, to achieve more positive contact mounting, plug and cap housings can be equipped with a double lock plate that helps to completely insert contacts. There are three contact centerline spacings available: 3.96 mm, 6.5 mm and 7.92 mm. Of these, the 7.92 mm centerline contact arrangement is for 2-position board-mounted headers. The mating wire-mounted plug connector uses the second circuit of the 3-position 3.96 mm centerline housing with no contact loaded. Available with the 3.96 mm centerline contact arrangement are wire-mounted plug housings and the mating wire-mounted cap housings (for free-hanging and panel mounted

applications) and board-mounted tab headers.

The 6.5 mm centerline contact arrangement is used in wire-mounted plug housings and the mating board-mounted tab headers. The plug housings are loaded with receptacle contacts and the cap housings with tab contacts. The tab headers for board mounting are preloaded with solder-dipping tab contacts with tail.

Contacts accept two wire size ranges: 28-22 AWG (with insulation outer diameter of 1.3 to 2.0 mm) and 20-18 AWG (with insulation outer diameter of 2.0 to 3.1 mm).

The tab header for board mounting has a locking mechanism where it is compatible with resin coating that is applied to the board for waterproof.

It is designed to work with the plug locking function.

The solder tail section of tab contact has kink feature.

Interacting with the mounting boss with kink feature, the solder tab secures the header on the board firmly during soldering.

The double lock plate is compatible with high-count positions of more than 3 rows. Also, the housing lance design of this connector, featuring no lance on contacts, makes handling of the connector very easy, as there is minimal entanglement of contacts with one another.

### Performance Characteristics

**Voltage Rating**—300 VAC (for 3.96 mm wire-to-wire, 6.5 mm wire-to-board and 7.92 mm wire-to-board applications)  
50 VAC (for 3.96 mm wire-to-board application)

**Current Rating**—14A max. (Based on initial I-rise vs. current testing using 16 AWG wire in a 2-position connector)

**Fine Rating**—1 mV, 1 $\alpha$ A min.

**Operating Temperature**—  
-30° ~ +105°C

### Technical Documents

#### Product Specifications

108-5410  
108-5439 (SMT)

#### Application Specification

114-5175

#### Instruction Sheet

411-5638

**Power Double Lock (PDL) Connectors (Wire-to-Board and Wire-to-Wire) (Continued)**

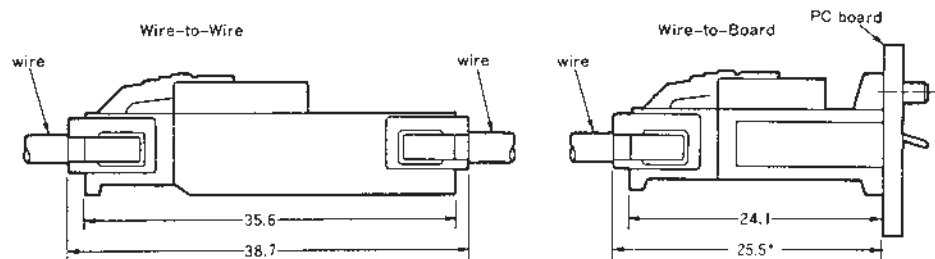
**Quick Reference Chart for Mating Part Numbers**

**Quick Reference Chart**

Plug Connector (Wire Side)			Mating Connectors (Wire and PC Board Mount Side)		
No. of Pos.	Housing Part No.	Part No. of Applicable Double Lock Plate	No. of Pos.	Part No. of Cap Housing and Tab Header	Part No. of Applicable Double Lock Plate
<b>■ 3.96 mm and 7.92 mm Centerline</b>					
1	316768-□	316770-1x1	1	316769-□ (Free-Hanging)	316770-1x1
2	177898-□	177918-1x1	2	179463-□ (Free-Hanging)	177918-1x1
				177906-□ (Panel Mount)	—
3	177899-□	177919-1x1	3	179838-□ (PC Board Mount)	—
				179464-□ (Free-Hanging)	177919-1x1
				177907-□ (Panel Mount)	—
4 (1 Row)	316501-□	177920-1x1	4	179839-□ (PC Board Mount)	—
				179444-□ (PC Board Mount 7.92 mm Centerline)	—
4 (2 Rows)	177900-□	177918-1x2	4	316502-□ (Panel Mount)	177920-1x1
				179465-□ (Free-Hanging)	177918-1x2
6	177901-□	177919-1x2	6	177908-□ (Panel Mount)	—
				179840-□ (PC Board Mount)	—
				179466-□ (Free-Hanging)	177919-1x2
8	177902-□	177920-1x2	8	177909-□ (Panel Mount)	—
				179841-□ (PC Board Mount)	—
9	177903-□	177919-1x3	9	179467-□ (Free-Hanging)	177920-1x2
				917845-□ (PC Board Mount)	—
10	177904-□	177921-1x2	10	177911-□ (Panel Mount)	177919-1x3
				177912-□ (Panel Mount)	177921-1x2
12	177905-□	177920-1x3	12	177913-□ (Panel Mount)	177920-1x3
				179843-□ (PC Board Mount)	—
				1903720-1 (Free-Hanging)	177920-1x3
<b>■ 6.5 mm and 13.0 mm Centerline</b>					
2	1939344-1	316061-1x1	2	1939343-1 (Panel Mount)	—
3	179938-□	316062-1x1	3	179846-□ (PC Board Mount)	—
				179944-□ (PC Board Mount/SMT)	—
—	—	—	2	917745-□ (PC Board Mount 13 mm Centerline)	—
4 (1 Row)	179939-□	316063-1x1	4	9139343-1-□ (Panel Mount)	—
				179847-□ (PC Board Mount)	—
4 (2 Rows)	179861-□	316061-1x2	4	179945-□ (PC Board Mount/SMT)	—
				179848-□ (PC Board Mount)	—
6	179862-□	316062-1x2	6	1903486-1 (Panel Mount)	—
				179849-□ (PC Board Mount)	—
12	917354-□	353891-1x2	12	1903487-1 (Panel Mount)	—
				917353-□ (PC Board Mount)	—

\*For details on 6.5 mm and 13.0 mm Centerline products, contact Technical Support

**Note:** All part numbers are RoHS Compliant.



**Note:** All dimensions shown are metric.

High Density  
Power Double Lock (PDL) Connectors  
.156 [3.96], .256 [6.50], .312 [7.92] and .512 [13.00] Centerlines

**Power Double Lock (PDL) Connectors (Wire-to-Board and Wire-to-Wire) (Continued)**

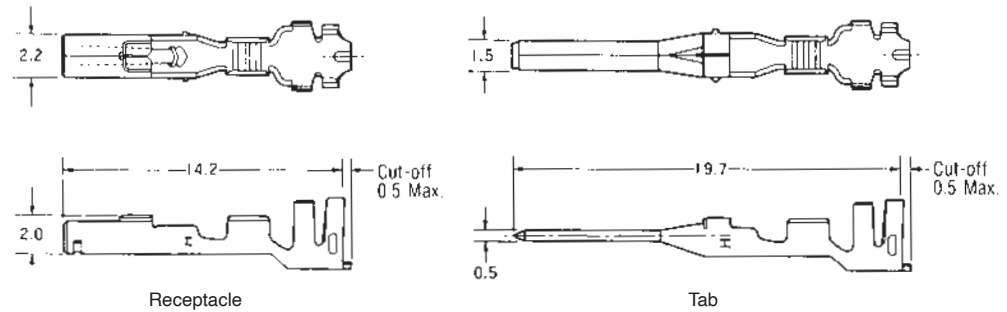
**Contacts and Product Composition**

**Contacts**

**Material and Finish**

Pre-tinned copper alloy

Receptacle for Plug Housing,  
Tab for Cap Housing



Wire Range		Ins. Dia. (Note)	Contact Part No.				Applicator Part No.	CERTI-CRIMP II Hand Tool Part No.
AWG	mm <sup>2</sup>		Receptacle		Tab			
26-22	0.14~0.34	1.30~2.00	177914-1	179592-1	177916-1	179594-1	680283-X	91567-1
			177914-2*	179592-2*				
20-16	0.51~1.38	2.00~3.10	177915-1	179593-1	177917-1	179595-1	680286-X	91569-1
			177915-2*	179593-2*				

**Note:** Maximum diameter is 2.8 mm when Double Lock Plate is used.

\*Part Number suffix -2 represents high contact pressure type.

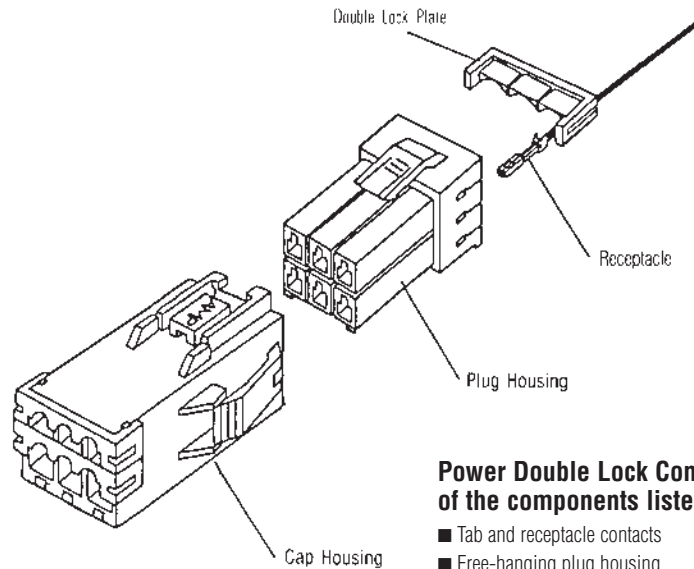
Extraction Tool P/N : 234912-1 (For receptacle contact)  
234914-1 (For tab contact)

**Note:** Contact the Tooling Assistance Center (TAC) at 1-800-722-1111 for Applicator Part Number.

**Positive mounting achieved with Double Lock mechanism.**

- ① Contact is partially-mounted.
- ② Double Lock Plate is set.
- ③ Contact is fully pushed in as Double Lock Plate is pressed.

**Product Composition**



**Power Double Lock Connector is composed of the components listed below:**

- Tab and receptacle contacts
- Free-hanging plug housing
- Free-hanging cap housing
- Panel mount cap housing
- PC Board-mount tab header
- Double Lock Plate

**Note:** All dimensions shown are metric.

**Note:** All part numbers are RoHS Compliant.

**Power Double Lock (PDL) Connectors (Wire-to-Board and Wire-to-Wire)** (Continued)

**3.96 mm Centerline Free-Hanging Plug Housing**

**1 Circuit**

Wire-to-Wire

Material—UL94V-0, 6/6 Nylon

**Part Number**

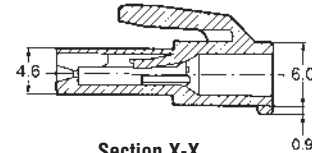
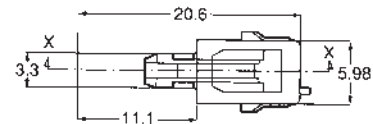
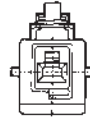
- 316768-1 (Natural)
- 316768-2 (Red)
- 316768-4 (Yellow)
- 316768-6 (Blue)
- 316768-9 (Black)

**Related Product Data**

**Receptacle Contacts**—page 61

**Mating Cap Housings**  
(Free-Hanging)—pages 65-66

**Double Lock Plate**—page 71



Section X-X

**2 Circuits**

Wire-to-Board and Wire-to-Wire

Material—UL94V-0, 6/6 Nylon

**Part Number**

- 177898-1 (Natural)
- 177898-2 (Red)
- 177898-4 (Yellow)
- 177898-6 (Blue)
- 177898-9 (Black)

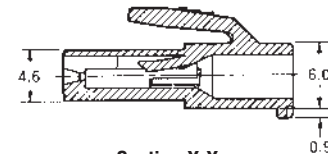
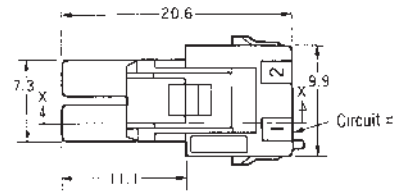
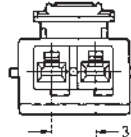
**Related Product Data**

**Receptacle Contacts**—page 61

**Mating Cap Housings**  
(Free-Hanging)—pages 65-66  
(Panel Mount)—pages 67-70

**Double Lock Plate**—page 71

**Mating Tab Headers**—  
pages 72-74



Section X-X

**3 Circuits**

Wire-to-Board and Wire-to-Wire

Material—UL94V-0, 6/6 Nylon

**Part Number**

- 177899-1 (Natural)
- 177899-2 (Red)
- 177899-4 (Yellow)
- 177899-6 (Blue)
- 177899-9 (Black)

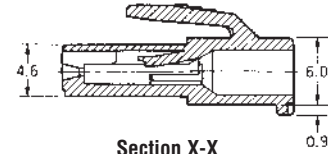
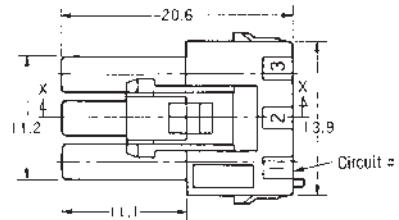
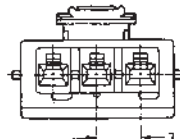
**Related Product Data**

**Receptacle Contacts**—page 61

**Mating Cap Housings**  
(Free-Hanging)—pages 65-66  
(Panel Mount)—pages 67-70

**Double Lock Plate**—page 71

**Mating Tab Headers**—  
pages 72-74 and  
(2 circuit, 7.92 mm  
centerline)—page 74



Section X-X

**4 Circuits (1 Row)**

Wire-to-Wire

Material—UL94V-0, 6/6 Nylon

**Part Number**

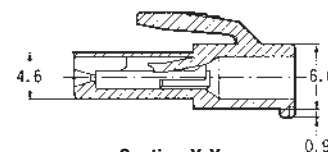
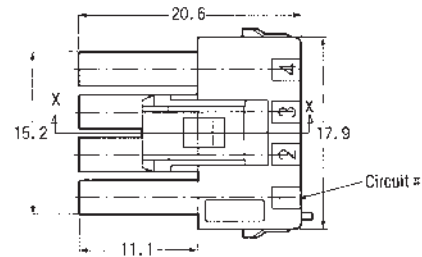
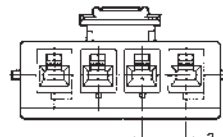
- 316501-1 (Natural)
- 316501-4 (Yellow)
- 316501-6 (Blue)

**Related Product Data**

**Receptacle Contacts**—page 61

**Mating Cap Housings**  
(Panel Mount)—pages 67-70

**Double Lock Plate**—page 71



Section X-X

Note: All dimensions shown are metric.

Note: All part numbers are RoHS Compliant.

High Density

Power Double Lock (PDL) Connectors  
.156 [3.96] Centerlines

**Power Double Lock (PDL) Connectors (Wire-to-Board and Wire-to-Wire)** (Continued)

**3.96 mm Centerline Free-Hanging Plug Housing**

**4 Circuits (2 Rows)**

Wire-to-Board and Wire-to-Wire

**Material**

UL94V-0, 6/6 Nylon

**Part Number**

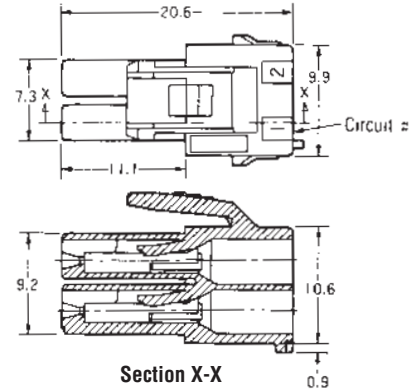
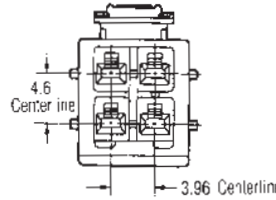
- 177900-1 (Natural)
- 177900-4 (Yellow)
- 177900-6 (Blue)

**Lock Type II**

3-177900-1 (Natural)

**Related Product Data**

- Receptacle Contacts**—page 61
- Mating Cap Housings**  
(Free-Hanging)—pages 65-66  
(Panel Mount)—pages 67-70
- Double Lock Plate**—page 71
- Mating Tab Headers**—  
pages 72-74



**6 Circuits**

Wire-to-Board and Wire-to-Wire

**Material**

UL94V-0, 6/6 Nylon

**Part Number**

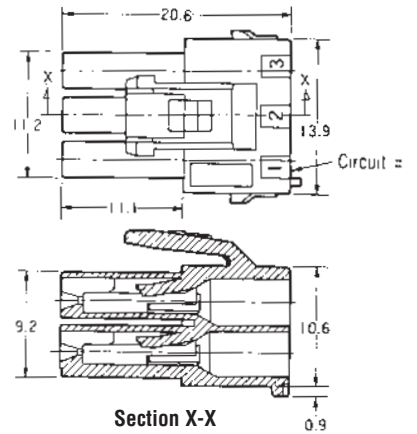
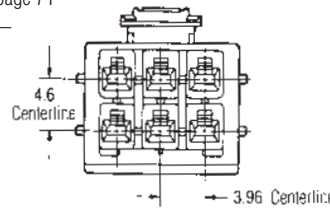
- 177901-1 (Natural)
- 177901-4 (Yellow)
- 177901-6 (Blue)

**Lock Type II**

3-177901-1 (Natural)

**Related Product Data**

- Receptacle Contacts**—page 61
- Mating Cap Housings**  
(Free-Hanging)—pages 65-66  
(Panel Mount)—pages 67-70
- Double Lock Plate**—page 71
- Mating Tab Headers**—  
pages 72-74



**8 Circuits**

Wire-to-Board and Wire-to-Wire

**Material**

UL94V-0, 6/6 Nylon

**Part Number**

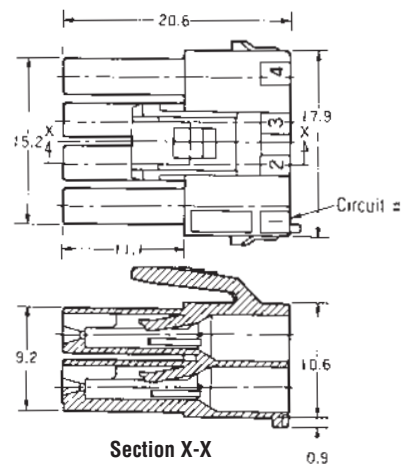
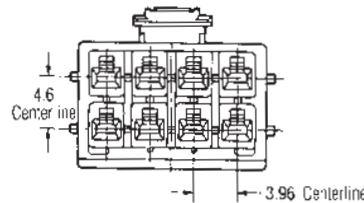
- 177902-1 (Natural)
- 177902-4 (Yellow)
- 177902-6 (Blue)

**Lock Type II**

3-177902-1 (Natural)

**Related Product Data**

- Receptacle Contacts**—page 61
- Mating Cap Housings**  
(Free-Hanging)—pages 65-66
- Double Lock Plate**—page 71
- Mating Tab Headers**—pages 72-74



**Note:** All dimensions shown are metric.

**Note:** All part numbers are RoHS Compliant.

**Power Double Lock (PDL) Connectors (Wire-to-Board and Wire-to-Wire)** (Continued)

**3.96 mm Centerline Free-Hanging Plug Housing**

**9 Circuits**

Wire-to-Wire

**Material**

UL94V-0, 6/6 Nylon

**Part Number**

177903-1 (Natural)  
177903-4 (Yellow)  
177903-6 (Blue)

**Lock Type II**

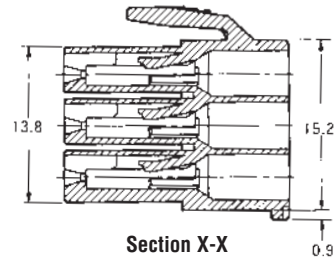
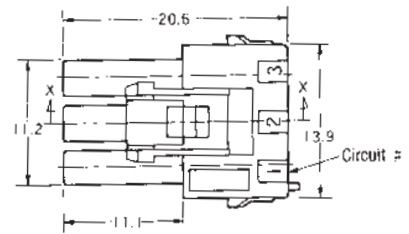
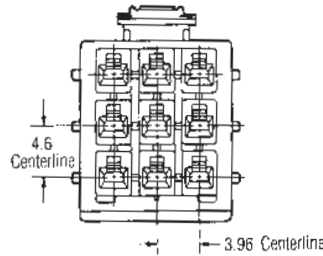
3-177903-1 (Natural)

**Related Product Data**

**Receptacle Contacts**—page 61

**Mating Cap Housings**  
(Panel Mount)—pages 67-70

**Double Lock Plate**—page 71



**10 Circuits**

Wire-to-Wire

**Material**

UL94V-0, 6/6 Nylon

**Part Number**

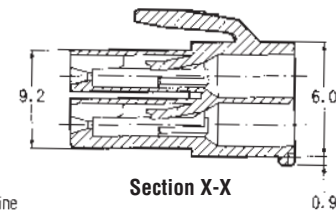
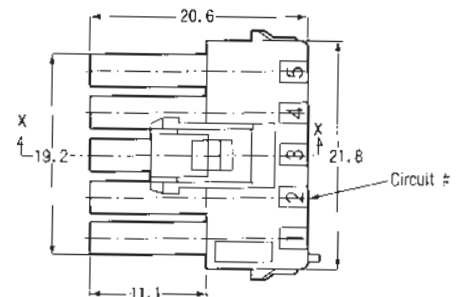
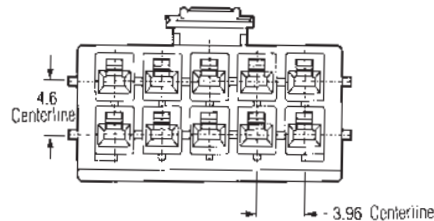
177904-1 (Natural)  
177904-4 (Yellow)  
177904-6 (Blue)

**Related Product Data**

**Receptacle Contacts**—page 61

**Mating Cap Housings**  
(Panel Mount)—pages 67-70

**Double Lock Plate**—page 71



**12 Circuits**

Wire-to-Board and Wire-to-Wire

**Material**

UL94V-0, 6/6 Nylon

**Part Number**

177905-1 (Natural)  
177905-4 (Yellow)  
177905-6 (Blue)

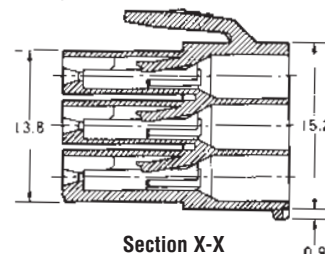
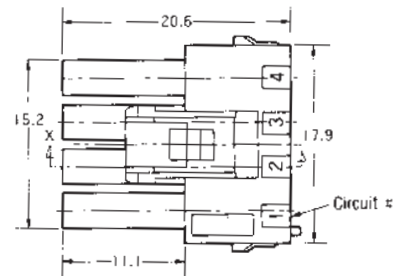
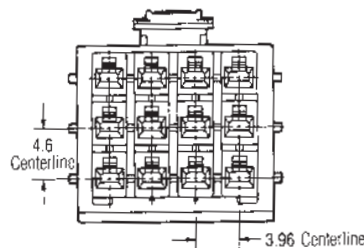
**Related Product Data**

**Receptacle Contacts**—page 61

**Mating Cap Housings**  
(Panel Mount)—pages 67-70

**Double Lock Plate**—page 71

**Mating Tab Headers**—pages 72-74



**Note:** All dimensions shown are metric.

**Note:** All part numbers are RoHS Compliant.

**Power Double Lock (PDL) Connectors (Wire-to-Wire)**

High Density

Power Double Lock (PDL) Connectors  
.156 [3.96] Centerlines

**3.96 mm Centerline Free-Hanging Cap Housing**

**1 Circuit**

Wire-to-Wire

**Material**

UL94V-0, 6/6 Nylon

**Part Number**

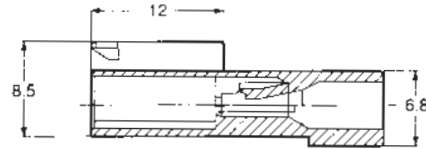
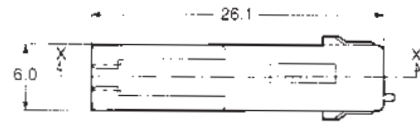
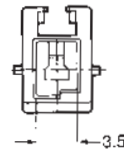
- 316769-1 (Natural)
- 316769-2 (Red)
- 316769-4 (Yellow)
- 316769-6 (Blue)
- 316769-9 (Black)

**Related Product Data**

**Tab Contacts**—page 61

**Mating Plug Housings**  
(Free-Hanging)—pages 62-64

**Double Lock Plate**—page 71



Section X-X

**2 Circuits**

Wire-to-Wire

**Material**

UL94V-0, 6/6 Nylon

**Part Number**

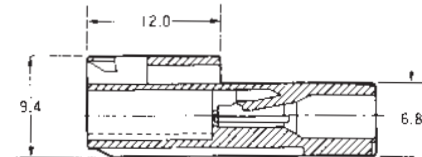
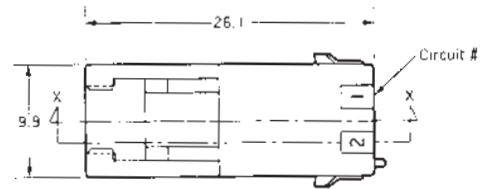
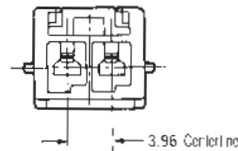
- 179463-1 (Natural)
- 179463-2 (Red)
- 179463-4 (Yellow)
- 179463-6 (Blue)
- 179463-9 (Black)

**Related Product Data**

**Tab Contacts**—page 61

**Mating Plug Housings**  
(Free-Hanging)—pages 62-64

**Double Lock Plate**—page 71



Section X-X

**3 Circuits**

Wire-to-Wire

**Material**

UL94V-0, 6/6 Nylon

**Part Number**

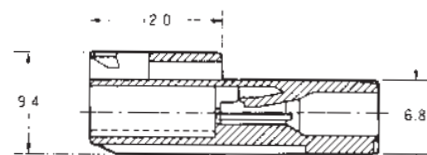
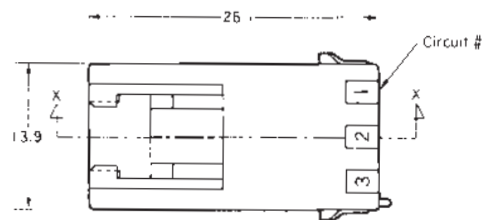
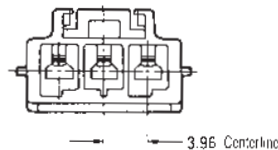
- 179464-1 (Natural)
- 179464-2 (Red)
- 179464-4 (Yellow)
- 179464-6 (Blue)
- 179464-9 (Black)

**Related Product Data**

**Tab Contacts**—page 61

**Mating Plug Housings**  
(Free-Hanging)—pages 62-64

**Double Lock Plate**—page 71



Section X-X

**Note:** All dimensions shown are metric.

**Note:** All part numbers are RoHS Compliant.

**Power Double Lock (PDL) Connectors (Wire-to-Wire)** (Continued)

**3.96 mm Centerline Free-Hanging Cap Housing**

**4 Circuits (2 Rows)**

Wire-to-Wire

**Material**

UL94V-0, 6/6 Nylon

**Part Number**

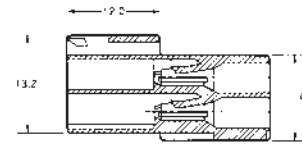
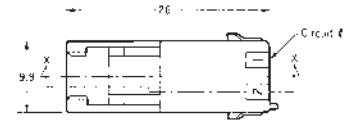
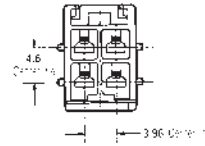
179465-1 (Natural)  
179465-4 (Yellow)  
179465-6 (Blue)

**Related Product Data**

**Tab Contacts**—page 61

**Mating Plug Housings**  
(Free-Hanging)—pages 62-64

**Double Lock Plate**—page 71



Section X-X

**6 Circuits**

Wire-to-Wire

**Material**

UL94V-0, 6/6 Nylon

**Part Number**

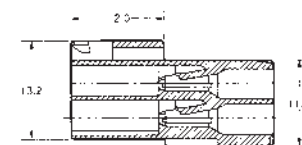
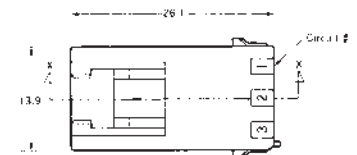
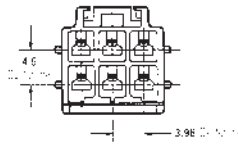
179466-1 (Natural)  
179466-4 (Yellow)  
179466-6 (Blue)

**Related Product Data**

**Tab Contacts**—page 61

**Mating Plug Housings**  
(Free-Hanging)—pages 62-64

**Double Lock Plate**—page 71



Section X-X

**8 Circuits**

Wire-to-Wire

**Material**

UL94V-0, 6/6 Nylon

**Part Number**

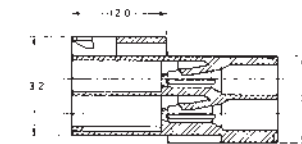
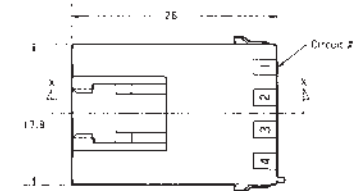
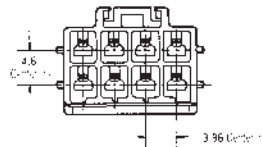
179467-1 (Natural)  
179467-4 (Yellow)  
179467-6 (Blue)

**Related Product Data**

**Tab Contacts**—page 61

**Mating Plug Housings**  
(Free-Hanging)—pages 62-64

**Double Lock Plate**—page 71



Section X-X

**12 Circuits**

Wire-to-Board

**Material**

UL94V-0, 6/6 Nylon

**Part Number**

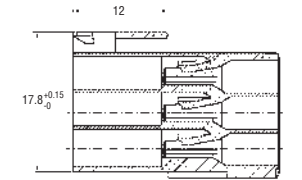
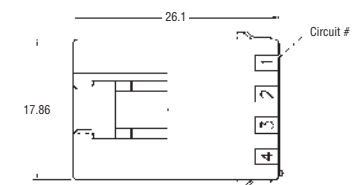
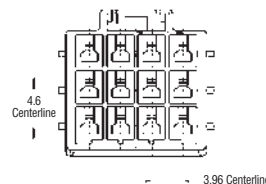
1903720-1 (Natural)

**Related Product Data**

**Tab Contacts**—page 61

**Mating Plug Housings**  
(Free-Hanging)—pages 62-64

**Double Lock Plate**—page 71



Section X-X

**Note:** All dimensions shown are metric.

**Note:** All part numbers are RoHS Compliant.

High Density

Power Double Lock (PDL) Connectors  
.156 [3.96] Centerlines

**Power Double Lock (PDL) Connectors (Wire-to-Wire)** (Continued)

High Density

Power Double Lock (PDL) Connectors  
.156 [3.96] Centerlines

**3.96 mm Centerline Panel Mount Cap Housing**

**2 Circuits**

Wire-to-Wire

Material—UL94V-0, 6/6 Nylon

**Part Number**

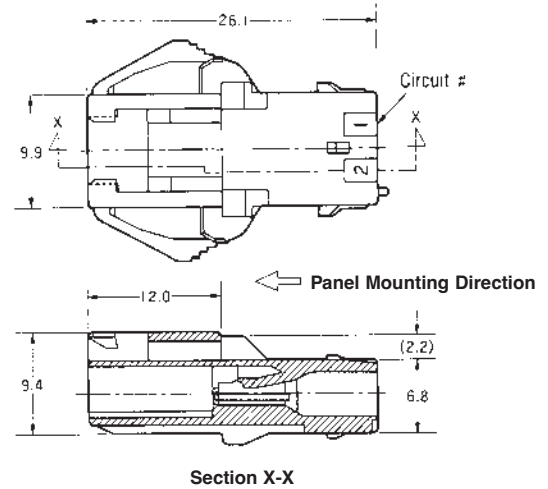
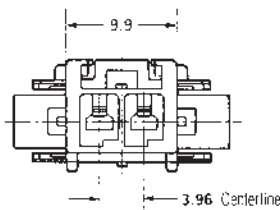
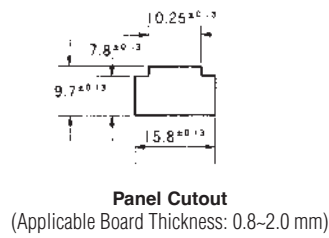
- 177906-1 (Natural)
- 177906-2 (Red)
- 177906-4 (Yellow)
- 177906-6 (Blue)
- 177906-9 (Black)

**Related Product Data**

**Tab Contacts**—page 61

**Mating Plug Housings**  
(Free-Hanging)—pages 62-64

**Double Lock Plate**—page 71



**3 Circuits**

Wire-to-Wire

Material—UL94V-0, 6/6 Nylon

**Part Number**

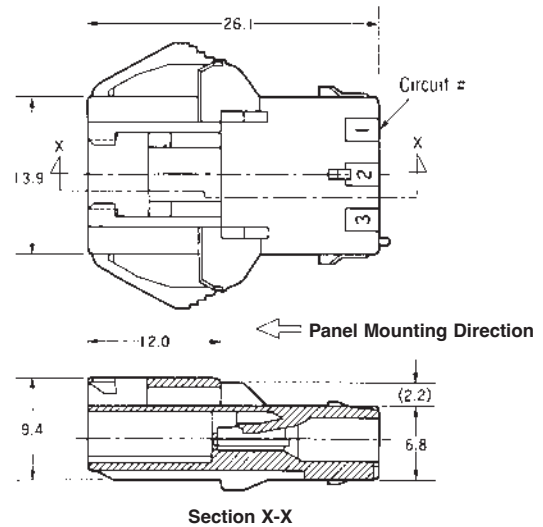
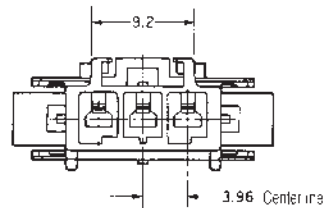
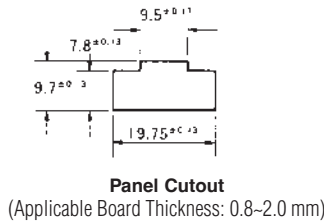
- 177907-1 (Natural)
- 177907-2 (Red)
- 177907-4 (Yellow)
- 177907-6 (Blue)
- 177907-9 (Black)

**Related Product Data**

**Tab Contacts**—page 61

**Mating Plug Housings**  
(Free-Hanging)—pages 62-64

**Double Lock Plate**—page 71



**4 Circuits (1 Row)**

Wire-to-Wire

Material—UL94V-0, 6/6 Nylon

**Part Number**

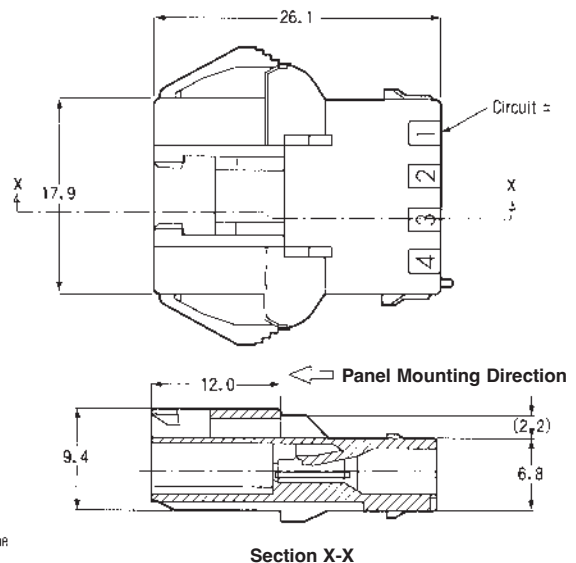
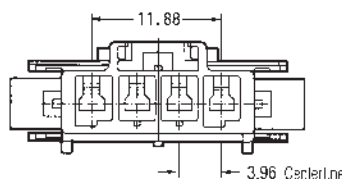
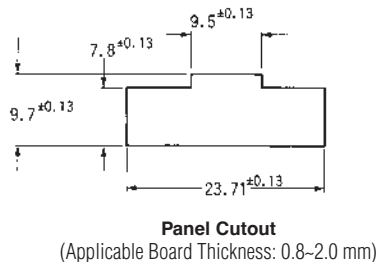
- 316502-1 (Natural)
- 316502-4 (Yellow)
- 316502-6 (Blue)

**Related Product Data**

**Tab Contacts**—page 61

**Mating Plug Housings**  
(Free-Hanging)—pages 62-64

**Double Lock Plate**—page 71



**Note:** All dimensions shown are metric.

**Note:** All part numbers are RoHS Compliant.

**Power Double Lock (PDL) Connectors (Wire-to-Wire)** (Continued)

**3.96 mm Centerline Panel Mount Cap Housing**

**4 Circuits (2 Rows)**

Wire-to-Wire

**Material**

UL94V-0, 6/6 Nylon

**Part Number**

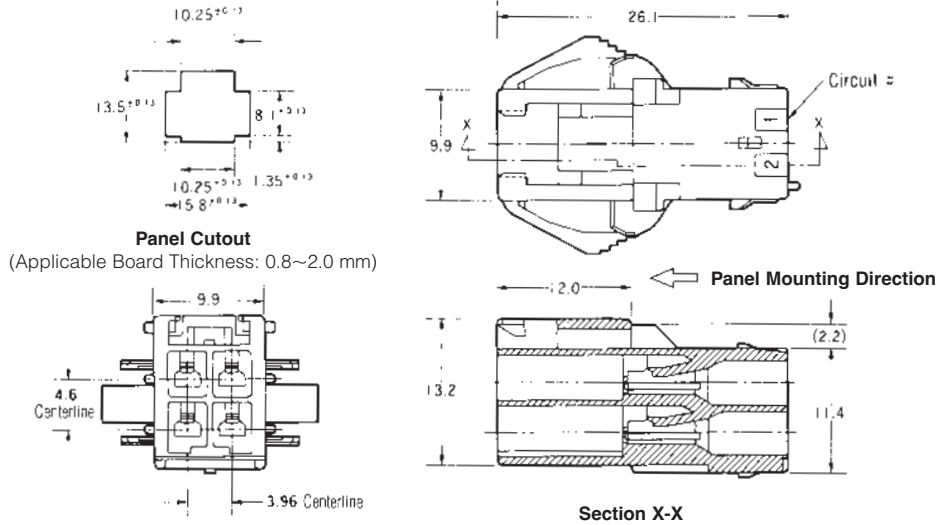
- 177908-1 (Natural)
- 177908-4 (Yellow)
- 177908-6 (Blue)

**Related Product Data**

**Tab Contacts**—page 61

**Mating Plug Housings**  
(Free-Hanging)—pages 62-64

**Double Lock Plate**—page 71



**6 Circuits**

Wire-to-Wire

**Material**

UL94V-0, 6/6 Nylon

**Part Number**

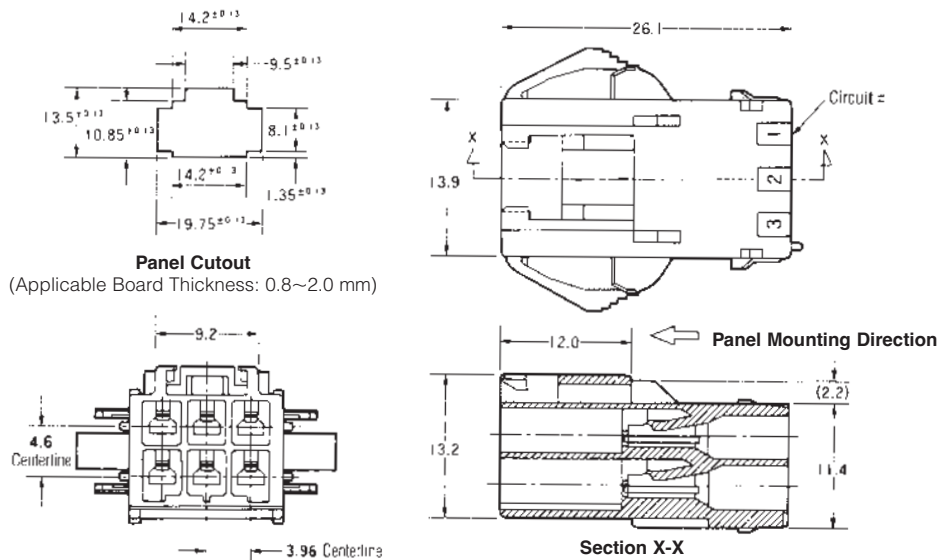
- 177909-1 (Natural)
- 177909-4 (Yellow)
- 177909-6 (Blue)

**Related Product Data**

**Tab Contacts**—page 61

**Mating Plug Housings**  
(Free-Hanging)—pages 62-64

**Double Lock Plate**—page 71



**Note:** All dimensions shown are metric.

**Note:** All part numbers are RoHS Compliant.

Power Double Lock (PDL) Connectors .156 [3.96] Centerlines High Density

**Power Double Lock (PDL) Connectors (Wire-to-Wire)** (Continued)

**3.96 mm Centerline Panel Mount Cap Housing**

**9 Circuits**

**Wire-to-Wire**

**Material**

UL94V-0, 6/6 Nylon

**Part Number**

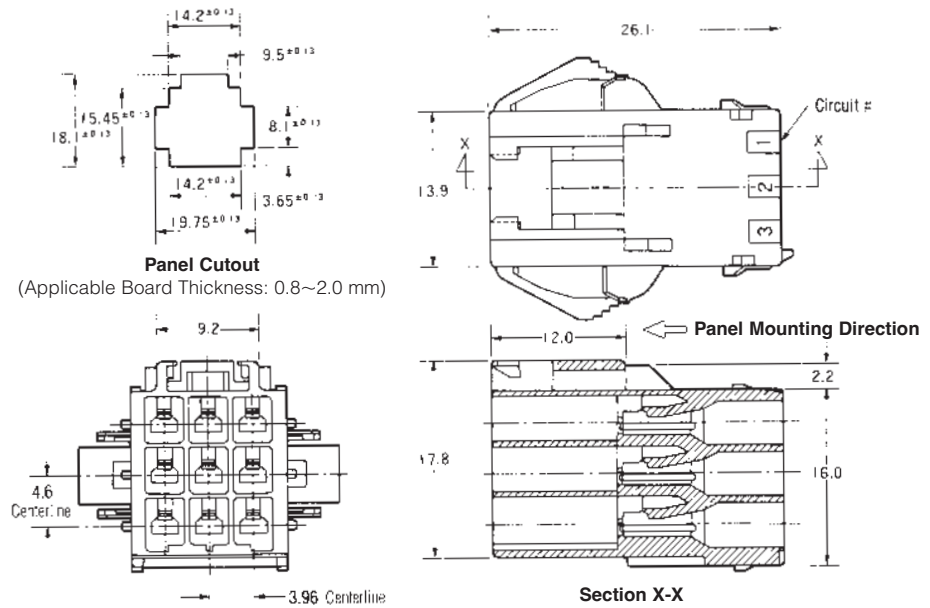
- 177911-1 (Natural)
- 177911-4 (Yellow)
- 177911-6 (Blue)

**Related Product Data**

**Tab Contacts**—page 61

**Mating Plug Housings**  
(Free-Hanging)—pages 62-64

**Double Lock Plate**—page 71



**For 10 Circuits**

**Wire-to-Wire**

**Material**

UL94V-0, 6/6 Nylon

**Part Number**

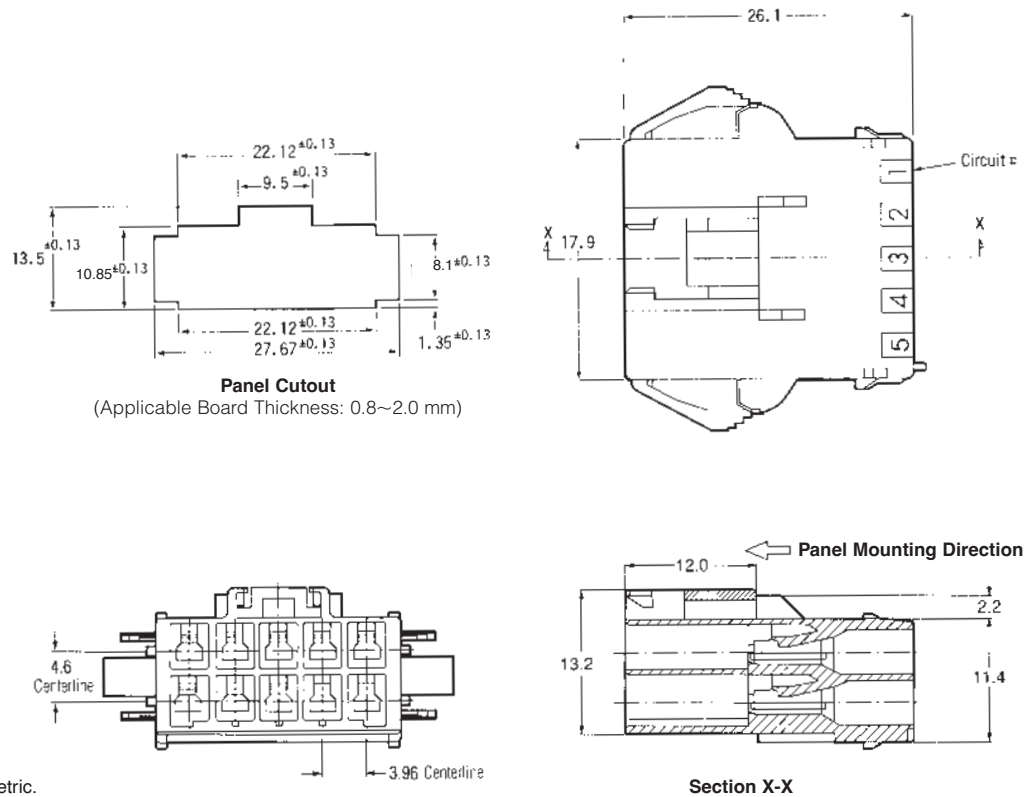
- 177912-1 (Natural)
- 177912-4 (Yellow)
- 177912-6 (Blue)

**Related Product Data**

**Tab Contacts**—page 61

**Mating Plug Housings**  
(Free-Hanging)—pages 62-64

**Double Lock Plate**—page 71



**Note:** All dimensions shown are metric.

**Note:** All part numbers are RoHS Compliant.

**Power Double Lock (PDL) Connectors (Wire-to-Wire)** (Continued)

**3.96 mm Centerline Panel Mount Cap Housing**

**12 Circuits**

**Wire-to-Wire**

**Material**

UL94V-0, 6/6 Nylon

**Part Number**

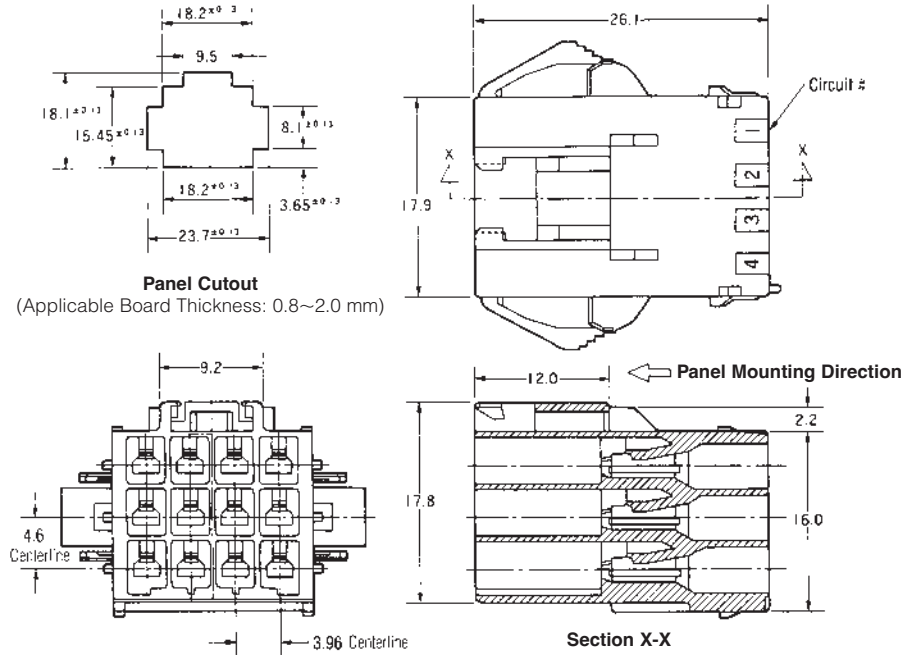
- 177913-1 (Natural)
- 177913-4 (Yellow)
- 177913-6 (Blue)

**Related Product Data**

**Tab Contacts**—page 61

**Mating Plug Housings**  
(Free-Hanging)—pages 62-64

**Double Lock Plate**—page 71



High Density

Power Double Lock (PDL) Connectors  
.156 [3.96] Centerlines

**Note:** All dimensions shown are metric.

**Note:** All part numbers are RoHS Compliant.

**Power Double Lock (PDL) Connectors (Wire-to-Board and Wire-to-Wire)**

**3.96 mm Centerline Double-Lock Plates**

**Double Lock Plates**

**Material**

UL94V-0, glass filled 6/6 Nylon, natural color

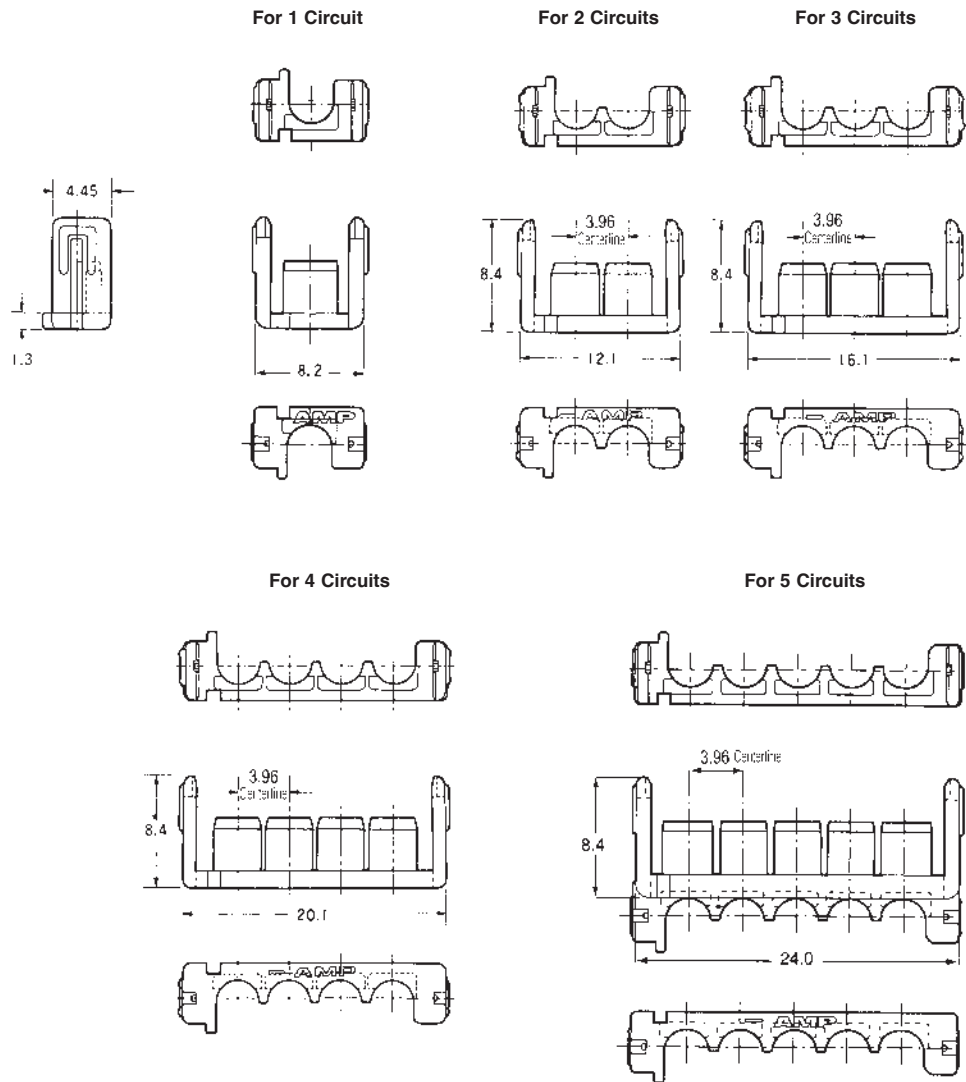
**Part Number**

- 316770-1 (1 Pos.)
- 177918-1 (2 Pos.)
- 177919-1 (3 Pos.)
- 177920-1 (4 Pos.)
- 177921-1 (5 Pos.)

**Related Product Data**

**Plug Housings**—pages 62-64

**Cap Housings**—pages 65-70



High Density

Power Double Lock (PDL) Connectors  
.156 [3.96] Centerlines

No. of Pos.	Applicable Housing Part No.			Double Lock Plate	
	Plug Housing	Cap Housing		Part Number	Required Qty.
		Free-Hanging	Panel Mount		
1	316768-□	316769-□	—	316770-1 (1 Pos.)	1
2	177898-□	179463-□	177906-□	177918-1 (2 Pos.)	1
3	177899-□	179464-□	177907-□	177919-1 (3 Pos.)	1
4 (1 Row)	316501-□	—	316502-□	177920-1 (4 Pos.)	1
4 (2 Rows)	177900-□	179465-□	177908-□	177918-1 (2 Pos.)	2
6	177901-□	179466-□	177909-□	177919-1 (3 Pos.)	2
8	177902-□	179467-□	—	177920-1 (4 Pos.)	2
9	177903-□	—	177911-□	177919-1 (3 Pos.)	3
10	177904-□	—	177912-□	177921-1 (5 Pos.)	2
12	177905-□	—	177913-□	177920-1 (4 Pos.)	3

**Note:** All dimensions shown are metric.

**Note:** All part numbers are RoHS Compliant.

**Power Double Lock (PDL) Connectors (Wire-to-Board)**

**3.96 mm Centerline for PC Board Mount Tab Header, Vertical**

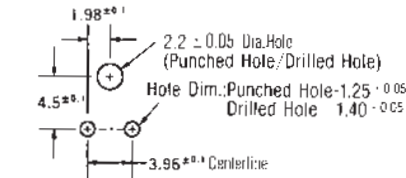
**2 Circuits**  
**Wire-to-Board**

**Material and Finish**  
**Housing**—UL 94V-0, glass filled 6/6 Nylon  
**Contact**—Copper alloy, Tin plated

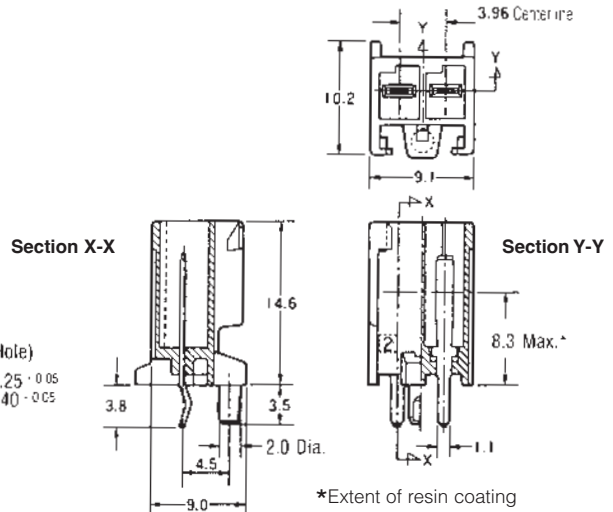
**Part Number**  
 179838-1 (Natural)  
 179838-2 (Red)  
 179838-4 (Yellow)  
 179838-6 (Blue)  
 179838-9 (Black)

**Tube** (53 ea.)—316299-□

**Related Product Data**  
**Mating Plug Housing**  
 (Free-Hanging)—pages 62-64



**PC Board Layout**  
 (Applicable Board Thickness: 1.6 mm)

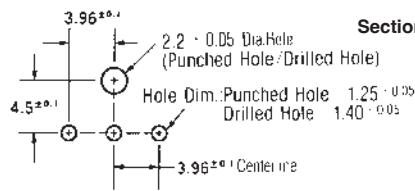


**3 Circuits**  
**Wire-to-Board**

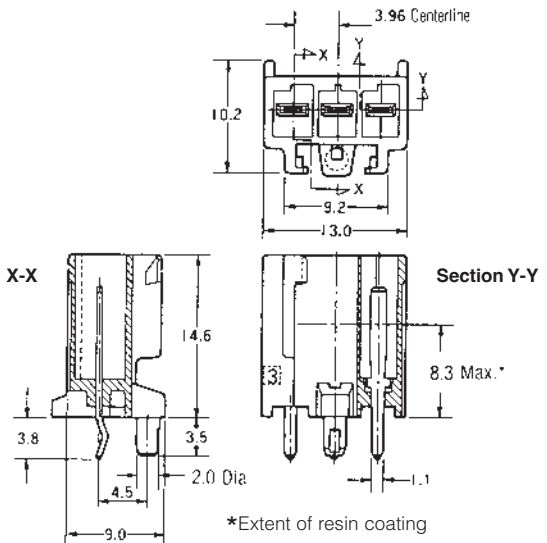
**Material and Finish**  
**Housing**—UL 94V-0, glass filled 6/6 Nylon  
**Contact**—Copper alloy, Tin plated

**Part Number**  
 179839-1 (Natural)  
 179839-2 (Red)  
 179839-4 (Yellow)  
 179839-6 (Blue)  
 179839-9 (Black)

**Related Product Data**  
**Mating Plug Housing**  
 (Free-Hanging)—pages 62-64



**PC Board Layout**  
 (Applicable Board Thickness: 1.6 mm)



**Note:** All dimensions shown are metric.  
**Note:** All part numbers are RoHS Compliant.

**Power Double Lock (PDL) Connectors (Wire-to-Board)** (Continued)

High Density

Power Double Lock (PDL) Connectors  
.156 [3.96] Centerlines

**3.96 mm Centerline for PC Board Mount Tab Header, Vertical** (Continued)

**4 Circuits (2 Rows)**

Wire-to-Board

**Material and Finish**

**Housing**—UL 94V-0, glass filled 6/6 Nylon.

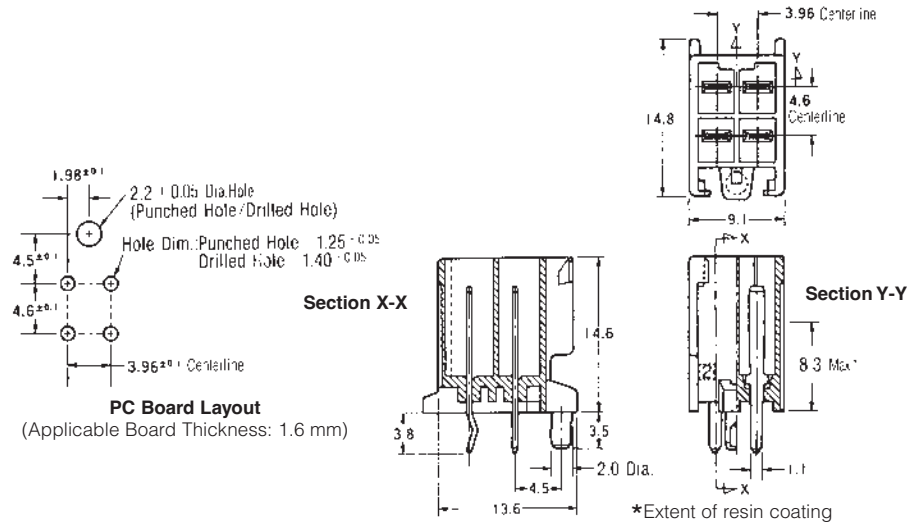
**Contact**—Copper alloy, Tin plated

**Part Number**

- 179840-1 (Natural)
- 179840-4 (Yellow)
- 179840-6 (Blue)

**Related Product Data**

**Mating Plug Housings**  
(Free-Hanging)—pages 62-64



**6 Circuits**

Wire-to-Board

**Material and Finish**

**Housing**—UL 94V-0, glass filled 6/6 Nylon.

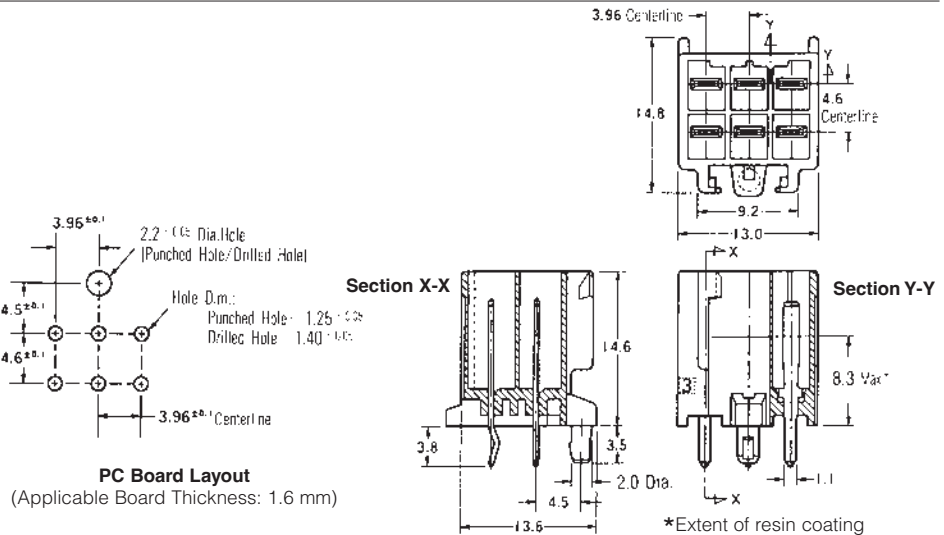
**Contact**—Copper alloy, Tin plated

**Part Number**

- 179841-1 (Natural)
- 179841-4 (Yellow)
- 179841-6 (Blue)

**Related Product Data**

**Mating Plug Housings**  
(Free-Hanging)—pages 62-64



**8 Circuits**

Wire-to-Board

**Material and Finish**

**Housing**—UL 94V-0, glass filled 6/6 Nylon.

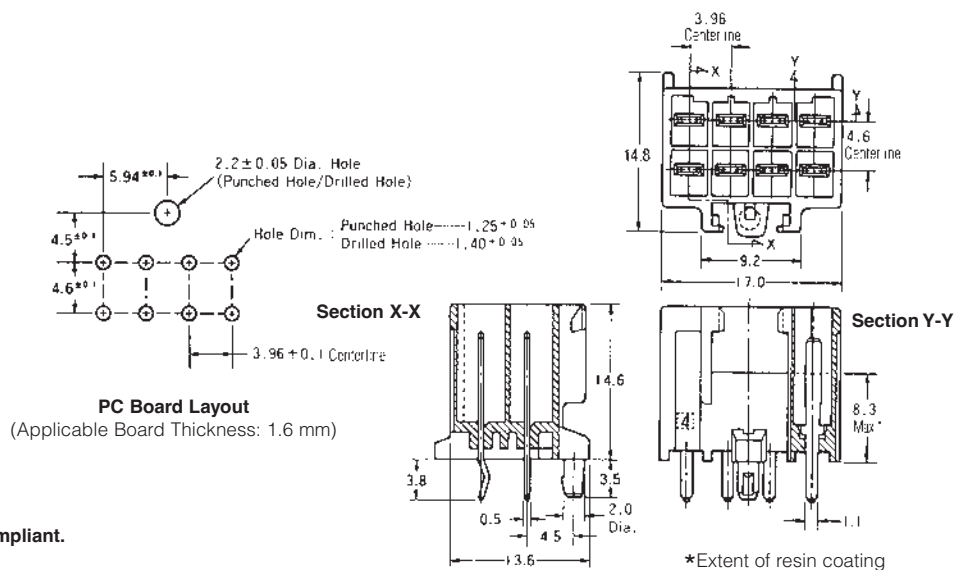
**Contact**—Copper alloy, Tin plated

**Part Number**

- 917845-1 (Natural)
- 917845-4 (Yellow)
- 917845-6 (Blue)

**Related Product Data**

**Mating Plug Housings**  
(Free-Hanging)—pages 62-64



**Note:** All dimensions shown are metric.

**Note:** All part numbers are RoHS Compliant.

**Power Double Lock (PDL) Connectors (Wire-to-Board)** (Continued)

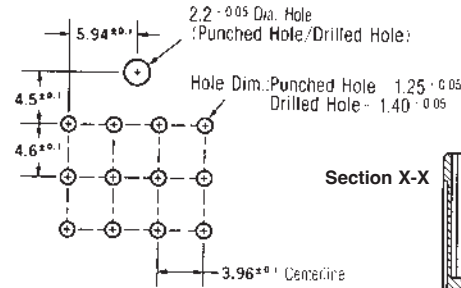
**3.96 mm Centerline for PC Board Mount Tab Header, Vertical**

**12 Circuits**  
**Wire-to-Board**

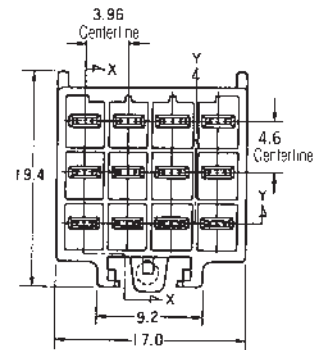
**Material and Finish**  
**Housing**—UL 94V-0, glass filled 6/6 Nylon  
**Contact**—Copper alloy, Tin plated

**Part Number**  
179843-1 (Natural)  
179843-4 (Yellow)  
179843-6 (Blue)

**Related Product Data**  
**Mating Plug Housings**  
(Free-Hanging)—pages 62-64

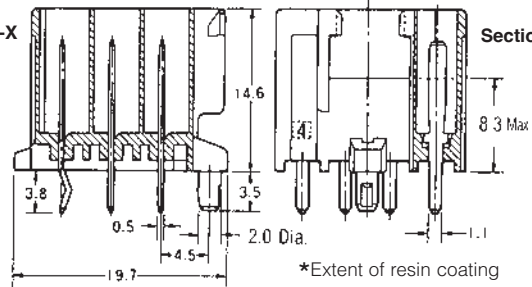


**PC Board Layout**  
(Applicable Board Thickness: 1.6 mm)



**Section X-X**

**Section Y-Y**



\*Extent of resin coating

**3.96 mm Centerline (2 Pos. = 7.92 mm Centerline) for PC Board Mount Tab Header, Vertical**

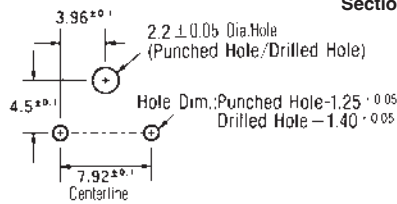
**2 Circuits**  
**Wire-to-Board**

**Material and Finish**  
**Housing**—UL 94V-0, glass filled 6/6 Nylon  
**Contact**—Copper alloy, Tin plated

**Part Number**  
With kink  
179844-1 (Natural)  
179844-2 (Red)  
179844-4 (Yellow)  
179844-6 (Blue)  
179844-9 (Black)

Without kink  
9-179844-1 (Natural)  
9-179844-6 (Blue)

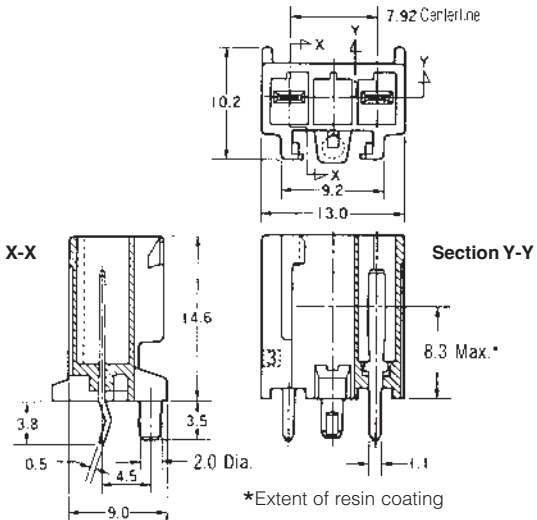
**Related Product Data**  
**Mating 3-Circuit Plug Housings**  
(Free-Hanging)—page 62



**PC Board Layout**  
(Applicable Board Thickness: 1.6 mm)

**Section X-X**

**Section Y-Y**



\*Extent of resin coating

**Note:** All dimensions shown are metric.  
**Note:** All part numbers are RoHS Compliant.

**Power Double Lock (PDL) Connectors (Wire-to-Board and Wire-to-Wire)** (Continued)

High Density  
Power Double Lock (PDL) Connectors  
.256 [6.50] Centerlines

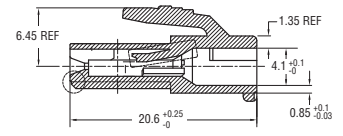
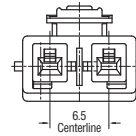
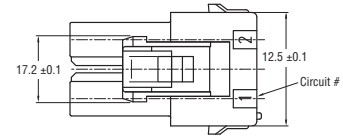
**6.5 mm Centerline Free-Hanging Plug Housing**

**2 Circuits**  
**Wire-to-Board**

**Material**  
UL 94V-0, 6/6 Nylon

**Part Number**  
1939344-1 (Natural)

**Related Product Data**  
**Receptacle Contacts**—page 61  
**Double Lock Plate**—page 77  
**Mating Tab Headers**—pages 79-81

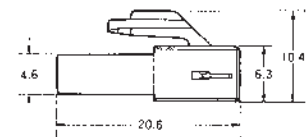
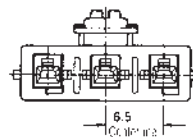
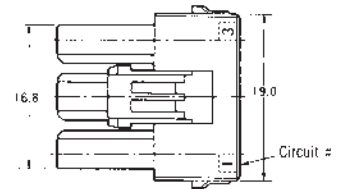


**3 Circuits**  
**Wire-to-Board**

**Material**  
UL 94V-0, 6/6 Nylon

**Part Number**  
179938-1 (Natural)  
179938-2 (Red)  
179938-4 (Yellow)  
179938-6 (Blue)  
179938-9 (Black)

**Related Product Data**  
**Receptacle Contacts**—page 61  
**Double Lock Plate**—page 77  
**Mating Tab Headers**—pages 79-81

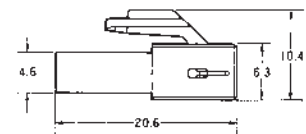
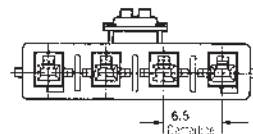
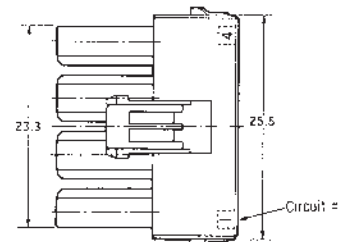


**4 Circuits (1 Row)**  
**Wire-to-Board**

**Material**  
UL 94V-0, 6/6 Nylon

**Part Number**  
179939-1 (Natural)  
179939-4 (Yellow)  
179939-6 (Blue)  
179939-9 (Black)

**Related Product Data**  
**Receptacle Contacts**—page 61  
**Double Lock Plate**—page 77  
**Mating Tab Headers**—pages 79-81

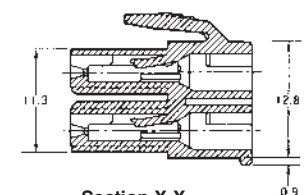
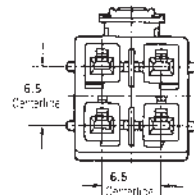
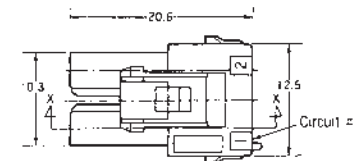
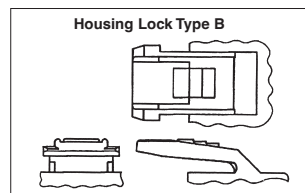


**4 Circuits (2 Rows)**  
**Wire-to-Board**

**Material**  
UL 94V-0, 6/6 Nylon

**Part Number**  
**Housing Lock Type A**  
179861-1 (Natural)  
179861-4 (Yellow)  
179861-6 (Blue)  
**Housing Lock Type B**  
2-179861-1 (Natural)  
2-179861-4 (Yellow)  
2-179861-6 (Blue)

**Related Product Data**  
**Receptacle Contacts**—page 61  
**Double Lock Plate**—page 77  
**Mating Tab Headers**—pages 79-81



**Note:** All dimensions shown are metric.

**Note:** All part numbers are RoHS Compliant.

**Power Double Lock (PDL) Connectors (Wire-to-Board and Wire-to-Wire)** (Continued)

**6.5 mm Centerline Free-Hanging Plug Housing**

**6 Circuits**

**Wire-to-Board**

**Material**

UL 94V-0, 6/6 Nylon

**Part Number**

Housing Lock Type A  
179862-1 (Natural)  
179862-4 (Yellow)  
179862-6 (Blue)

**Housing Lock Type B**

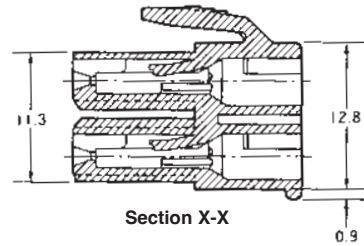
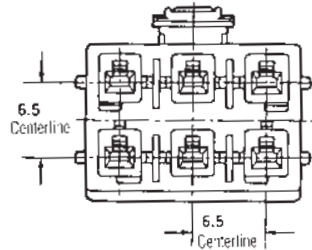
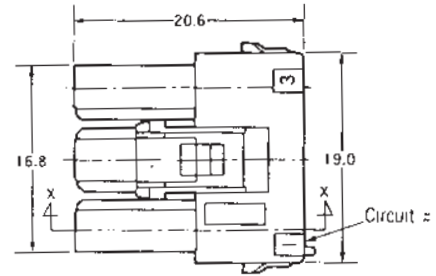
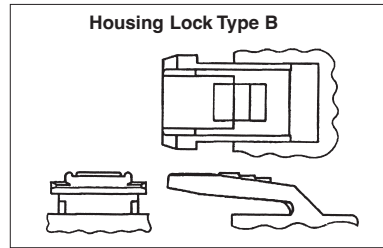
2-179862-1 (Natural)  
2-179862-4 (Yellow)  
2-179862-6 (Blue)

**Related Product Data**

**Receptacle Contacts**—page 61

**Double Lock Plate**—page 77

**Mating Tab Headers**—pages 79-81



**12 Circuits**

**Wire-to-Board**

**Material**

UL 94V-0, 6/6 Nylon.

**Part Number**

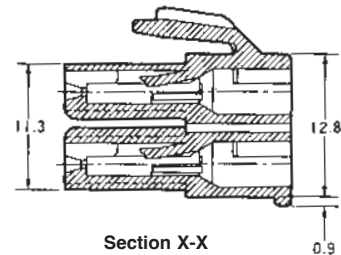
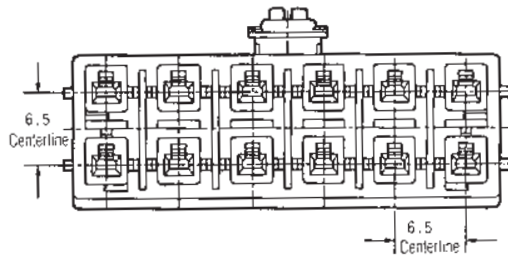
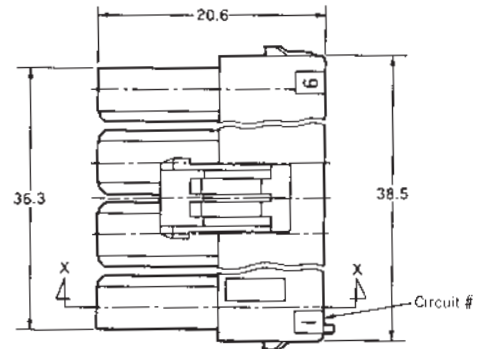
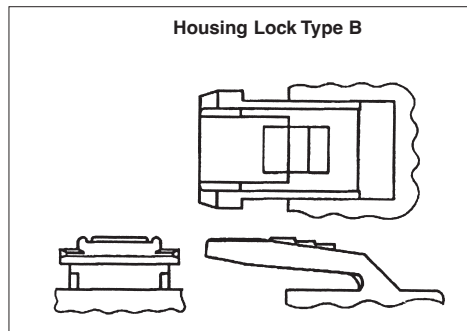
Housing Lock Type A  
917354-1 (Natural)  
Housing Lock Type B  
2-917354-1 (Natural)

**Related Product Data**

**Receptacle Contacts**—page 61

**Double Lock Plate**—page 77

**Mating Tab Headers**—pages 79-81



**Note:** All dimensions shown are metric.

**Note:** All part numbers are RoHS Compliant.

**Power Double Lock (PDL) Connectors (Wire-to-Board and Wire-to-Wire)** (Continued)

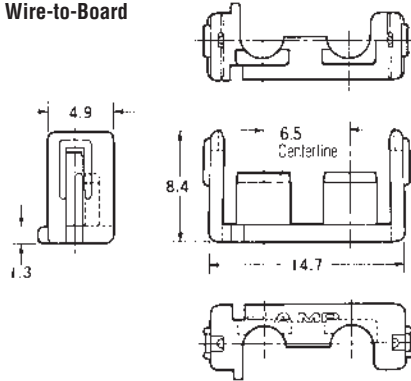
**6.5 mm Centerline Double-Lock Plates**

**Material**  
UL94V-0, glass filled  
6/6 Nylon, natural color

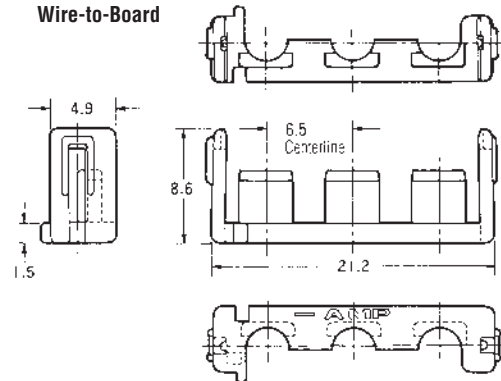
**Part Number**  
316061-1 (2-Circuits)  
316062-1 (3-Circuits)  
316063-1 (4-Circuits)  
353891-1 (6-Circuits)

**Related Product Data**  
**Plug Housings**  
(Free-Hanging)—pages 75-76

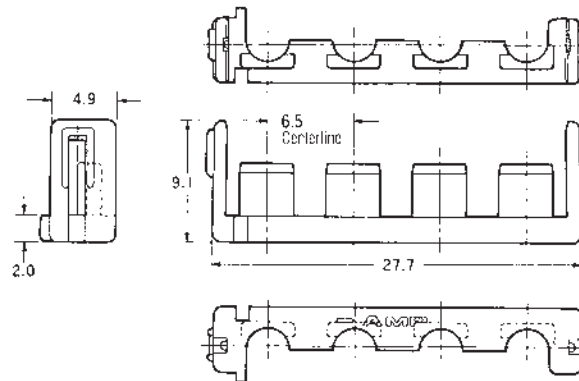
**For 2 Circuits**  
**Wire-to-Board**



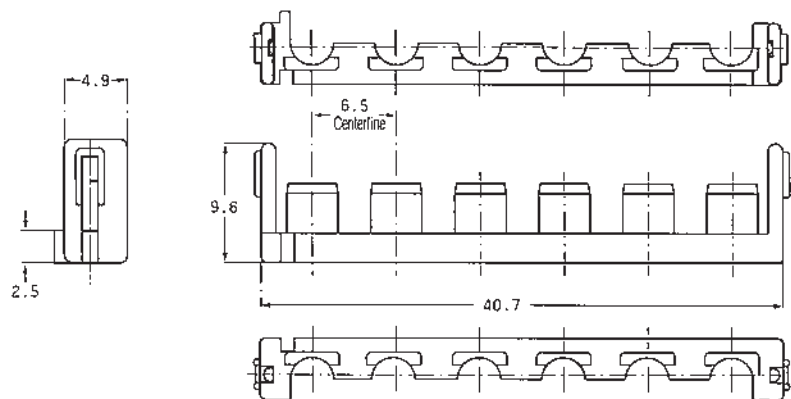
**For 3 Circuits**  
**Wire-to-Board**



**For 4 Circuits**  
**Wire-to-Board**



**For 6 Circuits**  
**Wire-to-Board**



No. of Pos.	Applicable Plug Housing Part No.	Double Lock Plate	
		Part Number	Required Qty.
3	179938-□	316062-1	1
4 (1 Row)	179939-□	316063-1	1
4 (2 Rows)	179861-□	316061-1	2
6	179862-□	316062-1	2
12	917354-□	353891-1	2

**Note:** All dimensions shown are metric.

**Note:** All part numbers are RoHS Compliant.

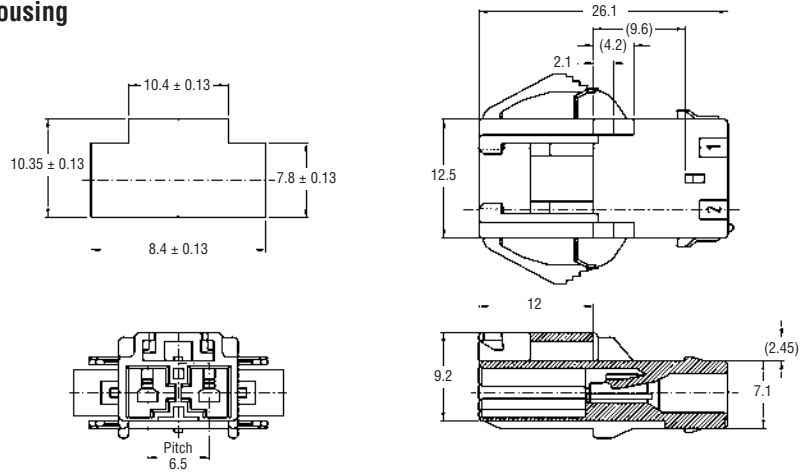
**Power Double Lock (PDL) Connectors (Wire-to-Board)** (Continued)

**6.5 mm Centerline Panel Mount Cap Housing**

**2 Circuits**  
Wire-to-Wire

**Material and Finish**  
**Housing**—UL 94V-0, glass filled 6/6 Nylon  
**Contact**—Copper alloy, Tin plated

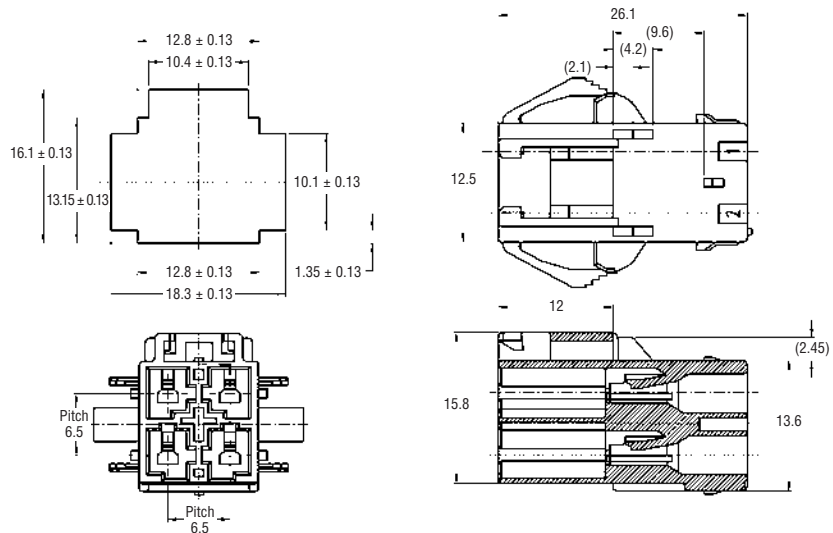
**Part Number**  
1939343-1 (Natural)



**4 Circuits**  
Wire-to-Wire

**Material and Finish**  
**Housing**—UL 94V-0, glass filled 6/6 Nylon  
**Contact**—Copper alloy, Tin plated

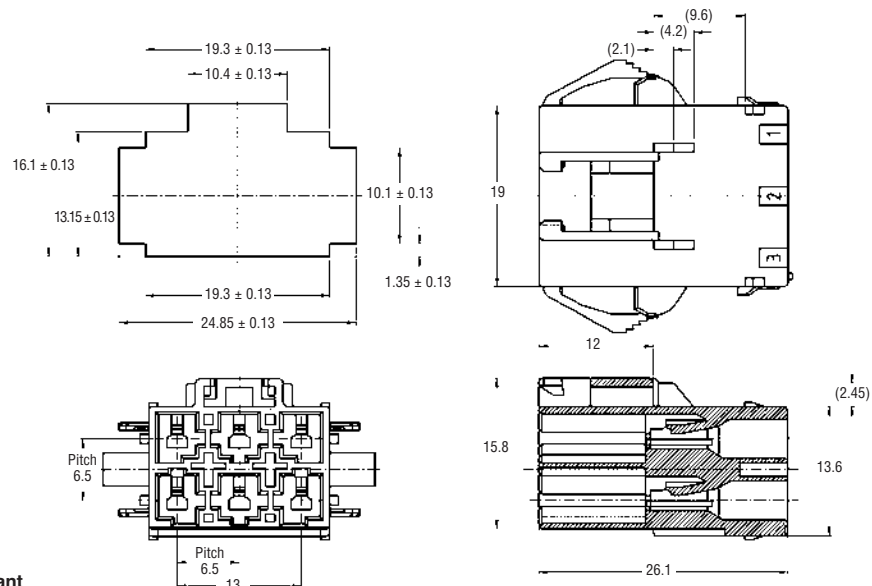
**Part Number**  
1903486-1 (Natural)



**6 Circuits**  
Wire-to-Wire

**Material and Finish**  
**Housing**—UL 94V-0, glass filled 6/6 Nylon  
**Contact**—Copper alloy, Tin plated

**Part Number**  
1903487-1 (Natural)



**Note:** All dimensions shown are metric.  
**Note:** All part numbers are RoHS Compliant

High Density

Power Double Lock (PDL) Connectors  
256 [6.50] Centerlines

**Power Double Lock (PDL) Connectors (Wire-to-Board)** (Continued)

High Density

Power Double Lock (PDL) Connectors  
.256 [6.50] and .512 [13.00] Centerlines

**6.5 mm Centerline (2 Pos.=13 mm Centerline) PC Board Mount Tab Header, Vertical**

**3 Circuits**

Wire-to-Board

**Material and Finish**

**Housing**—UL 94V-0, glass filled 6/6 Nylon

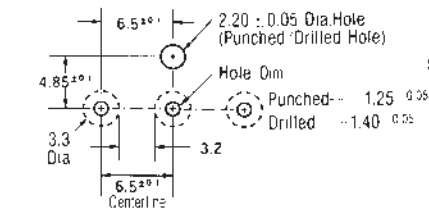
**Contact**—Copper alloy, Tin plated

**Part Number**

- 179846-1 (Natural)
- 179846-4 (Yellow)
- 179846-6 (Blue)

**Related Product Data**

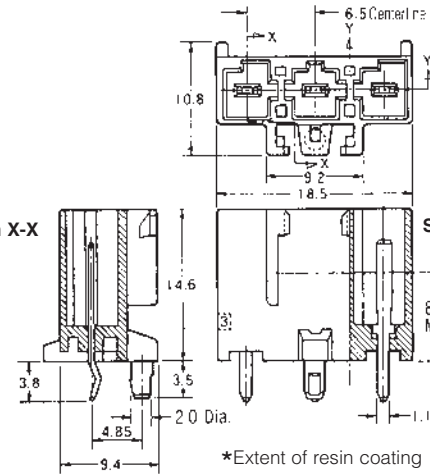
**Mating Plug Housings**  
(Free-Hanging)—pages 75-76



**PC Board Layout**

(Applicable Board Thickness: 1.6 mm)

Section X-X



\*Extent of resin coating

**2 Circuits**  
(13 mm Centerline)

Wire-to-Board

**Material and Finish**

**Housing**—UL 94V-0, glass filled 6/6 Nylon

**Contact**—Copper alloy, Tin plated

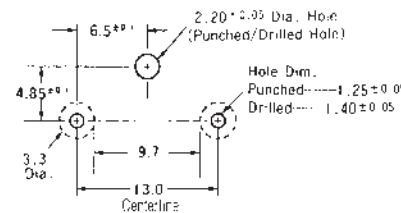
**Part Number**

- 917745-1 (Natural)
- 917745-4 (Yellow)
- 917745-6 (Blue)

Tube (26 ea.)—917746-□

**Related Product Data**

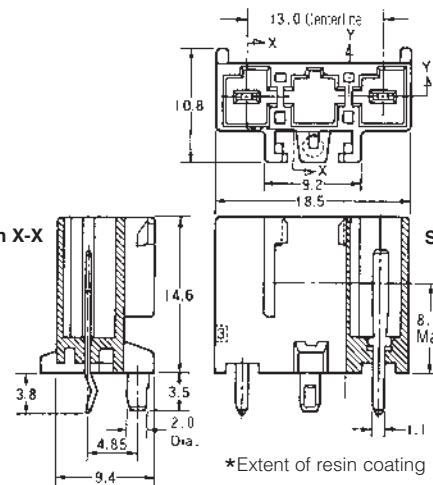
**Mating 3-Circuit Plug Housings**  
(Free-Hanging)—page 75



**PC Board Layout**

(Applicable Board Thickness: 1.6 mm)

Section X-X



\*Extent of resin coating

**4 Circuits (1 Row)**

Wire-to-Board

**Material and Finish**

**Housing**—UL 94V-0, glass filled 6/6 Nylon

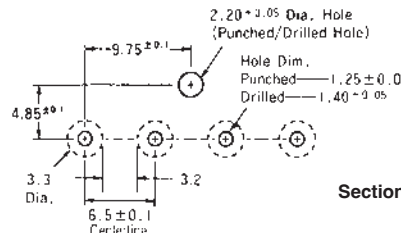
**Contact**—Copper alloy, Tin plated

**Part Number**

- 179847-1 (Natural)
- 179847-4 (Yellow)
- 179847-6 (Blue)

**Related Product Data**

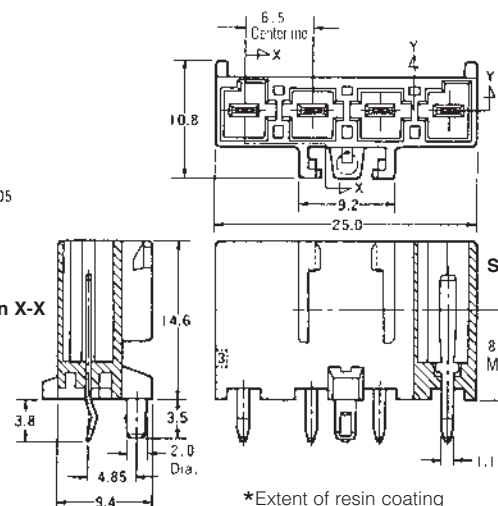
**Mating Plug Housings**  
(Free-Hanging)—pages 75-76



**PC Board Layout**

(Applicable Board Thickness: 1.6 mm)

Section X-X



\*Extent of resin coating

**Note:** All dimensions shown are metric.

**Note:** All part numbers are RoHS Compliant.

**Power Double Lock (PDL) Connectors (Wire-to-Board)** (Continued)

**6.5 mm Centerline PC Board Mount Tab Header, Vertical**

**4 Circuits (2 Rows)**

Wire-to-Board

**Material and Finish**

**Housing**—UL 94V-0, glass filled 6/6 Nylon

**Contact**—Copper alloy, Tin plated

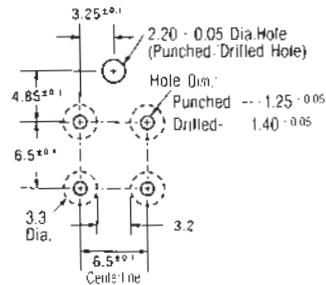
**Part Number**

- 179848-1 (Natural)
- 179848-4 (Yellow)
- 179848-6 (Blue)

Tube (40 ea.)—917747-□

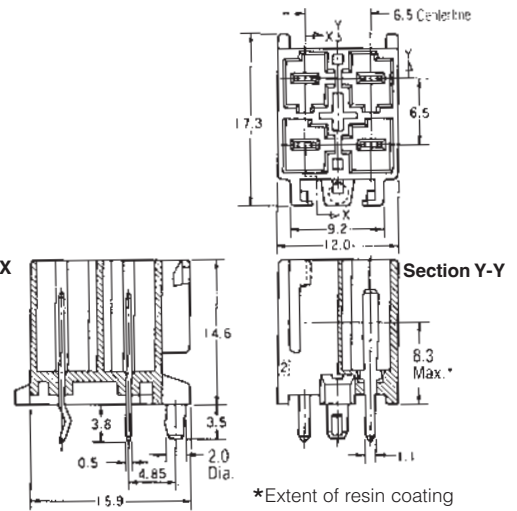
**Related Product Data**

**Mating Plug Housings**  
(Free-Hanging)—pages 75-76



**PC Board Layout**

(Applicable Board Thickness: 1.6 mm)



**6 Circuits**

Wire-to-Board

**Material and Finish**

**Housing**—UL 94V-0, glass filled 6/6 Nylon

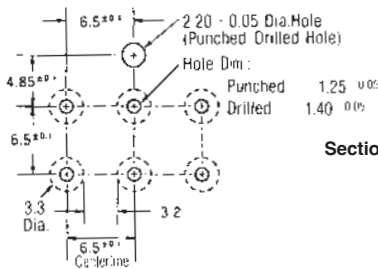
**Contact**—Copper alloy, Tin plated

**Part Number**

- 179849-1 (Natural)
- 179849-4 (Yellow)
- 179849-6 (Blue)

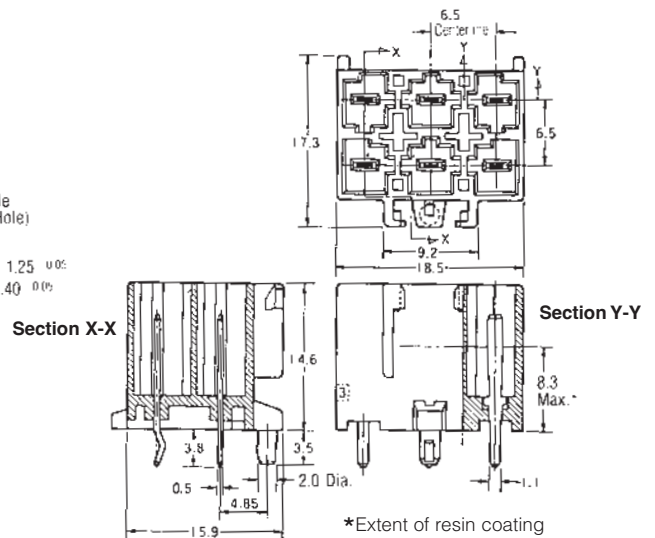
**Related Product Data**

**Mating Plug Housings**  
(Free-Hanging)—pages 75-76



**PC Board Layout**

(Applicable Board Thickness: 1.6 mm)



**Note:** All dimensions shown are metric.

**Note:** All part numbers are RoHS Compliant.

**Power Double Lock (PDL) Connectors (Wire-to-Board)** (Continued)

**6.5 mm Centerline PC Board Mount Tab Header, Vertical**

**12 Circuits**

**Wire-to-Board**

**Material and Finish**

**Housing**—UL 94V-0, glass filled 6/6 Nylon

**Contact**—Copper alloy, Tin plated

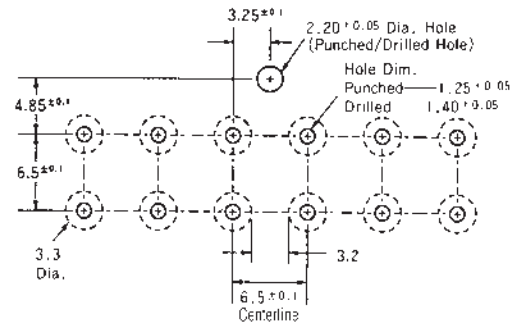
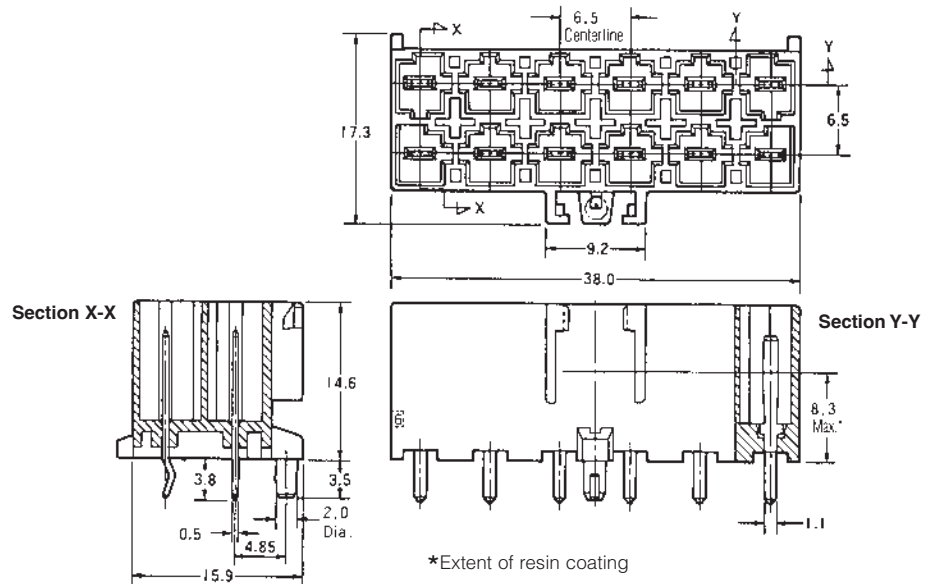
**Part Number**

With Boss, With kink  
917353-1 (Natural)

Without Boss, Without kink  
3-917353-1 (Natural)

**Related Product Data**

**Mating Plug Housings**  
(Free-Hanging)—pages 75-76



**PC Board Layout**

(Applicable Board Thickness: 1.6 mm)

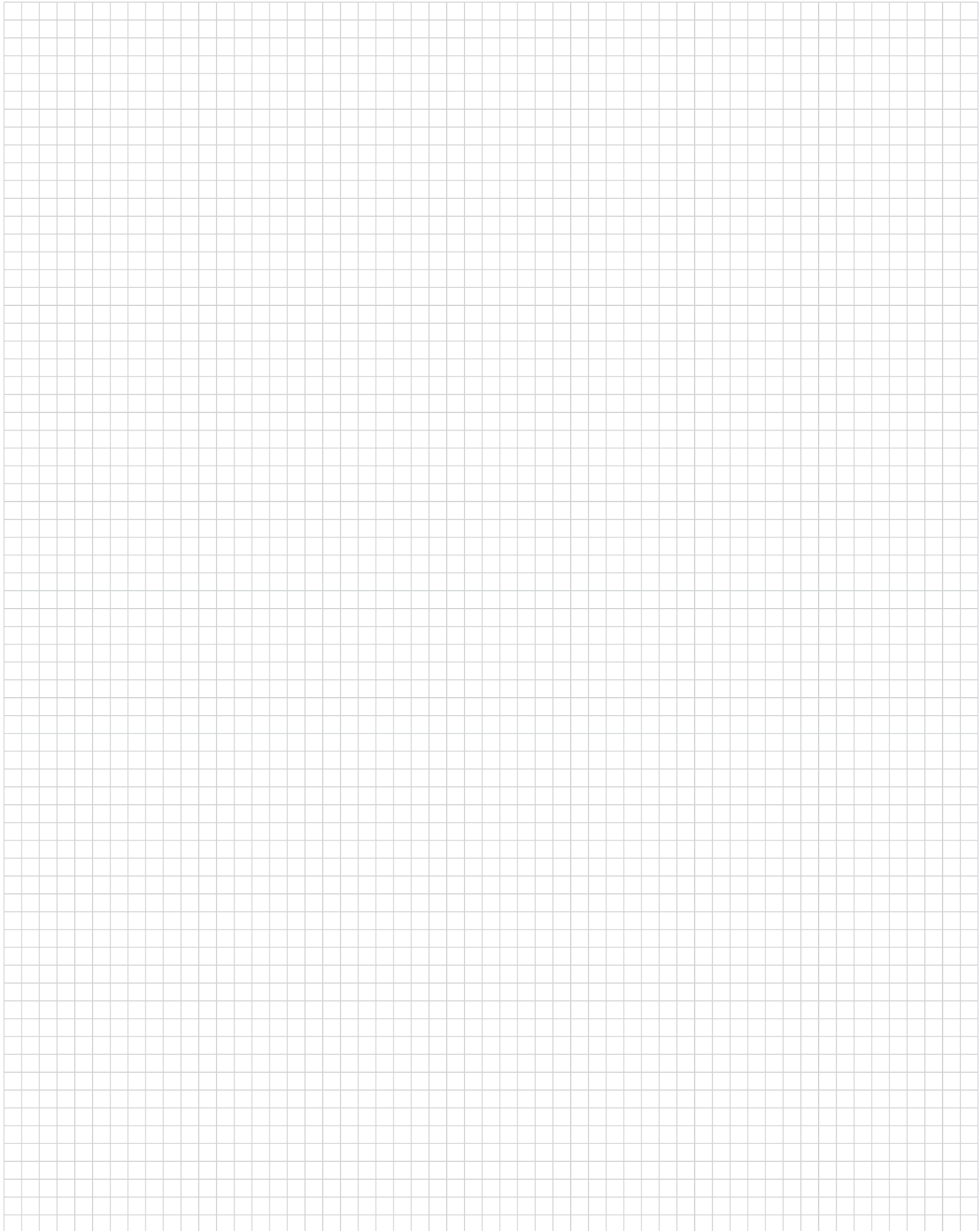
**Note:** All dimensions shown are metric.

**Note:** All part numbers are RoHS Compliant.

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## Engineering Notes

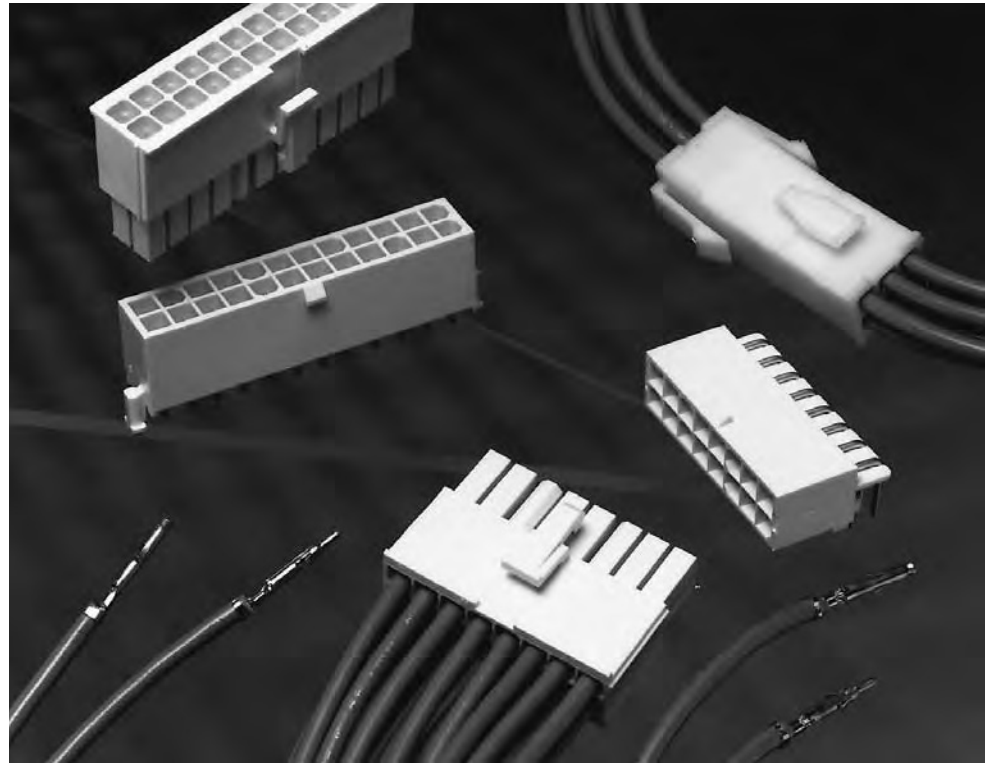
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## Mini-Universal MATE-N-LOK Connectors

### Product Facts

- Compact, durable housings
- Pins and sockets can be accommodated in the same housings
- Contacts fully protected in the housings. Both pins and sockets can be used on the power supply wiring
- Fully polarized to provide proper plug-to-cap mating incorporating a positive locking mechanism to help prevent accidental disengagement of mated connectors. Also facilitates panel mounting
- Free-hanging or panel mount
- Housings available in 1, 2, 3, 4, 6, 9, 12 and 15 circuit configuration for wire-to-wire connection
- Connectors can be mounted to .031-.079 [0.79-2.00] thick panels
- Printed circuit board pin headers are available in 2 thru 24 circuit vertical and right-angle configurations
- Hermaphroditic housings available in 2, 3 and 4 circuits for free-hanging applications
- Low insertion/extraction forces
- Contacts accept wire size range 30-16 AWG [.05-1.2 mm<sup>2</sup>]
- Test probe contacts available
- .163 [4.14] centerline spacing
- Not for interrupting current
- Recognized under the Component Program of Underwriters Laboratories Inc., File No. E28476 
- Certified by Canadian Standards Association, File No. LR 7189 



### Performance Characteristics

The Mini-Universal MATE-N-LOK Connector performance characteristics found on pages 83-84 are based on free-hanging and panel mount connectors, loaded with contacts crimped on stranded wire.

**Low Level Termination Resistance**  
20 milliohms max. total resistance between wire crimps of a mated pin and socket

**Dielectric Withstanding Voltage**—  
1.5 KVAC between adjacent circuits

**Insulation Resistance**—  
1000 megohms minimum between adjacent circuits

**Voltage Rating**—600 V AC or DC

**Contact Retention**—8 lb. min. per contact

**Durability**—20 cycles, mating and unmating

### Technical Documents

#### Product Specifications

- 108-1542 Mini-Universal MATE-N-LOK Connectors
- 108-1543 Mini-Universal MATE-N-LOK Headers
- 108-5151 Mini-Universal MATE-N-LOK Connectors (UL94V-2)
- 108-5138 Mini-Universal MATE-N-LOK Connectors (UL94V-0)

#### Application Specification

- 114-16017 Mini-Universal MATE-N-LOK Connectors

#### Instruction Sheets

- 408-3234 Mini-Universal MATE-N-LOK Connectors
- 411-5105 Mini-Universal MATE-N-LOK Connectors

## Mini-Universal MATE-N-LOK Connectors (Continued)

### Performance Characteristics (Continued)

**Maximum Current**—Maximum current rating of Mini-Universal MATE-N-LOK connectors is limited by the maximum operating temperature of the housings which is 105°C including the temperature rise of the contacts which is a maximum of 30°C. There are several variables which have a direct effect on this maximum current-carrying capability for a given connector and must be considered for each application. These variables are:

**Wire Size**—Larger diameter wire will carry more current since it has less internal resistance to current flow and thus generates less heat. Longer wire lengths also enhance current-carrying capabilities since the wire conducts heat away from the connector.

**Connector Size**—In general, the more circuits in a connector, the less current can be carried.

**Ambient Temperature**—The higher the ambient temperature, the less current can be carried in any given connector.

**Printed Wiring Board Conductor Size**—The finished trace conductor width and thickness should be maximized to allow for the greatest current-carrying capacity and heat dissipation.

Mini-Universal MATE-N-LOK connectors also will withstand the following tests:

**Housing Panel Retention**—  
26 lb. min.

**Housing Lock Strength**—9 lb. min.

**Thermal Shock**—-55°C to +105°C

**Temperature-Humidity Cycling**—  
25°C to 65°C at 95 RH

**Vibration**—10-55-10 cycles per minute at .06 inch total excursion

**Physical Shock**—18 drops,  
50 G half-sine at 11 milliseconds

### Current Rating Verification for 30°C Maximum Temperature Rise 100% Energized

#### Wire-to-Wire

#### Mini-Universal MATE-N-LOK Connectors — Calculated Current Table

Number of Circuits	Wire AWG						
	16	18	20	22	24	26	30
2	9.50	9.00	7.50	6.00	5.00	4.00	3.00
3	8.50	8.00	7.00	5.50	4.50	4.00	3.00
4	8.00	7.00	6.00	5.00	4.50	3.50	2.50
6	7.00	6.50	5.50	4.50	4.00	3.00	2.50
9	6.00	5.50	4.50	4.00	3.50	3.00	2.00
12	6.00	5.50	4.50	3.50	3.00	2.50	2.00
15	5.50	5.00	4.00	3.50	3.00	2.50	2.00

Values are based on initial Temperature Rise versus Current Testing and are intended to be a guide in the selection of a connector family. All applications should be tested by the end user. The values listed are per circuit, for fully loaded housings being 100% energized. **Note:** All combinations above were not tested and this chart contains interpolated and extrapolated values.

#### Minimum Wire Lengths for T-Rise vs. Current Testing

AWG	Min. Length (in.)	AWG	Min. Length (in.)
30	2.6	18	9.4
28	3.2	16	11.3
26	4.1	14	13.7
24	5.1	12	16.4
20	7.8	10	19.3

**Note:** If wire lengths used are less than those listed above, the current-carrying ability of the system will be reduced due to less heat being conducted away from the connector. The customer should fully test all applications.

#### Wire-to-Board

Due to the vast differences in trace geometry and printed circuit board configurations, we are unable to provide a separate current carrying chart for our printed circuit board header products. However, the above Wire-to-Wire charts may be used as a guideline for headers if the trace width and thickness is equal to the listed wire gauge. For vertical headers, only 95% of the Wire-to-Wire value should be used. For right-angle headers, only 75% of the Wire-to-Wire value should be used. The chart values are only a tool for connector selection and will require the customer to fully test their application.

#### Termination Resistance/Contact Crimp Tensile Force

Wire Size		Termination Resistance		Contact Crimp Tensile Force	
AWG	mm <sup>2</sup>	Test Current (Amps)	Resistance Milliohms (Max. Init.)	Force (Min.)	
				lbs.	N
30	.05	—	—	—	—
28	.08	—	—	—	—
26	.12	—	—	4	18
24	.2	—	—	7	31
22	.3	—	—	11	49
20	.5	—	—	13	58
18	.8	—	—	15	67
16	1.2	—	—	18	80

**Mini-Universal MATE-N-LOK Connectors** (Continued)

**Mini-Universal MATE-N-LOK Connector Mating Combinations**

Connector Part Number					Mating Connector Part Number				
Number of Circuits	Flammability Rating	Style	Plug <sup>1</sup> Housing Part No.	Cap <sup>1</sup> Housing Part No.	PC Board Pin Headers				Right-Angle With Board Lock
					Plating	With Drain Holes	Vertical Without Drain Holes	Blindmate	
1	UL94V-2	In-Line	172335-1	172327-14	—	—	—	—	—
	UL94V-0	In-Line	172164-1	172156-14	Tin <sup>6</sup>	—	—	—	1-794374-0
2	UL94V-2	In-Line	172336-1	172328-12	Duplex <sup>5</sup>	—	—	—	1-794374-1
			172807-1 <sup>3</sup>	172343-14	—	—	—	—	—
	UL94V-0	In-Line	172165-1	172807-1 <sup>3</sup>	—	—	—	—	—
			794894-17	173956-1 <sup>3</sup>	—	—	—	—	—
			172808-1 <sup>3</sup>	172157-12	Tin <sup>6</sup>	1-770166-0	1-770872-0	—	1-770966-0
			172337-1	172233-14	Duplex <sup>5</sup>	1-770166-1	1-770872-1	—	1-770966-1
3	UL94V-2	In-Line	172809-1 <sup>3</sup>	794896-12,7	Tin/Duplex	1-770166-1	1-770872-1	—	1-770966-1
			172338-1	172808-1 <sup>3</sup>	—	—	—	—	—
			173957-1 <sup>3</sup>	172329-12	Tin	—	—	—	—
4	UL94V-0	In-Line	172166-1	172344-14	Duplex <sup>5</sup>	—	—	—	—
			172809-1 <sup>3</sup>	173957-1 <sup>3</sup>	—	—	—	—	—
			172338-1	172158-12	Tin	1-770170-0	1-770873-0	—	1-770967-0
6	UL94V-2	Dual Row	172339-1	172234-14	Duplex <sup>5</sup>	1-770170-1	1-770873-1	—	1-770967-1
			173958-1 <sup>3</sup>	172809-1 <sup>3</sup>	—	—	—	—	—
			172167-1	172330-12	—	—	—	—	—
8	UL94V-0	Dual Row	172168-1	173958-1 <sup>3</sup>	—	—	—	—	—
			794805-17	172159-12	Tin	1-770174-0	1-770874-0	1-794325-0	1-770968-0
			172339-1	172159-12	Duplex <sup>5</sup>	1-770174-1	1-770874-1	1-794325-1	1-770968-1
10	UL94V-2	Dual Row	172169-1	794939-12,7	Tin/Duplex	1-770174-1	1-770874-1	—	1-770968-1
			172340-1	172331-12	—	—	—	—	—
			172169-1	172160-12	Tin	1-770178-0	1-770875-0	1-794326-0	1-770969-0
12	UL94V-0	Dual Row	770579-1	172160-12	Duplex <sup>5</sup>	1-770178-1	1-770875-1	1-794326-1	1-770969-1
			794821-17	794940-12,7	Tin/Duplex	1-770178-1	1-770875-1	—	1-770969-1
			172340-1	172332-12	Tin	1-794065-0	1-794073-0	1-794327-0	1-770970-0
14	UL94V-2	Matrix	172340-1	794941-12,7	Duplex <sup>5</sup>	1-794065-1	1-794073-1	1-794327-1	1-770970-1
			172169-1	172332-12	Tin/Duplex	1-794065-1	1-794073-1	—	1-770970-1
			172169-1	172161-12	—	—	—	—	—
16	UL94V-0	Dual Row	770580-1	172161-12	Tin	1-770182-0	1-770876-0	1-794432-0	—
			794781-17	172161-12	Duplex <sup>5</sup>	1-770182-1	1-770876-1	1-794432-1	—
			172341-1	172333-12	Tin	1-770743-0	1-770858-0	1-794328-0	1-770971-0
18	UL94V-2	Matrix	172341-1	794942-12,7	Duplex <sup>5</sup>	1-770743-1	1-770858-1	1-794328-1	1-770971-1
			172170-1	172333-12	Tin/Duplex	1-770743-1	1-770858-1	—	1-770971-1
			172170-1	172162-12	—	—	—	—	—
20	UL94V-0	Dual Row	770581-1	172162-12	Tin	1-770186-0	1-794040-0	1-794329-0	—
			770581-1	172162-12	Duplex <sup>5</sup>	1-770186-1	1-794040-1	1-794329-1	—
			770581-1	—	Tin	1-794066-0	1-770621-0	—	1-770972-0
22	UL94V-2	Matrix	770582-1	—	Duplex <sup>5</sup>	1-794066-1	1-770621-1	—	1-770972-1
			172342-1	172334-12	Tin	1-794067-0	1-794074-0	—	1-770973-0
			172171-1	172334-12	Duplex <sup>5</sup>	1-794067-1	1-794074-1	—	1-770973-1
24	UL94V-0	Dual Row	770582-1	172334-12	—	—	—	—	—
			770582-1	172163-12	Tin	1-770190-0	1-770859-0	1-794330-0	—
			770582-1	172163-12	Duplex <sup>5</sup>	1-770190-1	1-770859-1	1-794330-1	—
26	UL94V-2	Matrix	770583-1	—	Tin	1-794068-0	1-794075-0	—	1-770974-0
			770583-1	—	Duplex <sup>5</sup>	1-794068-1	1-794075-1	—	1-770974-1
			770583-1	—	Tin	1-794069-0	1-794076-0	—	1-794105-0
28	UL94V-0	Dual Row	770584-1	—	Duplex <sup>5</sup>	1-794069-1	1-794076-1	—	1-794105-1
			770584-1	—	Tin	1-794070-0	1-794077-0	—	1-794106-0
			770584-1	—	Duplex <sup>5</sup>	1-794070-1	1-794077-1	—	1-794106-1
30	UL94V-2	Matrix	770585-1	—	Tin	1-794071-0	1-794078-0	—	1-794107-0
			770585-1	—	Duplex <sup>5</sup>	1-794071-1	1-794078-1	—	1-794107-1
			770585-1	—	Tin	1-794072-0	1-794079-0	—	1-794108-0
32	UL94V-0	Dual Row	770586-1	—	Duplex <sup>5</sup>	1-794072-1	1-794079-1	—	1-794108-1
			770586-1	—	—	—	—	—	—
			770586-1	—	—	—	—	—	—

<sup>1</sup>Mini-Universal MATE-N-LOK plug and cap housings accept pin or socket contacts. Use the appropriate contacts in the plug housing as required by the mating connector. All **Plugs** are **free-hanging** and **Caps** are **free-hanging** or **panel mount**, unless otherwise noted.

<sup>2</sup>Panel mount only.

<sup>3</sup>Hermaphroditic: Mates to itself.

<sup>4</sup>Free-hanging only.

<sup>5</sup>Duplex Finish — Plated with .000030 [.000762] min. gold in mating area and matte tin on solder tail end over .000050 [.00127] min. nickel underplate on entire contact.

<sup>6</sup>Tin Finish — Plated with .000150 [.00381] min. tin over .000050 [.00127] min. nickel underplate on entire contact.

<sup>7</sup>For Splash-Proof Sealing.

**Note: All part numbers are RoHS Compliant.**

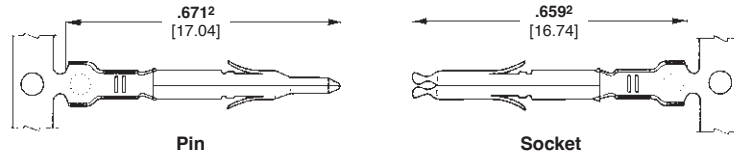
**Mini-Universal MATE-N-LOK Connectors (Continued)**

**Contacts**

Pin diameter .039 [0.99]

**Material**

Brass or Phosphor bronze  
Stock Thickness .008 [0.20]  
These contacts are to be used in Mini-Universal MATE-N-LOK Plug or Cap housings only.



**Related Product Data**

**Product Specifications**  
108-1542 Mini-Universal MATE-N-LOK Connectors  
108-1543 Mini-Universal MATE-N-LOK Headers

**Application Specification**

114-16017 Mini-Universal MATE-N-LOK Connectors

**Performance Characteristics** — pages 83-84

**Housings** — pages 87-89

**Technical Documents** — pages 83 and 205-206

**Application Tooling** — pages 207-210

Wire Size Range AWG [mm <sup>2</sup> ]	Ins. Dia. Range	Material and Finish	Contact Part Numbers				HDM Applicator Part No.	Hand Tool Part No.
			Pin		Socket			
			Strip Form	Loose Pieces	Strip Form	Loose Pieces		
30-26 [.05-.12]	.035-.050 [.889-1.27]	Brass, Pre-tin	770835-1	794059-1	770834-1	794058-1	567418-1 <sup>3</sup>	90717-2
		Phos. Brz., Pre-tin	—	—	770834-4	—	567418-2 <sup>3</sup>	
		Brass, Duplex <sup>1</sup>	1-770835-0	1-794059-0	1-770834-0	1-794058-0	567418-3 <sup>3</sup>	
26-22 [.12-.3]	.047-.069 [1.19-1.75]	Phos. Brz., Duplex <sup>1</sup>	—	—	1-770834-1	—	—	91529-1
		Brass, Pre-tin	770901-1	770985-1	770902-1	770986-1	567066-3 <sup>4</sup>	
		Phos. Brz., Pre-tin	—	—	770902-4	—	567066-4 <sup>4</sup>	
22-18 [.3-.8] or 22 x (2) [.3]	.059-.094 [1.50-2.39] or .067 x (2) [3.38]	Brass, Duplex <sup>1</sup>	1-770901-0	1-770985-0	1-770902-0	1-770986-0	567066-5 <sup>4</sup>	91522-1
		Phos. Brz., Duplex <sup>1</sup>	—	—	1-770902-1	—	567067-3 <sup>3</sup>	
		Brass, Pre-tin	770903-1	770987-1	770904-1	770988-1	567067-1 <sup>3</sup>	
20-16 [.5-1.2] or 20 x (2) [.5]	.079-.126 [2.01-3.20] or .075 x (2) [1.91]	Phos. Brz., Pre-tin	—	—	770904-4	—	567067-2 <sup>3</sup>	91536-1
		Brass, Duplex <sup>1</sup>	1-770903-0	1-770987-0	1-770904-0	1-770988-0	567067-3 <sup>3</sup>	
		Brass, Pre-tin	794406-12	171638-12	794407-12	171639-12	680582-2 <sup>3</sup>	
20 x (2) [.5]	.075 x (2) [1.91]	Phos. Brz., Duplex <sup>1</sup>	—	—	794407-4 <sup>2</sup>	—	680582-3 <sup>3</sup>	91536-1
		Brass, Duplex <sup>1</sup>	1-794406-0 <sup>2</sup>	—	1-794407-0 <sup>2</sup>	—	680582-3 <sup>3</sup>	
		Phos. Brz., Duplex <sup>1</sup>	—	—	1-794407-12	—	—	

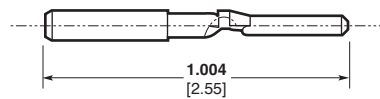
<sup>1</sup> Duplex Finish — Plated with .000030 [.000762] min. gold in mating area and .000100 [.00254] min. tin in crimping area over .000050 [.00127] min. nickel underplate on entire contact.  
<sup>2</sup> .671 [17.04] and .659 [16.74] dimensions are .689 [17.50] for indicated part numbers.  
<sup>3</sup> HDM Applicator part number ending in -1 is used on AMPOMATOR CLS Machine with T or G Terminators, -2 is used on AMP-O-LECTRIC Model K Machine, -3 is used on AMP-O-ELECTRIC Model G Machine. See pages 207-210 for further information.  
<sup>4</sup> HDM Applicator part number ending in -3 is used on AMPOMATOR CLS Machine with T or G Terminators, -4 is used on AMP-O-LECTRIC Model K Machine, -5 is used on AMP-O-LECTRIC Model G Machine. See pages 207-210 for further information.

**Note: All part numbers are RoHS Compliant.**

**Keying Plug**

**Material**

UL94V-0 Nylon, white color

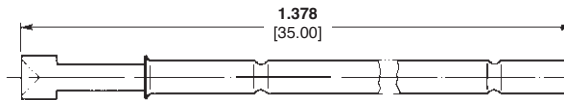


**Part Number**  
174670-1

**Test Probe Contact**

**Material and Finish**

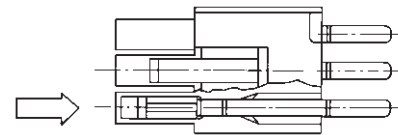
Phosphor bronze, nickel plated



**Part Number**  
172971-1

**Notes:**

1. The test probe is inserted into the housing in the same direction as indicated by the arrow shown to the right.
2. The test probe can be used in the Cap or Plug Housing.
3. Test probes are supplied unassembled.



**Contact Extraction Tool**  
No. 189727-1  
IS 408-4118



**Contact Insertion Tool**  
(For inserting contacts applied to small diameter wire)  
No. 91002-1  
IS 408-7347

High Density

Mini-Universal MATE-N-LOK Connectors  
.163 [4.14] Centerline

## Mini-Universal MATE-N-LOK Connectors (Continued)

### Housings

#### Free-Hanging or Panel Mount

.163 [4.14] Centerline spacing

#### Related Product Data

##### Product Specifications

108-1542 Mini-Universal MATE-N-LOK Connectors

108-1543 Mini-Universal MATE-N-LOK Headers

108-5151 Mini-Universal MATE-N-LOK Connectors (UL94V-2)

108-5138 Mini-Universal MATE-N-LOK Connectors (UL94V-0)

##### Performance Characteristics—

pages 83-84

**Contacts** — page 86

**Keying Plug** — page 86

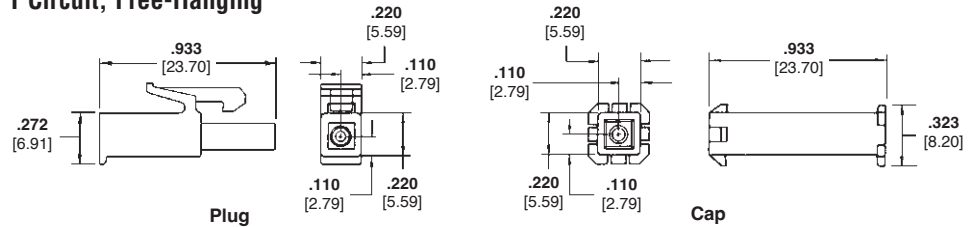
**Test Probe Contact** — page 86

**Panel Cutout Recommendations**— page 89

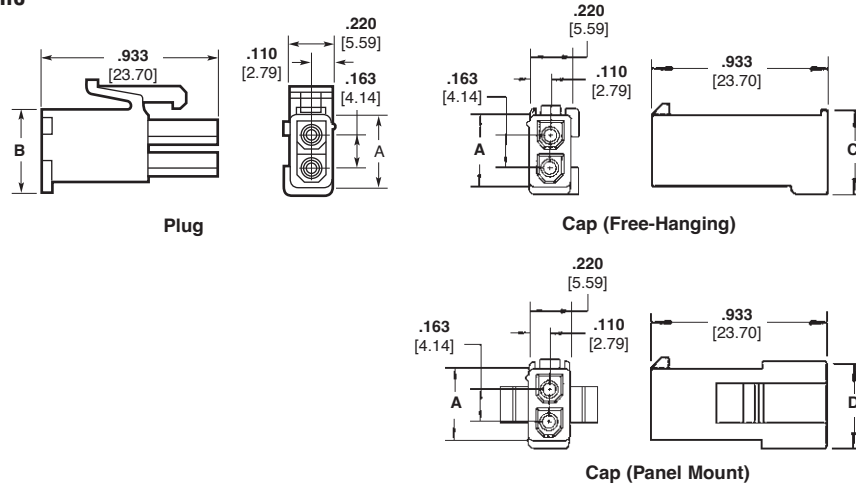
**Technical Documents**— pages 83 and 205-206

**Mating Headers** — pages 90-92

### 1 Circuit, Free-Hanging



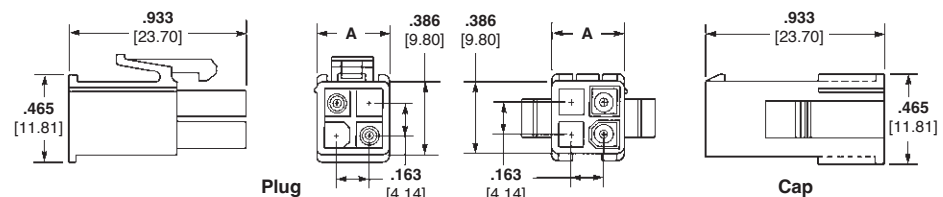
### 2 and 3 Circuit, In-Line



Number of Circuits	Dimensions				Housing Part Numbers <sup>1</sup>					
					UL94V-0 Nylon, White Color			UL94V-2 Nylon, Natural Color		
	A	B	C	D	Plug	Panel Mount	Free-Hanging	Plug	Panel Mount	Free-Hanging
1	—	—	—	—	172164-1	—	172156-1	172335-1	—	172327-1
2	.386 9.80	.425 10.79	.488 12.39	.464 11.78	172165-1	172157-1	172233-1	172336-1	172328-1	172343-1
3	.551 14.00	.591 15.01	.654 16.61	.630 16.00	172166-1	172158-1	172234-1	172337-1	172329-1	172344-1

Note: All part numbers are RoHS Compliant.

### 4 and 6 Circuit, Dual Row



Number of Circuits	A Dim.	Housing Part Numbers <sup>1</sup>			
		UL94V-0 Nylon, White Color		UL94V-2 Nylon, Natural Color	
		Plug	Cap	Plug	Cap
4	.386 9.80	172167-1	172159-1	172338-1	172330-1
6	.551 14.00	172168-1	172160-1	172339-1	172331-1

<sup>1</sup>Housing part numbers shown in both charts (above) are also available in other colors: Red, Green, Blue, Black. To order connectors in these colors use the appropriate dash numbers as follows: Red 1-XXXXXX-2, Green 1-XXXXXX-5, Blue 1-XXXXXX-6, Black 1-XXXXXX-9

Note: All part numbers are RoHS Compliant.

**Mini-Universal MATE-N-LOK Connectors** (Continued)

**Housings**

.163 [4.14] Centerline spacing

**Related Product Data**

- Product Specifications**  
 108-1542 Mini-Universal MATE-N-LOK Connectors  
 108-1543 Mini-Universal MATE-N-LOK Headers  
 108-5151 Mini-Universal MATE-N-LOK Connectors (UL94V-2)  
 108-5138 Mini-Universal MATE-N-LOK Connectors (UL94V-0)

**Performance Characteristics**—  
pages 83-84

**Contacts** — page 86

**Keying Plug** — page 86

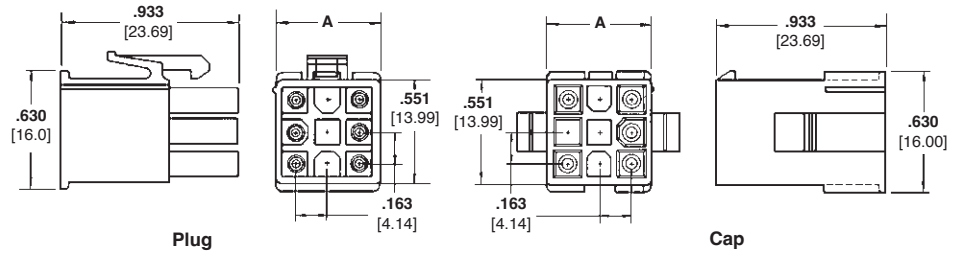
**Test Probe Contact** — page 86

**Panel Cutout Recommendations**—  
page 89

**Technical Documents**— pages 83  
and 205-206

**Mating Headers** — pages 90-92

**9, 12 and 15 Circuit,  
Free-Hanging or Panel Mount, Matrix**

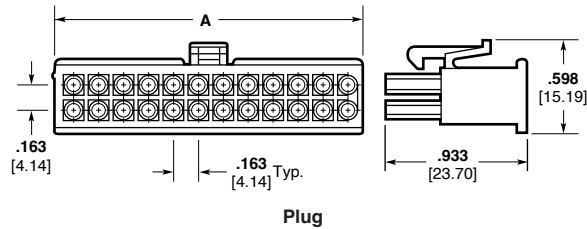


Number of Circuits	A Dim.	Housing Part Numbers <sup>1</sup>			
		UL94V-0 Nylon, White Color		UL94V-2 Nylon, Natural Color	
		Plug	Cap	Plug	Cap
9	.551 13.99	172169-1	172161-1	172340-1	172332-1
12	.716 18.19	172170-1	172162-1	172341-1	172333-1
15	.882 22.40	172171-1	172163-1	172342-1	172334-1

<sup>1</sup>Housing part numbers shown in chart are also available in other colors: Red, Green, Blue, Black. To order connectors in these colors use the appropriate dash numbers as follows: Red 1-XXXXXX-2, Green 1-XXXXXX-5, Blue 1-XXXXXX-6, Black 1-XXXXXX-9

**Note:** All part numbers are RoHS Compliant.

**8 thru 24 Circuit,  
Free-Hanging, Dual Row**



Number of Circuits	A Dim.	Part Number UL94V-0 Nylon, White Color Plug
8	.714 18.14	770579-1
10	.877 22.28	770580-1
12	1.040 26.42	770581-1
14	1.203 30.56	770582-1
16	1.366 34.70	770583-1
18	1.529 38.84	770584-1
20	1.692 42.98	770585-1
22	1.855 47.12	770586-1
24	2.018 51.26	770587-1

**Note:** All part numbers are RoHS Compliant.

Mini-Universal MATE-N-LOK Connectors .163 [4.14] Centerline

High Density

**Mini-Universal MATE-N-LOK Connectors** (Continued)

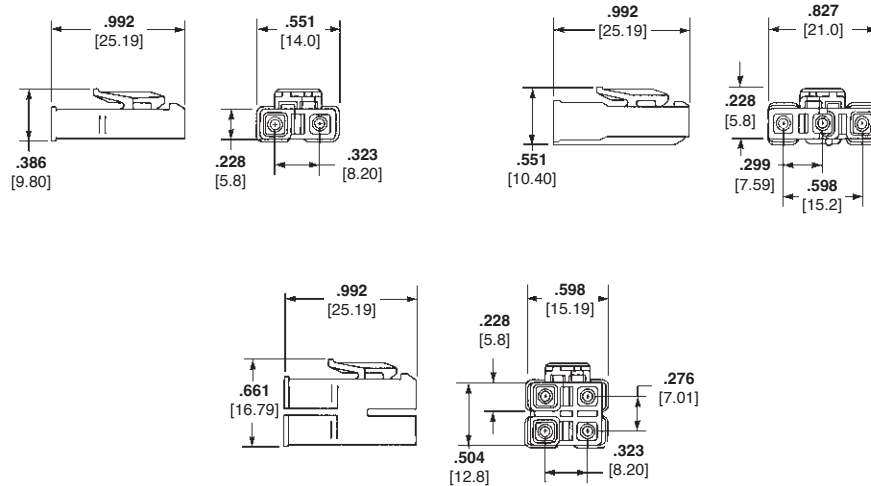
**Housings**  
**Hermaphroditic**  
**Free-Hanging**

**2, 3 and 4 Circuit**

**Related Product Data**

- Product Specifications**  
 108-1542 Mini-Universal MATE-N-LOK Connectors  
 108-1543 Mini-Universal MATE-N-LOK Headers  
 108-5151 Mini-Universal MATE-N-LOK Connectors (UL94V-2)  
 108-5138 Mini-Universal MATE-N-LOK Connectors (UL94V-0)

- Performance Characteristics**— pages 83-84  
**Contacts** — page 86  
**Cap Housings** — pages 87-89  
**Technical Documents**— pages 83 and 205-206

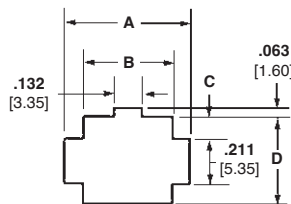


Number of Circuits	Part Numbers	
	UL94V-2 Nylon, Natural Color	UL94V-0 Nylon, White Color
2	172807-1	173956-1
3	172808-1	173957-1
4	172809-1	173958-1

**Note:** Housing mates to itself; 2 required per wire-to-wire connection.  
**Note:** All part numbers are RoHS Compliant.

**Recommended Cap Housing Panel Cutouts**

View is from cap entry side  
 Recommended Panel Thickness .031—.079 [.79 – 2.01]



Number of Circuits	Dimensions			
	A	B	C	D
2	.421 10.69	.242 6.15	.098 2.49	.407 10.3
3	.421 10.69	.242 6.15	.181 4.60	.573 14.55
4	.587 14.91	.407 10.34	.098 2.49	.407 10.3
6	.752 19.10	.573 14.55	.098 2.49	.407 10.3
9	.752 19.10	.573 14.55	.181 4.60	.573 14.55
12	.917 23.29	.738 18.75	.181 4.60	.573 14.55
15	1.080 27.43	.904 22.96	.181 4.60	.573 14.55

**Mini-Universal MATE-N-LOK Connectors** (Continued)

**Vertical PC Board Pin Headers**

.163 [4.14] Centerline spacing

**Material**

**Housing** — Nylon, white

**Flammability Rating** — UL94V-0

**Contacts** — Brass

Solder tail diameter .039 [1.00]

**Related Product Data**

**Product Specifications**

- 108-1542 Mini-Universal MATE-N-LOK Connectors
- 108-1543 Mini-Universal MATE-N-LOK Headers
- 108-5151 Mini-Universal MATE-N-LOK Connectors (UL94V-2)
- 108-5138 Mini-Universal MATE-N-LOK Connectors (UL94V-0)

**Performance Characteristics** — pages 83-84

**Recommended PC Board Hole Layouts** — page 93

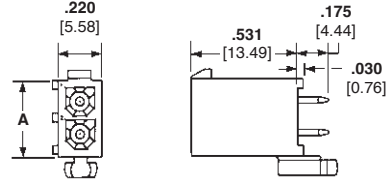
**Technical Documents** — pages 83 and 205-206

**Mating Connectors**

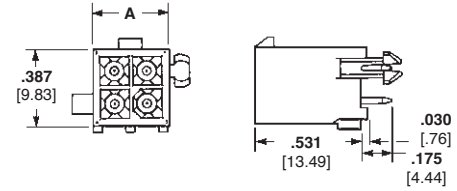
**Mini-Universal MATE-N-LOK**  
Plug Housings — pages 87-89

**Mini-Universal MATE-N-LOK 2**  
Plug Housings — pages 101-102

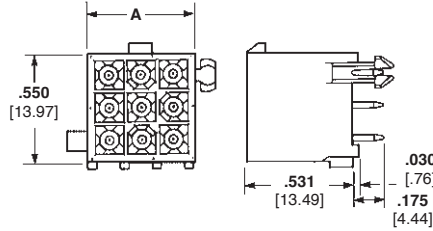
**2 and 3 Circuit, In-Line**



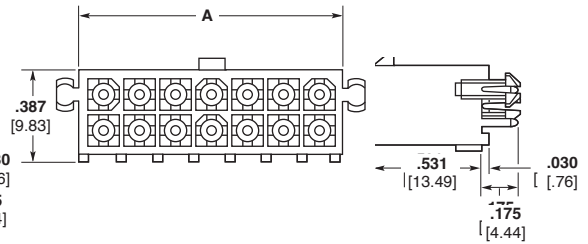
**4, 6, 8, 10 and 12 Circuit, Dual Row**



**9, 12 and 15 Circuit, Matrix**



**14, 16, 18, 20, 22 and 24 Circuit, Dual Row**



Number of Circuits	Style	A Dim.	Pin Finish	Vertical Pin Header Part Numbers		Mates with Plug Housing Part Number (Using Socket Contact)	
				With Drain Holes	Without Drain Holes	Mini-Universal MATE-N-LOK	Mini-Universal MATE-N-LOK 2
2	In-Line	.387 9.83	Tin <sup>1</sup>	1-770166-0	1-770872-0	172165-1	794184-1
			Duplex <sup>2</sup>	1-770166-1	1-770872-1		
3	In-Line	.550 13.97	Tin <sup>1</sup>	1-770170-0	1-770873-0	172166-1	794186-1
			Duplex <sup>2</sup>	1-770170-1	1-770873-1		
4	Dual Row	.387 9.83	Tin <sup>1</sup>	1-770174-0	1-770874-0	172167-1	794188-1
			Duplex <sup>2</sup>	1-770174-1	1-770874-1		
6	Dual Row	.550 13.97	Tin <sup>1</sup>	1-770178-0	1-770875-0	172168-1	794190-1
			Duplex <sup>2</sup>	1-770178-1	1-770875-1		
8	Dual Row	.713 18.11	Tin <sup>1</sup>	1-794065-0	1-794073-0	770579-1	794192-1
			Duplex <sup>2</sup>	1-794065-1	1-794073-1		
9	Matrix	.551 14.00	Tin <sup>1</sup>	1-770182-0	1-770876-0	172169-1	794194-1
			Duplex <sup>2</sup>	1-770182-1	1-770876-1		
10	Dual Row	.877 22.28	Tin <sup>1</sup>	1-770743-0	1-770858-0	770580-1	794196-1
			Duplex <sup>2</sup>	1-770743-1	1-770858-1		
12	Dual Row	1.039 26.39	Tin <sup>1</sup>	1-794066-0	1-770621-0	770581-1	794198-1
			Duplex <sup>2</sup>	1-794066-1	1-770621-1		
12	Matrix	.713 18.11	Tin <sup>1</sup>	1-770186-0	1-794040-0	172170-1	794200-1
			Duplex <sup>2</sup>	1-770186-1	1-794040-1		
14	Dual Row	1.202 30.53	Tin <sup>1</sup>	1-794067-0	1-794074-0	770582-1	794202-1
			Duplex <sup>2</sup>	1-794067-1	1-794074-1		
15	Matrix	.877 22.28	Tin <sup>1</sup>	1-770190-0	1-770859-0	172171-1	794204-1
			Duplex <sup>2</sup>	1-770190-1	1-770859-1		
16	Dual Row	1.365 34.67	Tin <sup>1</sup>	1-794068-0	1-794075-0	770583-1	794206-1
			Duplex <sup>2</sup>	1-794068-1	1-794075-1		
18	Dual Row	1.528 38.81	Tin <sup>1</sup>	1-794069-0	1-794076-0	770584-1	794208-1
			Duplex <sup>2</sup>	1-794069-1	1-794076-1		
20	Dual Row	1.691 42.95	Tin <sup>1</sup>	1-794070-0	1-794077-0	770585-1	794210-1
			Duplex <sup>2</sup>	1-794070-1	1-794077-1		
22	Dual Row	1.854 47.09	Tin <sup>1</sup>	1-794071-0	1-794078-0	770586-1	794212-1
			Duplex <sup>2</sup>	1-794071-1	1-794078-1		
24	Dual Row	2.017 51.23	Tin <sup>1</sup>	1-794072-0	1-794079-0	770587-1	794214-1
			Duplex <sup>2</sup>	1-794072-1	1-794079-1		

<sup>1</sup> Tin Finish — Plated with .000150 [.00381] min. tin over .000050 [.00127] min. nickel underplate on entire contact.  
<sup>2</sup> Duplex Finish — Plated with .000030 [.000762] min. gold in mating area and matte tin on solder tail end over .000050 [.00127] min. nickel underplate on entire contact.

**Note:** All part numbers are RoHS Compliant.

High Density

Mini-Universal MATE-N-LOK Connectors  
.163 [4.14] Centerline

**Mini-Universal MATE-N-LOK Connectors** (Continued)

**Vertical PC Board  
Blindmate Pin Headers**

.163 [4.14] Centerline spacing

**Material**

**Housing** — Nylon, white

**Flammability Rating** — UL94V-0

**Contacts** — Brass

Solder tail diameter .039 [1.00]

**Related Product Data**

**Product Specifications**

108-1693 Mini-Universal MATE-N-LOK 2 Connectors

108-1694 Mini-Universal MATE-N-LOK 2 Headers

**Performance Characteristics** — pages 83-84

**Recommended PC Board Hole Layouts** — page 93

**Technical Documents** — pages 83 and 205-206

**Mating Connectors**

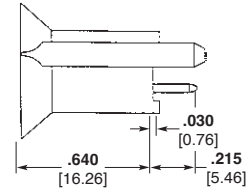
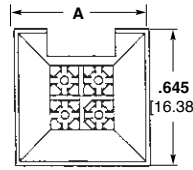
**Mini-Universal MATE-N-LOK**

Plug Housings — pages 87-89

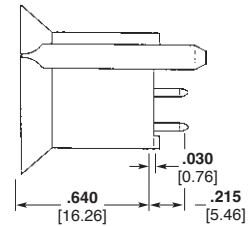
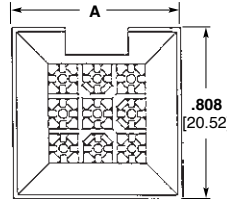
**Mini-Universal MATE-N-LOK 2**

Plug Housings — pages 101-102

**4, 6, 8 and 10 Circuit,  
Dual Row**



**9, 12 and 15 Circuit,  
Matrix**



Number of Circuits	Style	A Dim.	Pin Finish	Pin Header Part Numbers With Drain Holes	Mates with Plug Housing Part Number (Using Socket Contacts)	
					Mini-Universal MATE-N-LOK	Mini-Universal MATE-N-LOK 2
4	Dual Row	.645 16.38	Tin <sup>1</sup>	1-794325-0	172167-1	794188-1
			Duplex <sup>2</sup>	1-794325-1		
6	Dual Row	.808 20.52	Tin <sup>1</sup>	1-794326-0	172168-1	794190-1
			Duplex <sup>2</sup>	1-794326-1		
8	Dual Row	.971 24.66	Tin <sup>1</sup>	1-794327-0	770579-1	794192-1
			Duplex <sup>2</sup>	1-794327-1		
9	Matrix	.808 20.52	Tin <sup>1</sup>	1-794432-0	172169-1	794194-1
			Duplex <sup>2</sup>	1-794432-1		
10	Dual Row	1.134 28.80	Tin <sup>1</sup>	1-794328-0	770580-1	794196-1
			Duplex <sup>2</sup>	1-794328-1		
12	Matrix	.971 24.66	Tin <sup>1</sup>	1-794329-0	172170-1	794200-1
			Duplex <sup>2</sup>	1-794329-1		
15	Matrix	1.134 28.80	Tin <sup>1</sup>	1-794330-0	172171-1	794204-1
			Duplex <sup>2</sup>	1-794330-1		

<sup>1</sup> Tin Finish — Plated with .000150 [.00381] min. tin over .000050 [.00127] min. nickel underplate on entire contact.

<sup>2</sup> Duplex Finish — Plated with .000030 [.000762] min. gold in mating area and matte tin on solder tail end over .000050 [.00127] min. nickel underplate on entire contact.

**Note: All part numbers are RoHS Compliant.**

High Density

Mini-Universal MATE-N-LOK Connectors  
.163 [4.14] Centerline

**Mini-Universal MATE-N-LOK Connectors** (Continued)

**Right-Angle PC Board Pin Headers**

.163 [4.14] Centerline spacing

**Material**

**Housing**— Nylon, white color

**Flammability Rating**— UL94V-0

**Contacts**— Brass

Solder tail diameter .039 [1.00]

**Related Product Data**

**Product Specification**

108-1694 Mini-Universal  
MATE-N-LOK 2 Headers

**Performance Characteristics**—  
pages 83-84

**Recommended PC Board Hole  
Layouts**—page 93

**Technical Documents**— pages 83  
and 205-206

**Mating Connectors**

**Mini-Universal MATE-N-LOK**

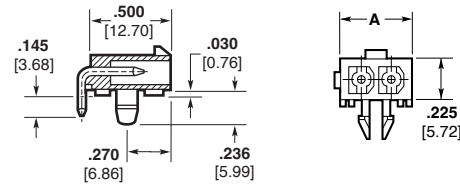
Plug Housings—pages 87-89

**Mini-Universal MATE-N-LOK 2**

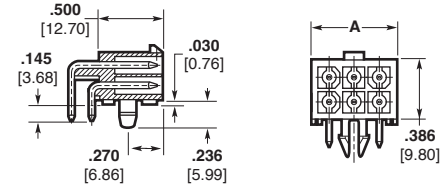
Plug Housings—pages 101-102

**With Board Lock Feature**

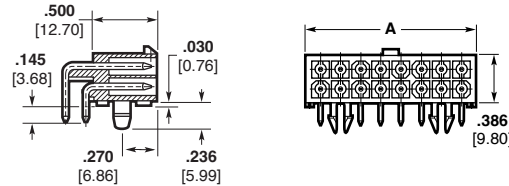
**1, 2 and 3 Circuit, In-Line**



**4, 6, 8, 10 and 12 Circuit, Dual Row**



**14, 16, 18, 20, 22 and 24 Circuit, Dual Row**



Number of Circuits	Style	A Dim.	Pin Finish	Pin Header Part Number With Board Lock	Mates with Plug Housing Part Number (Using Socket Contacts)	
					Mini-Universal MATE-N-LOK	Mini-Universal MATE-N-LOK 2
1	—	.225 5.72	Tin <sup>1</sup>	1-794374-0	172164-1	—
			Duplex <sup>2</sup>	1-794374-1		
2	In-Line	.388 9.86	Tin <sup>1</sup>	1-770966-0	172165-1	794184-1
			Duplex <sup>2</sup>	1-770966-1		
3	In-Line	.551 14.00	Tin <sup>1</sup>	1-770967-0	172166-1	794186-1
			Duplex <sup>2</sup>	1-770967-1		
4	Dual Row	.388 9.86	Tin <sup>1</sup>	1-770968-0	172167-1	794188-1
			Duplex <sup>2</sup>	1-770968-1		
6	Dual Row	.551 14.00	Tin <sup>1</sup>	1-770969-0	172168-1	794190-1
			Duplex <sup>2</sup>	1-770969-1		
8	Dual Row	.714 18.14	Tin <sup>1</sup>	1-770970-0	770579-1	794192-1
			Duplex <sup>2</sup>	1-770970-1		
10	Dual Row	.877 22.28	Tin <sup>1</sup>	1-770971-0	770580-1	794196-1
			Duplex <sup>2</sup>	1-770971-1		
12	Dual Row	1.040 26.42	Tin <sup>1</sup>	1-770972-0	770581-1	794198-1
			Duplex <sup>2</sup>	1-770972-1		
14	Dual Row	1.203 30.56	Tin <sup>1</sup>	1-770973-0	770582-1	794202-1
			Duplex <sup>2</sup>	1-770973-1		
16	Dual Row	1.366 34.70	Tin <sup>1</sup>	1-770974-0	770583-1	794206-1
			Duplex <sup>2</sup>	1-770974-1		
18	Dual Row	1.529 38.84	Tin <sup>1</sup>	1-794105-0	770584-1	794208-1
			Duplex <sup>2</sup>	1-794105-1		
20	Dual Row	1.692 42.98	Tin <sup>1</sup>	1-794106-0	770585-1	794210-1
			Duplex <sup>2</sup>	1-794106-1		
22	Dual Row	1.855 47.12	Tin <sup>1</sup>	1-794107-0	770586-1	794212-1
			Duplex <sup>2</sup>	1-794107-1		
24	Dual Row	2.018 51.26	Tin <sup>1</sup>	1-794108-0	770587-1	794214-1
			Duplex <sup>2</sup>	1-794108-1		

<sup>1</sup>Tin Finish — Plated with .000150 [.00381] min. tin over .000050 [.00127] min. nickel underplate on entire contact.

<sup>2</sup>Duplex Finish — Plated with .000030 [.000762] min. gold in mating area and matte tin on solder tail end over .000050 [.00127] min. nickel underplate on entire contact.

**Note:** All part numbers are RoHS Compliant.

High Density

Mini-Universal MATE-N-LOK Connectors  
.163 [4.14] Centerline

**Mini-Universal MATE-N-LOK Connectors (Continued)**

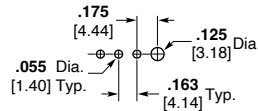
**Recommended PC Board Hole Layouts for Vertical and Blindmate Headers**

.062 [1.57] thick board, tolerances non-accumulative

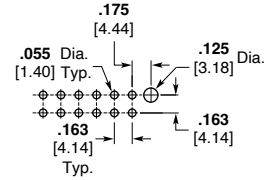
**Related Product Data**

Vertical Headers—pages 90-91

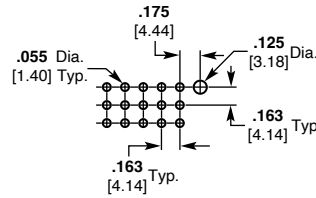
**2 and 3 Circuit, In-Line**



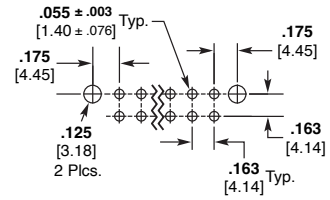
**4, 6, 8, 10 and 12 Circuit, Dual Row**



**9, 12 and 15 Circuit, Matrix**



**14, 16, 18, 20, 22 and 24 Circuit, Dual Row**



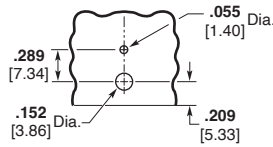
**Recommended PC Board Hole Layouts for Right-Angle Headers**

.062 [1.57] thick board, tolerances non-accumulative

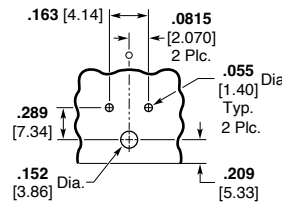
**Related Product Data**

Right-Angle Headers—page 92

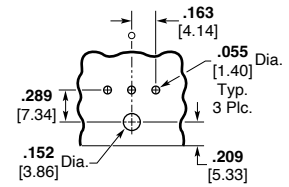
**1 Circuit**



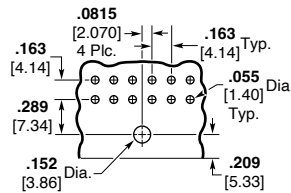
**2 Circuit, In-Line**



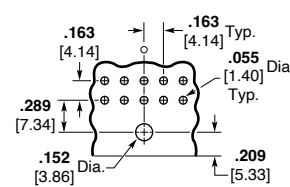
**3 Circuit, In-Line**



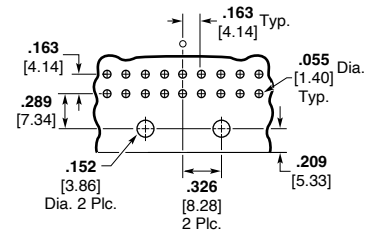
**4, 8 and 12 Circuit, Dual Row**



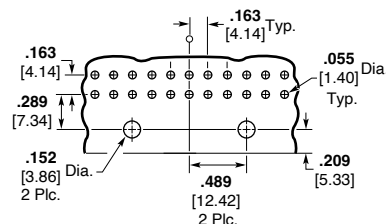
**6 and 10 Circuit, Dual Row**



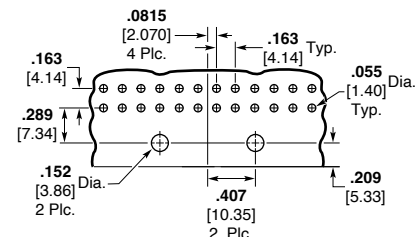
**14 and 18 Circuit, Dual Row**



**22 Circuit, Dual Row**



**16, 20 and 24 Circuit, Dual Row**



High Density

Mini-Universal MATE-N-LOK Connectors  
.163 [4.14] Centerline

**Mini-Universal MATE-N-LOK Connectors (Continued)**

**Strain Reliefs for Plug or Cap Housings**

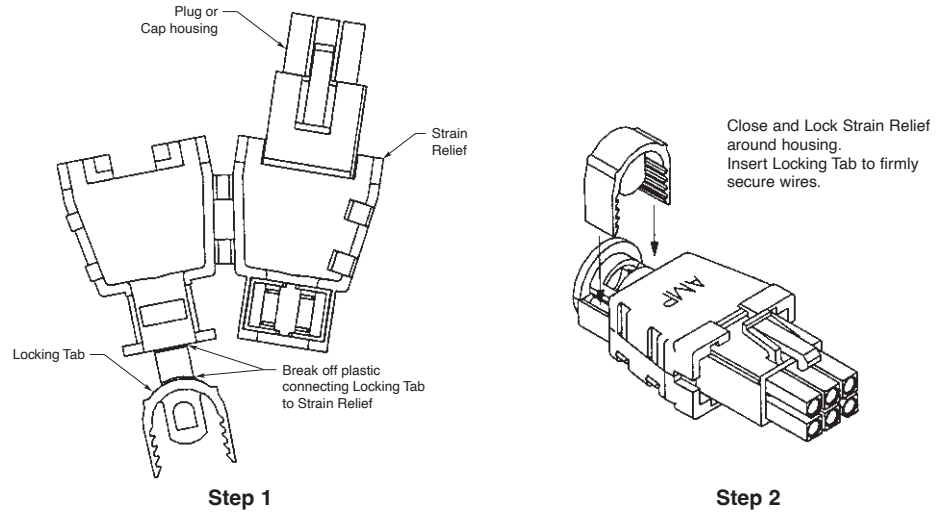
**Related Product Data**

**Housings**—pages 87-89  
**Technical Documents**—pages 83 and 205-206

These Strain Reliefs may also be used with AMP-DUAC Receptacle housings on page 126.

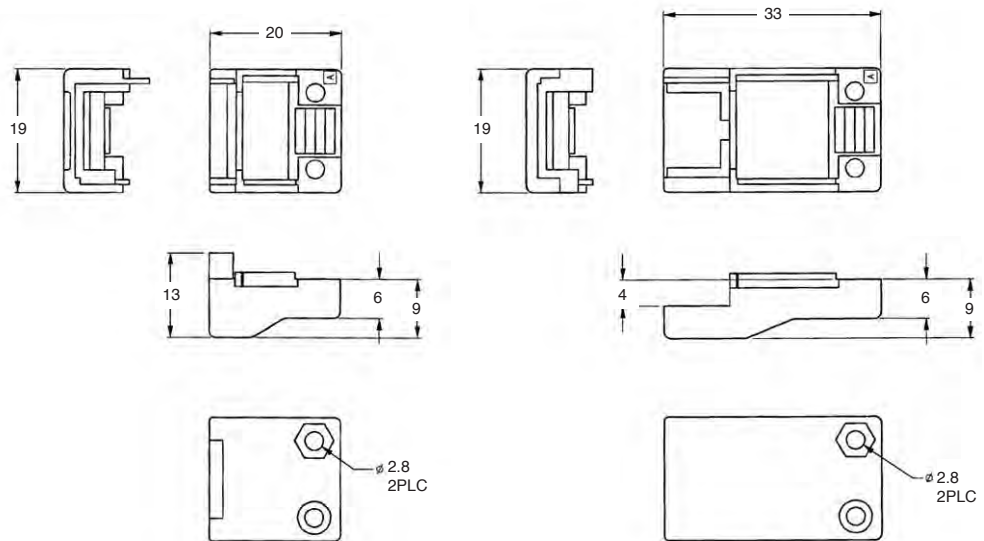
High Density

**6 and 8 Circuit**



Style	Number of Circuits	A Dim.	Wire Bundle Dia. Range	Part Numbers	
				UL94V-0 Nylon, White Color	Use With
Dual Row	6	.920 23.36	.165-.220 4.19-5.59	794423-1	172168-1 172160-1 172339-1 172331-1
	8	.920 23.36	.180-.245 4.57-6.22	794370-1	770979-1

**9 Circuit**



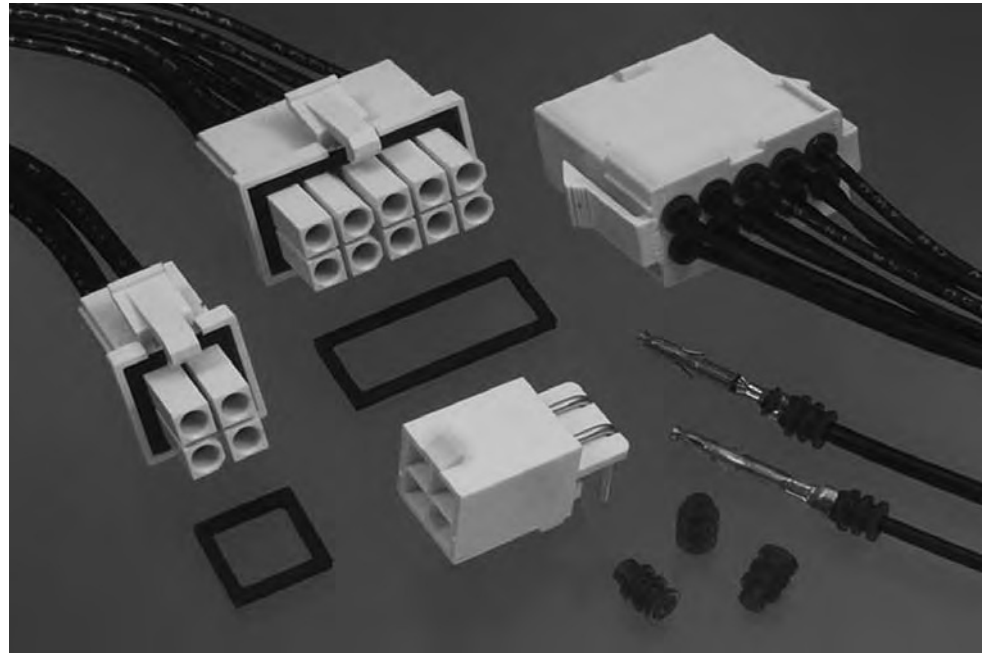
Style	Number of Circuits	Part Numbers	
		Part Number	Use With
Matrix	9	<b>Plug</b>	316454-1 172169-1 172340-1
		<b>Cap</b>	316455-1 172161-1 172332-1

**Note:** All part numbers are RoHS Compliant.

## Mini-Universal MATE-N-LOK Sealed Connector System

### Product Facts — Sealed Connector System

- Splash-proof design allows use in areas where high humidity, intermittent liquid splashing or foam-in applications require a sealed connector for improved electrical performance
- Wire-to-wire and wire-to-board
- Dual row, 2 to 10 positions (even only) and 16 positions
- Mates with all standard Mini-Universal MATE-N-LOK connector housings and pin headers (except Blindmate)
- Positive, polarized keyed and latched orientation to ease application
- Utilizes proven Mini-Universal MATE-N-LOK contacts with existing application tooling
- Tested to Sealing Level of IP56 per IEC 60529
- Primarily used in Appliance, Vending and HVAC applications
- Compact, durable housings
- Pins and sockets can be accommodated in the same housings
- Contacts fully protected in the housings. Both pins and sockets can be used on the power supply wiring
- Fully polarized to provide proper plug-to-cap mating incorporating a positive locking mechanism to help prevent accidental disengagement of mated connectors. Also facilitates panel mounting
- Free-hanging or panel mount
- Connectors can be mounted to .031-.079 [0.79-2.00] thick panels
- With seals, contacts accept wire size range 26-18 AWG [.12-.8 mm<sup>2</sup>] with insulation diameter of .040-.083 [1.02-2.11]
- .163 [4.14] centerline spacing
- Not for interrupting current



### Performance Characteristics

The Mini-Universal MATE-N-LOK Connector performance characteristics found on pages 95-96 are based on free-hanging and panel mount connectors, loaded with contacts crimped on stranded wire.

#### Low Level Termination Resistance

20 milliohms max. total resistance between wire crimps of a mated pin and socket

#### Dielectric Withstanding Voltage—

1.5 KVAC between adjacent circuits

#### Insulation Resistance—

1000 megohms minimum between adjacent circuits

#### Voltage Rating—600 V AC or DC

Contact Retention—8 lb. min. per contact

Durability—20 cycles, mating and unmating

### Technical Documents

#### Product Specifications

- 108-1542-2 Mini-Universal MATE-N-LOK Splash-Proof Seals
- 108-1542 Mini-Universal MATE-N-LOK Connectors
- 108-1543 Mini-Universal MATE-N-LOK Headers

#### Application Specification

- 114-13089 Mini-Universal MATE-N-LOK Sealed Connector

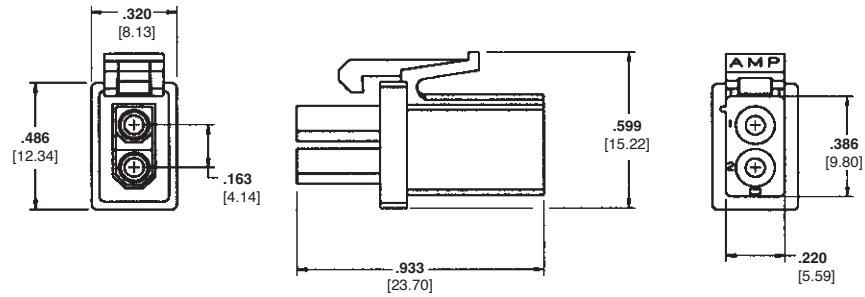
#### Instruction Sheets

- 408-3234 Mini-Universal MATE-N-LOK Connectors
- 411-5105 Mini-Universal MATE-N-LOK Connectors

**Mini-Universal MATE-N-LOK Sealed Connector System (Continued)**

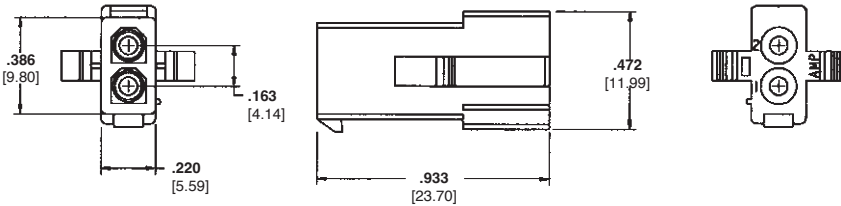
**Plug**

Part Number 794894-1  
(2 position shown)



**Cap**

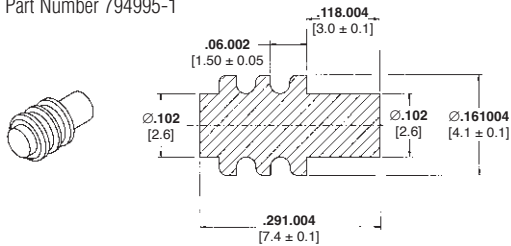
Part Number 794896-1  
(2 position shown)



**Individual Wire Seals**

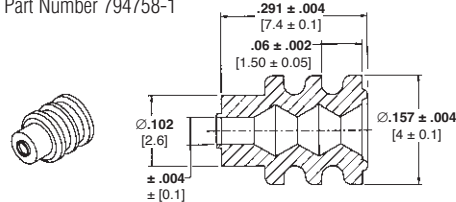
**Single Housing Cavity Plug Seal**

Part Number 794995-1

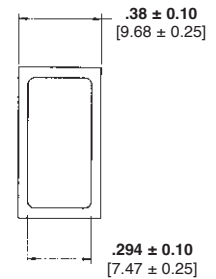


**Single Wire Seal**

Part Number 794758-1



**Interface Seals**



Number of Positions	Interface Seals	Plug for Sealing	Cap for Sealing	Vertical Headers for Sealing	Right Angle Headers for Sealing
2	794772-2	794894-1	794896-1	1-770872-X	1-770966-X
4	794772-4	794805-1	794939-1	1-770874-X	1-770968-X
6	794772-6	794895-1	794940-1	1-770875-X	10770969-X
8	794772-8	794821-1	794941-1	1-794073-X	1-770970-X
10	1-794772-0	794781-1	794942-1	1-770858-X	1-770971-X
16	1-1586362-6	794824-1	—	1-794075-X	1-770974-X

-0 for tin finish, -1 for duplex. See Mini-Universal MATE-N-LOK section for details

**Individual Wire Seal Contacts**

Wire Size Range AWG [mm <sup>2</sup> ]	Ins. Dia. Range	Material and Finish	Contact Part Numbers (for use with Single Wire Seals)				HDM Applicator Part No.	Hand Tool Part No.
			Pin		Socket			
			Strip Form	Loose Piece	Strip Form	Loose Piece		
26-22 [.12-.3]	.040-.060 1.02-1.52	Brass, Pre-tin Brass, Duplex <sup>1</sup>	770901-1	770985-1	770902-1	770986-1	567066-3 <sup>3</sup>	91529-1
			1-770901-0	1-770985-0	1-770902-0	1-770986-0	567066-4 <sup>3</sup>	
							567066-5 <sup>3</sup>	
22-18 [.3-.8]	.050-.083 1.27-2.11	Brass, Pre-tin Brass, Duplex <sup>1</sup>	770903-1	770987-1	770904-1	770988-1	567067-1 <sup>2</sup>	91522-1
			1-770903-0	1-770987-0	1-770904-0	1-770988-0	567067-2 <sup>2</sup>	
							567067-3 <sup>2</sup>	

<sup>1</sup> Duplex Finish — Plated with .000030 [.000762] min. gold in mating area and .000100 [.00254] min. tin in crimping area over .000050 [.00127] min. nickel underplate on entire contact.

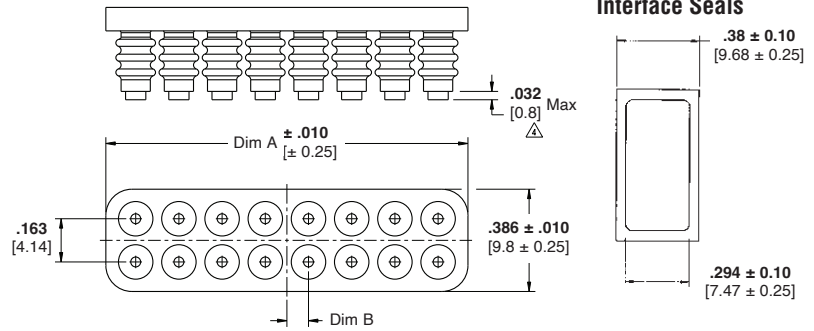
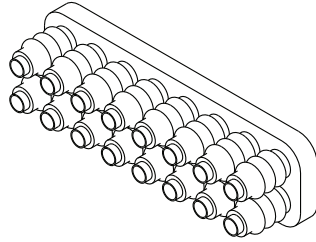
<sup>2</sup> HDM Applicator part number ending in -1 is used on AMPOMATOR CLS Machine with T or G Terminators, -2 is used on AMP-O-LECTRIC Model K Machine, -3 is used on AMP-O-ELECTRIC Model G Machine. See pages 207-210 for further information.

<sup>3</sup> HDM Applicator part number ending in -3 is used on AMPOMATOR CLS Machine with T or G Terminators, -4 is used on AMP-O-LECTRIC Model K Machine, -5 is used on AMP-O-LECTRIC Model G Machine. See pages 207-210 for further information.

**Note: Ganged Wire Seals are available; contact Technical Support.**

**Mini-Universal MATE-N-LOK Connectors (Continued)**

**New: Mini Universal  
Gang Seals  
No Seal Crimping  
Required!**



High Density

Mini-Universal MATE-N-LOK Sealed Connector System  
.163 [4.14] Centerline

Number of Positions	Interface Seals	Gang Wire Seal	Plug for Sealing	Cap for Sealing	Vertical Headers for Sealing*	Right Angle Headers for Sealing*
2	794772-2	1586359-2	794894-1	794896-1	1-770872-X	1-770966-X
4	794772-4	1586359-4	794805-1	794939-1	1-770874-X	1-770968-X
6	794772-6	1586359-6	794895-1	794940-1	1-770875-X	1-770969-X
8	794772-8	1586359-8	794821-1	794941-1	1-794073-X	1-770970-X
10	1-794772-0	1-1586359-0	794781-1	794942-1	1-770858-X	1-770971-X
16	1-1586362-6	1-1586359-6	794824-1	—	1-794075-X	1-770974-X

\*0 for tin finish, -1 for duplex. See Mini-Universal MATE-N-LOK section for details

**Gang Wire Seal Contacts**

Wire Size Range	Insulation Range	Material Finish	Pin		Socket	
			Strip Form	Loose Piece	Strip Form	Loose Piece
16 AWG	.050 - .083	Brass, Pre-tin Brass, Duplex <sup>1</sup>	1586537-1	—	1586538-1	—
			1586537-3	—	1586538-3	—
18 - 22 AWG	.050 - .083	Brass, Pre-tin Brass, Duplex	794440-1	—	794831-1	—
			794440-3	—	794831-3	—
22 - 26 AWG	.050 - .069	Brass, Pre-tin Brass, Duplex <sup>1</sup>	770901-1	770985-1	770902-1	770986-1
			1-770901-0	1-770985-0	1-770902-0	1-770986-0

<sup>1</sup> Duplex Finish — Plated with .000030 [.000762] min. gold in mating area and .000100 [.00254] min. tin in crimping area over .000050 [.00127] min. nickel underplate on entire contact.

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## Engineering Notes

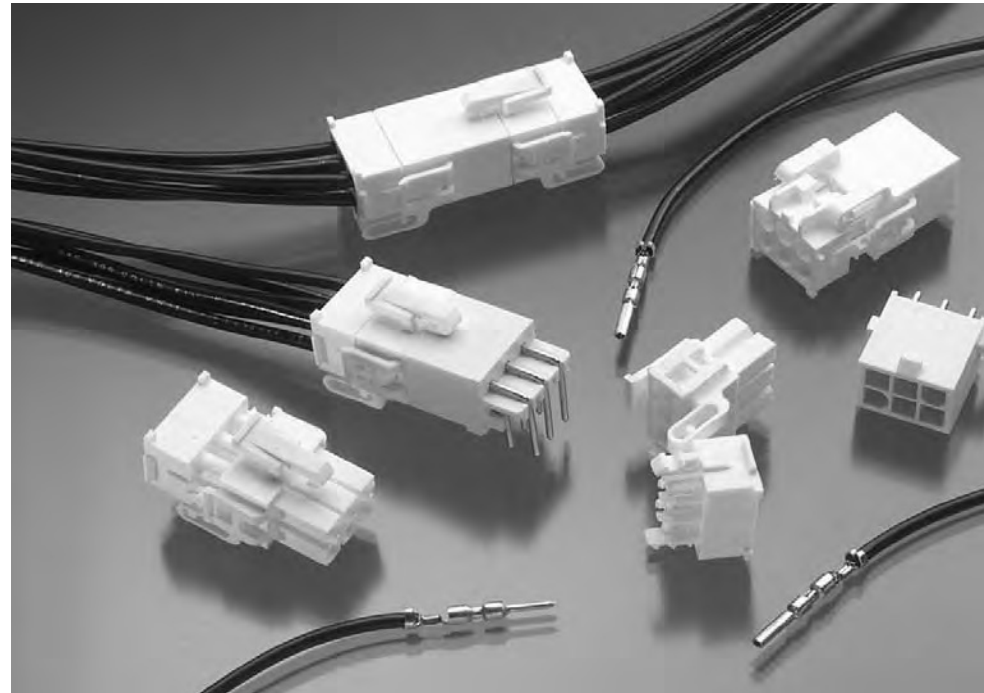
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## Mini-Universal MATE-N-LOK 2 Connectors

### Product Facts

- One molded piece, secondary locking plug and cap housing assemblies
- Three-point stabilization to provide better terminal position
- Fully polarized to provide proper plug-to-cap mating
- Lanceless contacts for tangle-free handling
- Toolless contact removal
- Tin or duplex gold plated contacts
- Available in 2 through 24 circuit sizes wire-to-wire and wire-to-board
- Mates with standard Mini-Universal MATE-N-LOK headers and connectors
- Contacts available in strip and loose piece
- Polarized housings available in UL 94V-0 or UL 94V-2 flammability rated material
- Mini-Universal MATE-N-LOK 2 pins and sockets can be intermixed in Mini-Universal MATE-N-LOK 2 housings
- Mini-Universal MATE-N-LOK 2 pins and sockets can not be used in standard Mini-Universal MATE-N-LOK housings
- Contacts accept wire size range 30-16 AWG [.05-1.2 mm<sup>2</sup>]
- .163 [4.14] centerline spacing
- Not for interrupting current
- Recognized under the Component Program of Underwriters Laboratories Inc. to US and Canadian Standards, File No. E28476



### Performance Characteristics

The Mini-Universal MATE-N-LOK 2 Connector performance characteristics found on pages 99-100 are based on free-hanging connectors, loaded with contacts crimped on stranded wire.

#### Low Level Termination Resistance

20 milliohms max. total resistance between wire crimps of a mated pin and socket

#### Dielectric Withstanding Voltage

1500 V AC or DC between adjacent circuits at sea level

#### Insulation Resistance—

100 megohms minimum between adjacent circuits

#### Voltage Rating—600 V AC or DC

**Contact Retention**—15 lb. min. per contact

**Durability**—25 cycles, mating and unmating

**Current Rating**—up to 10.5 amps per circuit; 2 position

**Mating Force**—2.5 lb. max. per circuit

**Unmating Force**—0.25 lb. minimum per circuit

Wire Size		Termination Resistance		Contact Crimp Tensile Force	
AWG	mm <sup>2</sup>	Test Current (Amps)	Resistance Milliohms (Max. Init.)	Force (Min.)	
				lbs.	N
30	.05	—	—	—	—
28	.08	—	—	—	—
26	.12	—	—	4	18
24	.2	—	—	—	—
22	.3	—	—	11	49
20	.5	—	—	13	58
18	.8	—	—	15	67
16	1.2	—	—	18	80

### Technical Documents

#### Product Specifications

108-1693 Mini-Universal MATE-N-LOK 2 Connectors

108-1694 Mini-Universal MATE-N-LOK 2 Headers

#### Application Specification

114-1111 Mini-Universal MATE-N-LOK 2 Connectors

#### Instruction Sheet

408-3393 Mini-Universal MATE-N-LOK 2 Connectors

Mini-Universal MATE-N-LOK 2 connectors also will withstand the following tests:

**Housing Lock Strength**—6 lb. min.

**Thermal Shock**—-55°C to +105°C

**Temperature-Humidity Cycling**—25°C to 65°C at 95 RH

**Vibration**—10-55-10 cycles per minute at .06 inch total excursion

**Physical Shock**—18 drops, 50 G half-sine at 11 milliseconds

**Mini-Universal MATE-N-LOK 2 Connectors** (Continued)

**Performance Characteristics** (Continued)

**Maximum Current**—Maximum current rating of Mini-Universal MATE-N-LOK 2 connectors is limited by the maximum operating temperature of the housings which is 105°C (gold) or 85°C (tin) including the temperature rise of the contacts which is a maximum of 30°C. There are several variables which have a direct effect on this maximum current-carrying capability for a given connector and must be considered for each application. These variables are:

**Wire Size**—Larger diameter wire will carry more current since it has less internal resistance to current flow and thus generates less heat. Longer wire lengths also enhance current-carrying capabilities since the wire conducts heat away from the connector.

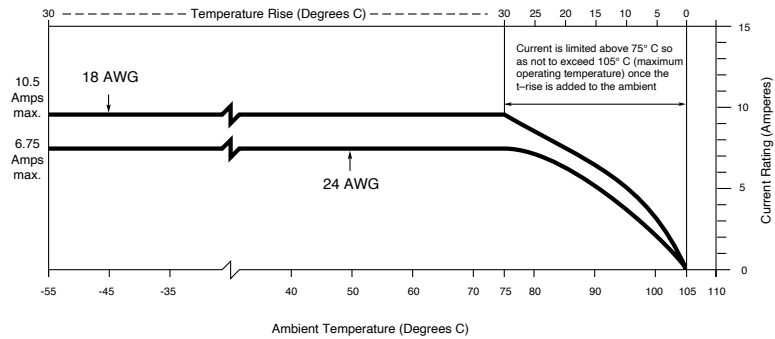
**Connector Size**—In general, the more circuits in a connector, the less current can be carried.

**Ambient Temperature**—The higher the ambient temperature, the less current can be carried in any given connector.

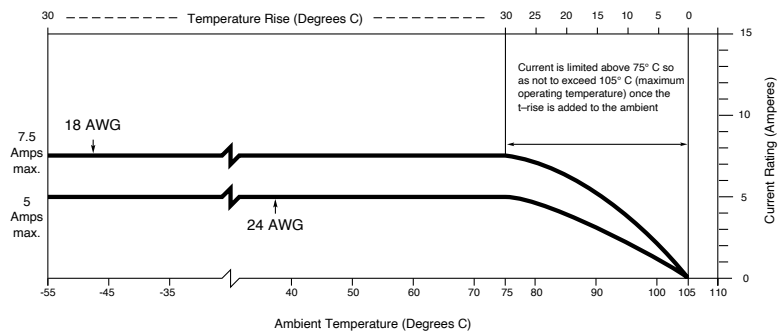
**Printed Wiring Board Conductor Size**—The finished trace conductor width and thickness should be maximized to allow for the greatest current-carrying capacity and heat dissipation.

**Current Rating Verification for 30°C Maximum Temperature Rise 100% Energized**

**2 Circuit Connector (Wire-to-Wire)**



**6 Circuit Connector (Wire-to-Wire)**



**Contacts**

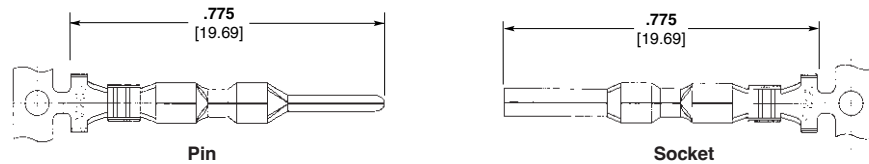
Pin diameter .039 [0.99]

**Material**

Brass

Stock Thickness .010 [0.25]

These contacts can be used in either Mini-Universal MATE-N-LOK 2 Plug or Cap housings **only**.



**Not to be used with Mini-Universal MATE-N-LOK Connectors**

**Related Product Data**

Product Specifications	
Wire Size Range AWG [mm <sup>2</sup> ]	Ins. Dia. Range
108-1693 Mini-Universal MATE-N-LOK 2 Connectors	.035-.050 .889-1.27
108-1694 Mini-Universal MATE-N-LOK 2 Headers	.047-.069 1.19-1.75

**Application Specification**

Wire Size Range AWG [mm <sup>2</sup> ]	Ins. Dia. Range	Finish
114-1111 Mini-Universal MATE-N-LOK 2 Connectors	.059-.094 [.3-.8]	Pre-tin Duplex <sup>1</sup>

**Performance Characteristics**—pages 99-100

**Housings**—pages 101-102

**Technical Documents**—pages 99 and 205-206

Wire Size Range AWG [mm <sup>2</sup> ]	Ins. Dia. Range	Finish	Contact Part Numbers				HDM Applicator Part No.	Hand Tool Part No.
			Pin		Socket			
			Strip Form	Loose Piece	Strip Form	Loose Piece		
30-26 [.05-.12]	.035-.050 .889-1.27	Pre-tin	794216-1	794224-1	794217-1	794225-1	567418-12	90717-2
		Duplex <sup>1</sup>	1-794216-0	1-794224-0	1-794217-0	1-794225-0	567418-22 567418-32	
26-22 [.12-.3]	.047-.069 1.19-1.75	Pre-tin	794218-1	794226-1	794219-1	794227-1	567066-33	
		Duplex <sup>1</sup>	1-794218-0	1-794226-0	1-794219-0	1-794227-0	567066-43 567066-53	
22-18 [.3-.8]	.059-.094 1.50-2.39	Pre-tin	794220-1	794228-1	794221-1	794229-1	680854-12	91522-1
		Duplex <sup>1</sup>	1-794220-0	1-794228-0	1-794221-0	1-794229-0	680854-22 680854-32	
20-16 [.5-1.2]	.079-.126 2.01-3.20	Pre-tin	794222-1	794230-1	794223-1	794231-1	680582-22	
		Duplex <sup>1</sup>	1-794222-0	1-794230-0	1-794223-0	1-794231-0	680582-32	

<sup>1</sup>Duplex Finish — Plated with .000030 [.000762] min. gold in mating area and .000100 [.00254] min. tin in crimping area over .000050 [.00127] min. nickel underplate on entire contact.

<sup>2</sup>HDM Applicator part number ending in -1 is used on AMPOMATOR CLS Machine with T or G Terminators, -2 is used on AMP-O-LECTRIC Model K Machine, -3 is used on AMP-O-ELECTRIC Model G Machine.

<sup>3</sup>HDM Applicator part number ending in -3 is used on AMPOMATOR CLS Machine with T or G Terminators, -4 is used on AMP-O-LECTRIC Model K Machine, -5 is used on AMP-O-LECTRIC Model G Machine.

See pages 207-210 for further information.

**Note: All part numbers are RoHS Compliant.**

**Mini-Universal MATE-N-LOK 2 Connectors** (Continued)

**Housings**

**Free-Hanging**

.163 [4.14] Centerline spacing

**Related Product Data**

**Product Specifications**  
108-1693 Mini-Universal MATE-N-LOK 2 Connectors

108-1694 Mini-Universal MATE-N-LOK 2 Headers

**Performance Characteristics**—

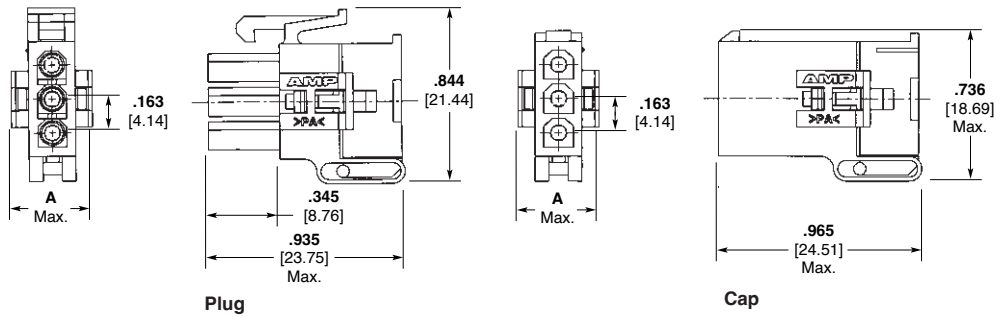
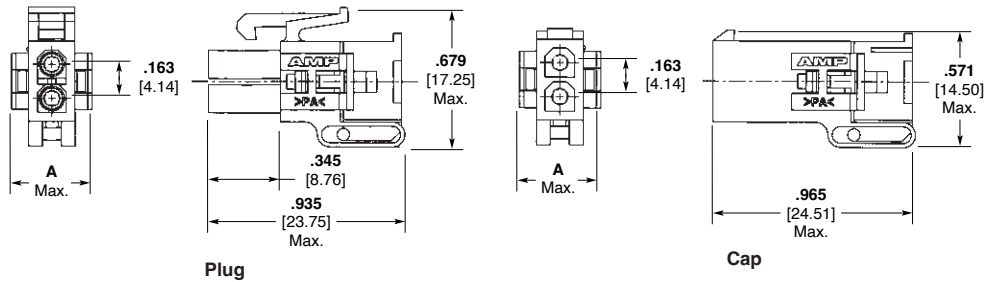
pages 99-100

**Contacts** — page 100

**Technical Documents**— pages 99 and 205-206

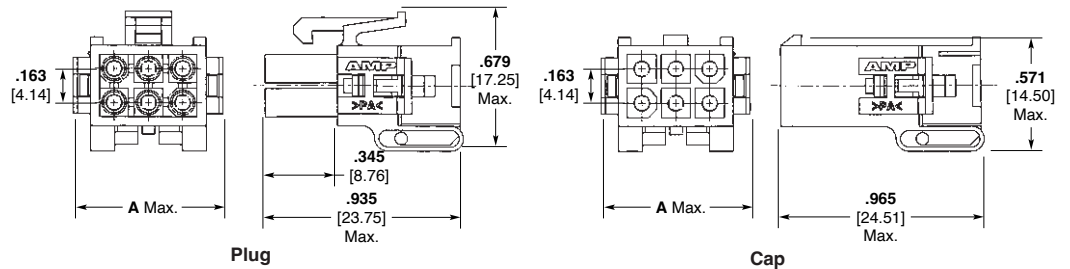
**Mating Headers**—pages 103-105

**2 and 3 Circuit, In-Line**



Number of Circuits	A Dimension	Housing Part Numbers			
		UL94V-0 Nylon, White Color		UL94V-2 Nylon, Natural Color	
		Plug	Cap	Plug	Cap
2	.405 10.29	794184-1	794185-1	794237-1	794238-1
3	.405 10.29	794186-1	794187-1	794239-1	794240-1

**4 and 6 Circuit, Dual Row**

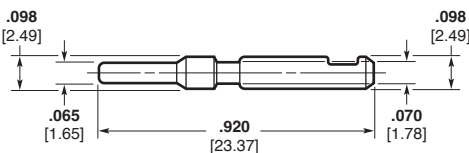


Number of Circuits	A Dimension	Housing Part Numbers			
		UL94V-0 Nylon, White Color		UL94V-2 Nylon, Natural Color	
		Plug	Cap	Plug	Cap
4	.571 14.50	794188-1	794189-1	794241-1	794242-1
6	.736 18.70	794190-1	794191-1	794243-1	794244-1

**Keying Plug**

**Material**

UL94V-0 Nylon, white color



Part Number 794369-1

**Note:** All part numbers are RoHS Compliant.

**Mini-Universal MATE-N-LOK 2 Connectors** (Continued)

**Housings**  
**Free-Hanging**

.163 [4.14] Centerline spacing

**Related Product Data**

**Product Specifications**  
108-1693 Mini-Universal MATE-N-LOK 2 Connectors

108-1694 Mini-Universal MATE-N-LOK 2 Headers

**Performance Characteristics**—  
pages 99-100

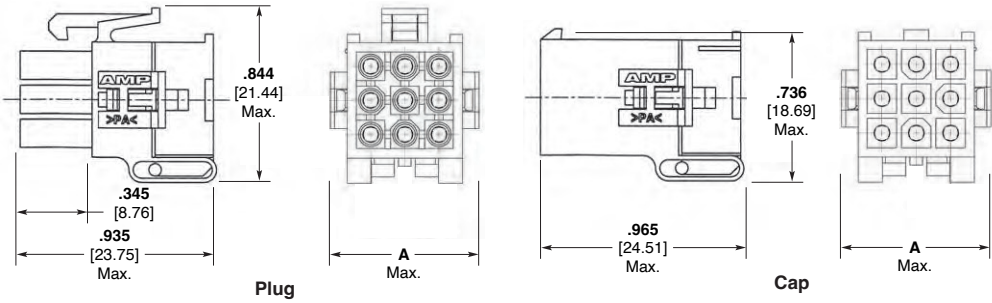
**Contacts**—page 100

**Keying Plug**—page 101

**Technical Documents**—pages 99 and 205-206

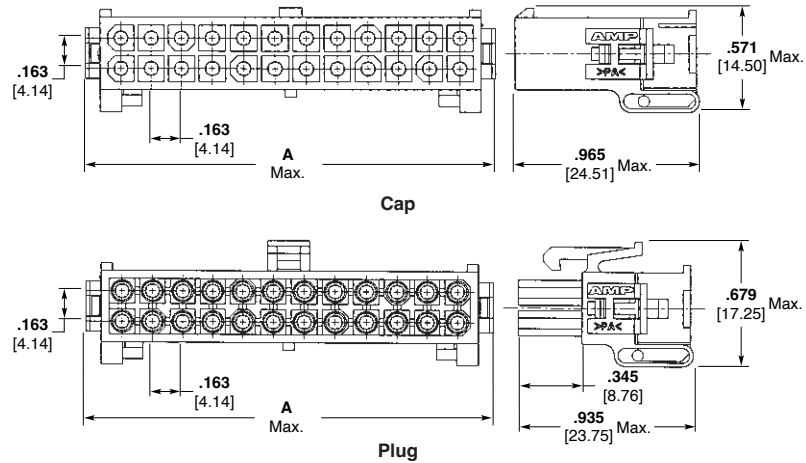
**Mating Headers**—pages 103-105

**9, 12 and 15 Circuit, Matrix**



Number of Circuits	A Dimension	Housing Part Numbers			
		UL94V-0 Nylon, White Color		UL94V-2 Nylon, Natural Color	
		Plug	Cap	Plug	Cap
9	.736 18.69	794194-1	794195-1	794247-1	794248-1
12	.901 22.89	794200-1	794201-1	794253-1	794254-1
15	1.067 27.10	794204-1	794205-1	794257-1	794258-1

**8 through 24 Circuit, Dual Row**



Number of Circuits	A Dimension	Housing Part Numbers			
		UL94V-0 Nylon, White Color		UL94V-2 Nylon, Natural Color	
		Plug	Cap	Plug	Cap
8	.899 22.84	794192-1	794193-1	794245-1	794246-1
10	1.062 26.98	794196-1	794197-1	794249-1	794250-1
12	1.225 31.12	794198-1	794199-1	794251-1	794252-1
14	1.388 35.26	794202-1	794203-1	794255-1	794256-1
16	1.551 39.40	794206-1	794207-1	794259-1	794260-1
18	1.714 43.54	794208-1	794209-1	794261-1	794262-1
20	1.877 47.68	794210-1	794211-1	794263-1	794264-1
22	2.040 51.82	794212-1	794213-1	794265-1	794266-1
24	2.203 55.96	794214-1	794215-1	794267-1	794268-1

**Note:** All part numbers are RoHS Compliant.

High Density

Mini-Universal MATE-N-LOK 2 Connectors  
.163 [4.14] Centerline

**Mini-Universal MATE-N-LOK 2 Connectors** (Continued)

**Vertical PC Board Pin Headers**

.163 [4.14] Centerline spacing

**Material**

**Housing**— Nylon, white

**Flammability Rating**—UL94V-0

**Contacts**— Brass

Solder tail diameter .039 [1.00]

**Related Product Data**

**Product Specifications**

108-1693 Mini-Universal MATE-N-LOK 2 Connectors

108-1694 Mini-Universal MATE-N-LOK 2 Headers

**Performance Characteristics**— pages 99-100

**Recommended PC Board Hole Layout**—page 106

**Technical Documents**— pages 99 and 205-206

**Mating Connectors**

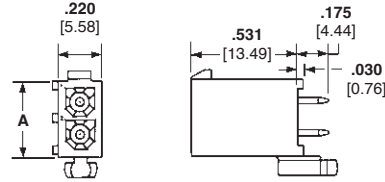
**Mini-Universal MATE-N-LOK 2**

Plug Housings— pages 101-102

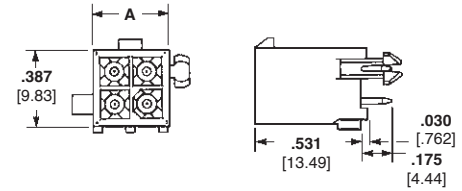
**Mini-Universal MATE-N-LOK**

Plug Housings— pages 87-89

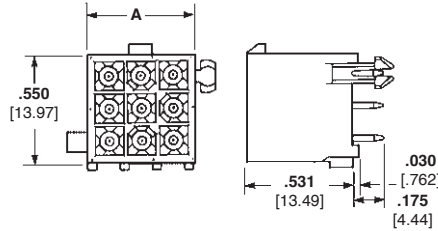
**2 and 3 Circuit, In-Line**



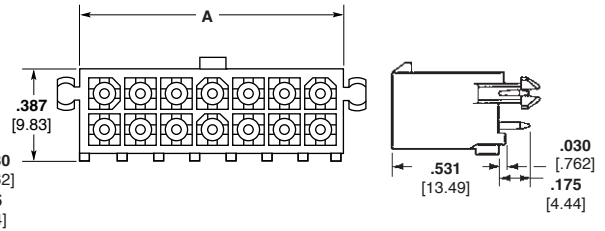
**4, 6, 8, 10 and 12 Circuit, Dual Row**



**9, 12 and 15 Circuit, Matrix**



**14, 16, 18, 20, 22 and 24 Circuit, Dual Row**



Number of Circuits	Style	A Dim.	Pin Finish	Vertical Pin Header Part Numbers		Mates with Plug Housing Part Number (Using Socket Contacts)	
				With Drain Holes	Without Drain Holes	Mini-Universal MATE-N-LOK	Mini-Universal MATE-N-LOK 2
2	In-Line	.387 9.83	Tin <sup>1</sup>	1-770166-0	1-770872-0	172165-1	794184-1
			Duplex <sup>2</sup>	1-770166-1	1-770872-1		
3	In-Line	.550 13.97	Tin <sup>1</sup>	1-770170-0	1-770873-0	172166-1	794186-1
			Duplex <sup>2</sup>	1-770170-1	1-770873-1		
4	Dual Row	.387 9.83	Tin <sup>1</sup>	1-770174-0	1-770874-0	172167-1	794188-1
			Duplex <sup>2</sup>	1-770174-1	1-770874-1		
6	Dual Row	.550 13.97	Tin <sup>1</sup>	1-770178-0	1-770875-0	172168-1	794190-1
			Duplex <sup>2</sup>	1-770178-1	1-770875-1		
8	Dual Row	.713 18.11	Tin <sup>1</sup>	1-794065-0	1-794073-0	770579-1	794192-1
			Duplex <sup>2</sup>	1-794065-1	1-794073-1		
9	Matrix	.551 14.00	Tin <sup>1</sup>	1-770182-0	1-770876-0	172169-1	794194-1
			Duplex <sup>2</sup>	1-770182-1	1-770876-1		
10	Dual Row	.877 22.28	Tin <sup>1</sup>	1-770743-0	1-770858-0	770580-1	794196-1
			Duplex <sup>2</sup>	1-770743-1	1-770858-1		
12	Dual Row	1.039 26.39	Tin <sup>1</sup>	1-794066-0	1-770621-0	770581-1	794198-1
			Duplex <sup>2</sup>	1-794066-1	1-770621-1		
	Matrix	.713 18.11	Tin <sup>1</sup>	1-770186-0	1-794040-0	172170-1	794200-1
			Duplex <sup>2</sup>	1-770186-1	1-794040-1		
14	Dual Row	1.202 30.53	Tin <sup>1</sup>	1-794067-0	1-794074-0	770582-1	794202-1
			Duplex <sup>2</sup>	1-794067-1	1-794074-1		
15	Matrix	.877 22.28	Tin <sup>1</sup>	1-770190-0	1-770859-0	172171-1	794204-1
			Duplex <sup>2</sup>	1-770190-1	1-770859-1		
16	Dual Row	1.365 34.67	Tin <sup>1</sup>	1-794068-0	1-794075-0	770583-1	794206-1
			Duplex <sup>2</sup>	1-794068-1	1-794075-1		
18	Dual Row	1.528 38.81	Tin <sup>1</sup>	1-794069-0	1-794076-0	770584-1	794208-1
			Duplex <sup>2</sup>	1-794069-1	1-794076-1		
20	Dual Row	1.691 42.95	Tin <sup>1</sup>	1-794070-0	1-794077-0	770585-1	794210-1
			Duplex <sup>2</sup>	1-794070-1	1-794077-1		
22	Dual Row	1.854 47.09	Tin <sup>1</sup>	1-794071-0	1-794078-0	770586-1	794212-1
			Duplex <sup>2</sup>	1-794071-1	1-794078-1		
24	Dual Row	2.017 51.23	Tin <sup>1</sup>	1-794072-0	1-794079-0	770587-1	794214-1
			Duplex <sup>2</sup>	1-794072-1	1-794079-1		

<sup>1</sup>Tin Finish — Plated with .000150 [.00381] min. tin over .000050 [.00127] min. nickel underplate on entire contact.

<sup>2</sup>Duplex Finish — Plated with .000030 [.000762] min. gold in mating area and matte tin on solder tail end over .000050 [.00127] min. nickel underplate on entire contact.

**Note:** All part numbers are RoHS Compliant.

**Mini-Universal MATE-N-LOK 2 Connectors** (Continued)

**Vertical PC Board  
Blindmate Pin Headers**

.163 [4.14] Centerline spacing

**Material**

**Housing**— Nylon, white

**Flammability Rating**— UL94V-0

**Contacts**— Brass  
Solder tail diameter .039 [1.00]

**Related Product Data**

**Product Specifications**

108-1693 Mini-Universal MATE-N-LOK 2 Connectors

108-1694 Mini-Universal MATE-N-LOK 2 Headers

**Performance Characteristics**— pages 99-100

**Recommended PC Board Hole Layout**—page 106

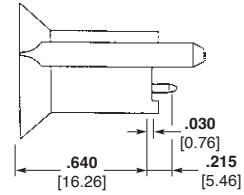
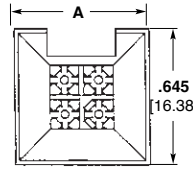
**Technical Documents**— pages 99 and 205-206

**Mating Connectors**

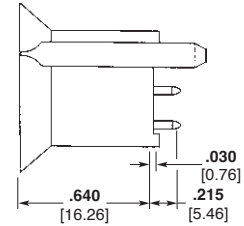
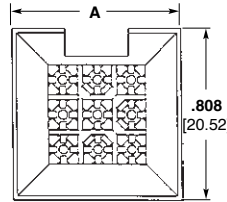
**Mini-Universal MATE-N-LOK 2**  
Plug Housings—pages 101-102

**Mini-Universal MATE-N-LOK**  
Plug Housings—pages 87-89

**4, 6, 8 and 10 Circuit,  
Dual Row**



**9, 12 and 15 Circuit,  
Matrix**



Number of Circuits	Style	A Dim.	Pin Finish	Pin Header Part Numbers with Drain Holes	Mates with Plug Housing Part Number (Using Socket Contacts)	
					Mini-Universal MATE-N-LOK	Mini-Universal MATE-N-LOK 2
4	Dual Row	.645 16.38	Tin <sup>1</sup>	1-794325-0	172167-1	794188-1
			Duplex <sup>2</sup>	1-794325-1		
6	Dual Row	.808 20.52	Tin <sup>1</sup>	1-794326-0	172168-1	794190-1
			Duplex <sup>2</sup>	1-794326-1		
8	Dual Row	.971 24.66	Tin <sup>1</sup>	1-794327-0	770579-1	794192-1
			Duplex <sup>2</sup>	1-794327-1		
9	Matrix	.808 20.52	Tin <sup>1</sup>	1-794432-0	172169-1	794194-1
			Duplex <sup>2</sup>	1-794432-1		
10	Dual Row	1.134 28.80	Tin <sup>1</sup>	1-794328-0	770580-1	794196-1
			Duplex <sup>2</sup>	1-794328-1		
12	Matrix	.971 24.66	Tin <sup>1</sup>	1-794329-0	172170-1	794200-1
			Duplex <sup>2</sup>	1-794329-1		
15	Matrix	1.134 28.80	Tin <sup>1</sup>	1-794330-0	172171-1	794204-1
			Duplex <sup>2</sup>	1-794330-1		

<sup>1</sup>Tin Finish — Plated with .000150 [.00381] min. tin over .000050 [.00127] min. nickel underplate on entire contact.  
<sup>2</sup>Duplex Finish — Plated with .000030 [.000762] min. gold in mating area and matte tin on solder tail end over .000050 [.00127] min. nickel underplate on entire contact.

**Note:** All part numbers are RoHS Compliant.

Mini-Universal MATE-N-LOK 2 Connectors .163 [4.14] Centerline

High Density

**Mini-Universal MATE-N-LOK 2 Connectors** (Continued)

**Right-Angle PC Board Pin Headers**

.163 [4.14] Centerline spacing

**Material**

**Housing**— Nylon, white color

**Flammability Rating**— UL94V-0

**Contacts**— Brass

Solder tail diameter .039 [1.00]

**Related Product Data**

**Product Specification**

108-1694 Mini-Universal MATE-N-LOK 2 Headers

**Performance Characteristics**— pages 99-100

**Recommended PC Board Hole Layout**— page 106

**Technical Documents**— pages 99 and 205-206

**Mating Connectors**

**Mini-Universal MATE-N-LOK 2**

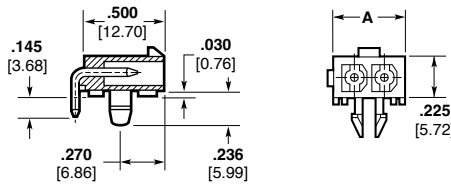
Plug Housings— pages 101-102

**Mini-Universal MATE-N-LOK**

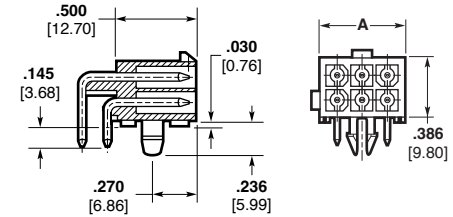
Plug Housings— pages 87-89

**With Board Lock Feature**

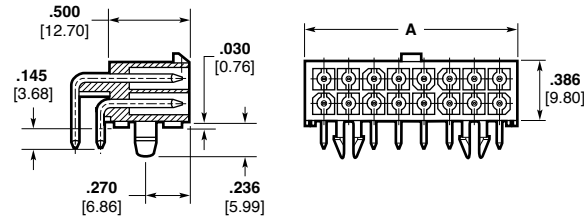
**2 and 3 Circuit, In-Line**



**4, 6, 8, 10 and 12 Circuit, Dual Row**



**14, 16, 18, 20, 22 and 24 Circuit, Dual Row**



Number of Circuits	Style	A Dim.	Pin Finish	Pin Header Part Number with Board Lock	Mates with Plug Housing Part Number (Using Socket Contacts)	
					Mini-Universal MATE-N-LOK	Mini-Universal MATE-N-LOK 2
2	In-line	.388 9.86	Tin <sup>1</sup>	1-770966-0	172165-1	794184-1
			Duplex <sup>2</sup>	1-770966-1		
3	In-line	.551 14.00	Tin <sup>1</sup>	1-770967-0	172166-1	794186-1
			Duplex <sup>2</sup>	1-770967-1		
4	Dual Row	.388 9.86	Tin <sup>1</sup>	1-770968-0	172167-1	794188-1
			Duplex <sup>2</sup>	1-770968-1		
6	Dual Row	.551 14.00	Tin <sup>1</sup>	1-770969-0	172168-1	794190-1
			Duplex <sup>2</sup>	1-770969-1		
8	Dual Row	.714 18.14	Tin <sup>1</sup>	1-770970-0	770579-1	794192-1
			Duplex <sup>2</sup>	1-770970-1		
10	Dual Row	.877 22.28	Tin <sup>1</sup>	1-770971-0	770580-1	794196-1
			Duplex <sup>2</sup>	1-770971-1		
12	Dual Row	1.040 26.42	Tin <sup>1</sup>	1-770972-0	770581-1	794198-1
			Duplex <sup>2</sup>	1-770972-1		
14	Dual Row	1.203 30.56	Tin <sup>1</sup>	1-770973-0	770582-1	794202-1
			Duplex <sup>2</sup>	1-770973-1		
16	Dual Row	1.366 34.70	Tin <sup>1</sup>	1-770974-0	770583-1	794206-1
			Duplex <sup>2</sup>	1-770974-1		
18	Dual Row	1.529 38.84	Tin <sup>1</sup>	1-794105-0	770584-1	794208-1
			Duplex <sup>2</sup>	1-794105-1		
20	Dual Row	1.692 42.98	Tin <sup>1</sup>	1-794106-0	770585-1	794210-1
			Duplex <sup>2</sup>	1-794106-1		
22	Dual Row	1.855 47.12	Tin <sup>1</sup>	1-794107-0	770586-1	794212-1
			Duplex <sup>2</sup>	1-794107-1		
24	Dual Row	2.018 51.26	Tin <sup>1</sup>	1-794108-0	770587-1	794214-1
			Duplex <sup>2</sup>	1-794108-1		

<sup>1</sup>Tin Finish — Plated with .000150 [.00381] min. tin over .000050 [.00127] min. nickel underplate on entire contact.  
<sup>2</sup>Duplex Finish — Plated with .000030 [.000762] min. gold in mating area and matte tin on solder tail end over .000050 [.00127] min. nickel underplate on entire contact.

**Note:** All part numbers are RoHS Compliant.

**Mini-Universal MATE-N-LOK 2 Connectors** (Continued)

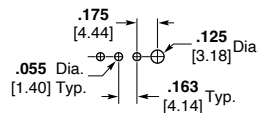
**Recommended PC Board Hole Layouts for Vertical and Blindmate Headers**

.062 [1.57] thick board, tolerances non-accumulative

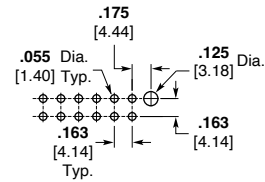
**Related Product Data**

Vertical Headers—pages 103-104

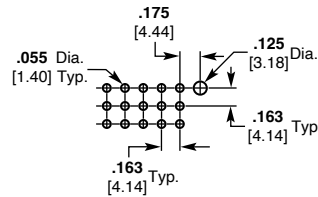
**2 and 3 Circuit, In-Line**



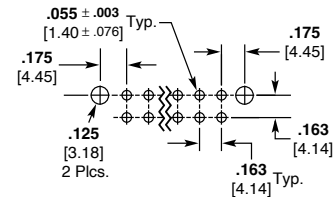
**4, 6, 8, 10 and 12 Circuit, Dual Row**



**9, 12 and 15 Circuit, Matrix**



**14, 16, 18, 20, 22 and 24 Circuit, Dual Row**



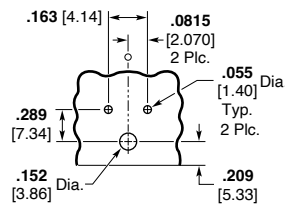
**Recommended PC Board Hole Layouts for Right-Angle Headers**

.062 [1.57] thick board, tolerances non-accumulative

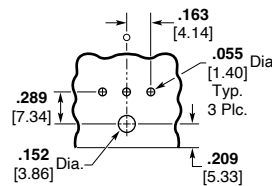
**Related Product Data**

Right-Angle Headers—page 105

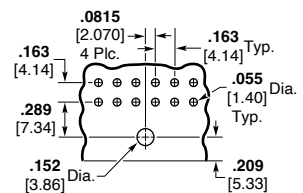
**2 Circuit**



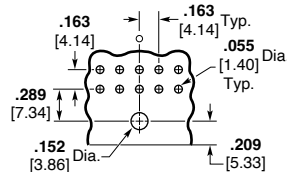
**3 Circuit**



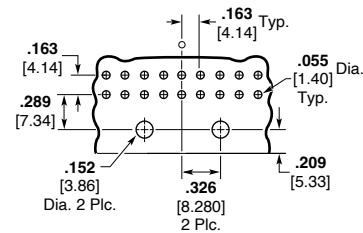
**4, 8 and 12 Circuit**



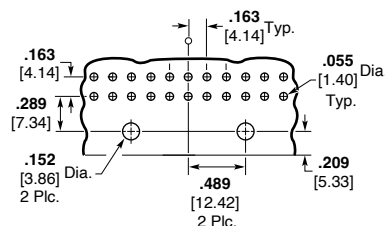
**6 and 10 Circuit**



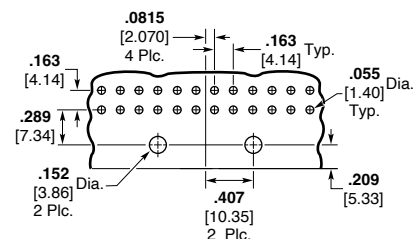
**14 and 18 Circuit**



**22 Circuit**



**16, 20 and 24 Circuit**



High Density

Mini-Universal MATE-N-LOK 2 Connectors  
.163 [4.14] Centerline

**Mini-Universal MATE-N-LOK 2 Connectors** (Continued)

**Mini-Universal  
MATE-N-LOK 2 Connector  
Mating Combinations**

Number of Circuits	Connector Part Number				Mating Connector Part Number				
	Flammability Rating	Style	Plug <sup>1</sup> Housing Part No.	Cap <sup>1</sup> Housing Part No.	Plating	PC Board Pin Headers <sup>4</sup>			Right-Angle Board Lock
						With Drain Holes	Vertical Without Drain Holes	Blindmate	
2	UL94V-2	In-Line	794237-1	794238-1	—	—	—	—	—
	UL94V-0	In-Line	794184-1	794185-1	Tin <sup>3</sup>	1-770166-0	1-770872-0	—	1-770966-0
3	UL94V-2	In-Line	794239-1	794240-1	Duplex <sup>2</sup>	1-770166-1	1-770872-1	—	1-770966-1
	UL94V-0	In-Line	794186-1	794187-1	—	—	—	—	—
4	UL94V-2	Dual Row	794241-1	794242-1	Tin <sup>3</sup>	1-770170-0	1-770873-0	—	1-770967-0
	UL94V-0	Dual Row	794188-1	794189-1	Duplex <sup>2</sup>	1-770170-1	1-770873-1	—	1-770967-1
6	UL94V-2	Dual Row	794243-1	794244-1	—	—	—	—	—
	UL94V-0	Dual Row	794190-1	794191-1	Tin <sup>3</sup>	1-770174-0	1-770874-0	1-794325-0	1-770968-0
8	UL94V-2	Dual Row	794245-1	794246-1	Duplex <sup>2</sup>	1-770174-1	1-770874-1	1-794325-1	1-770968-1
	UL94V-0	Dual Row	794192-1	794193-1	—	—	—	—	—
9	UL94V-2	Matrix	794247-1	794248-1	Tin <sup>3</sup>	1-770178-0	1-770875-0	1-794326-0	1-770969-0
	UL94V-0	Matrix	794194-1	794195-1	Duplex <sup>2</sup>	1-770178-1	1-770875-1	1-794326-1	1-770969-1
10	UL94V-2	Dual Row	794249-1	794250-1	—	—	—	—	—
	UL94V-0	Dual Row	794196-1	794197-1	Tin <sup>3</sup>	1-770182-0	1-770876-0	1-794432-0	—
12	UL94V-2	Matrix	794253-1	794254-1	Duplex <sup>2</sup>	1-770182-1	1-770876-1	1-794432-1	—
	UL94V-0	Dual Row	794251-1	794252-1	—	—	—	—	—
14	UL94V-2	Dual Row	794255-1	794256-1	Tin <sup>3</sup>	1-770186-0	1-794040-0	1-794329-0	—
	UL94V-0	Dual Row	794200-1	794201-1	Duplex <sup>2</sup>	1-770186-1	1-794040-1	1-794329-1	—
16	UL94V-2	Dual Row	794259-1	794260-1	Tin <sup>3</sup>	1-794066-0	1-770621-0	—	1-770972-0
	UL94V-0	Dual Row	794198-1	794199-1	Duplex <sup>2</sup>	1-794066-1	1-770621-1	—	1-770972-1
18	UL94V-2	Dual Row	794202-1	794203-1	—	—	—	—	—
	UL94V-0	Dual Row	794201-1	794203-1	Tin <sup>3</sup>	1-794067-0	1-794074-0	—	1-770973-0
20	UL94V-2	Matrix	794257-1	794258-1	Duplex <sup>2</sup>	1-794067-1	1-794074-1	—	1-770973-1
	UL94V-0	Matrix	794204-1	794205-1	—	—	—	—	—
22	UL94V-2	Dual Row	794265-1	794266-1	Tin <sup>3</sup>	1-770190-0	1-770859-0	1-794330-0	—
	UL94V-0	Dual Row	794204-1	794205-1	Duplex <sup>2</sup>	1-770190-1	1-770859-1	1-794330-1	—
24	UL94V-2	Dual Row	794267-1	794268-1	—	—	—	—	—
	UL94V-0	Dual Row	794210-1	794211-1	Tin <sup>3</sup>	1-794068-0	1-794075-0	—	1-770974-0
26	UL94V-2	Dual Row	794269-1	794270-1	Duplex <sup>2</sup>	1-794068-1	1-794075-1	—	1-770974-1
	UL94V-0	Dual Row	794261-1	794262-1	—	—	—	—	—
28	UL94V-2	Dual Row	794263-1	794264-1	Tin <sup>3</sup>	1-794069-0	1-794076-0	—	1-794105-0
	UL94V-0	Dual Row	794208-1	794209-1	Duplex <sup>2</sup>	1-794069-1	1-794076-1	—	1-794105-1
30	UL94V-2	Dual Row	794210-1	794211-1	—	—	—	—	—
	UL94V-0	Dual Row	794210-1	794211-1	Tin <sup>3</sup>	1-794070-0	1-794077-0	—	1-794106-0
32	UL94V-2	Dual Row	794212-1	794213-1	Duplex <sup>2</sup>	1-794070-1	1-794077-1	—	1-794106-1
	UL94V-0	Dual Row	794265-1	794266-1	—	—	—	—	—
34	UL94V-2	Dual Row	794214-1	794215-1	Tin <sup>3</sup>	1-794071-0	1-794078-0	—	1-794107-0
	UL94V-0	Dual Row	794212-1	794213-1	Duplex <sup>2</sup>	1-794071-1	1-794078-1	—	1-794107-1
36	UL94V-2	Dual Row	794214-1	794215-1	—	—	—	—	—
	UL94V-0	Dual Row	794214-1	794215-1	Tin <sup>3</sup>	1-794072-0	1-794079-0	—	1-794108-0
38	UL94V-2	Dual Row	794214-1	794215-1	Duplex <sup>2</sup>	1-794072-1	1-794079-1	—	1-794108-1

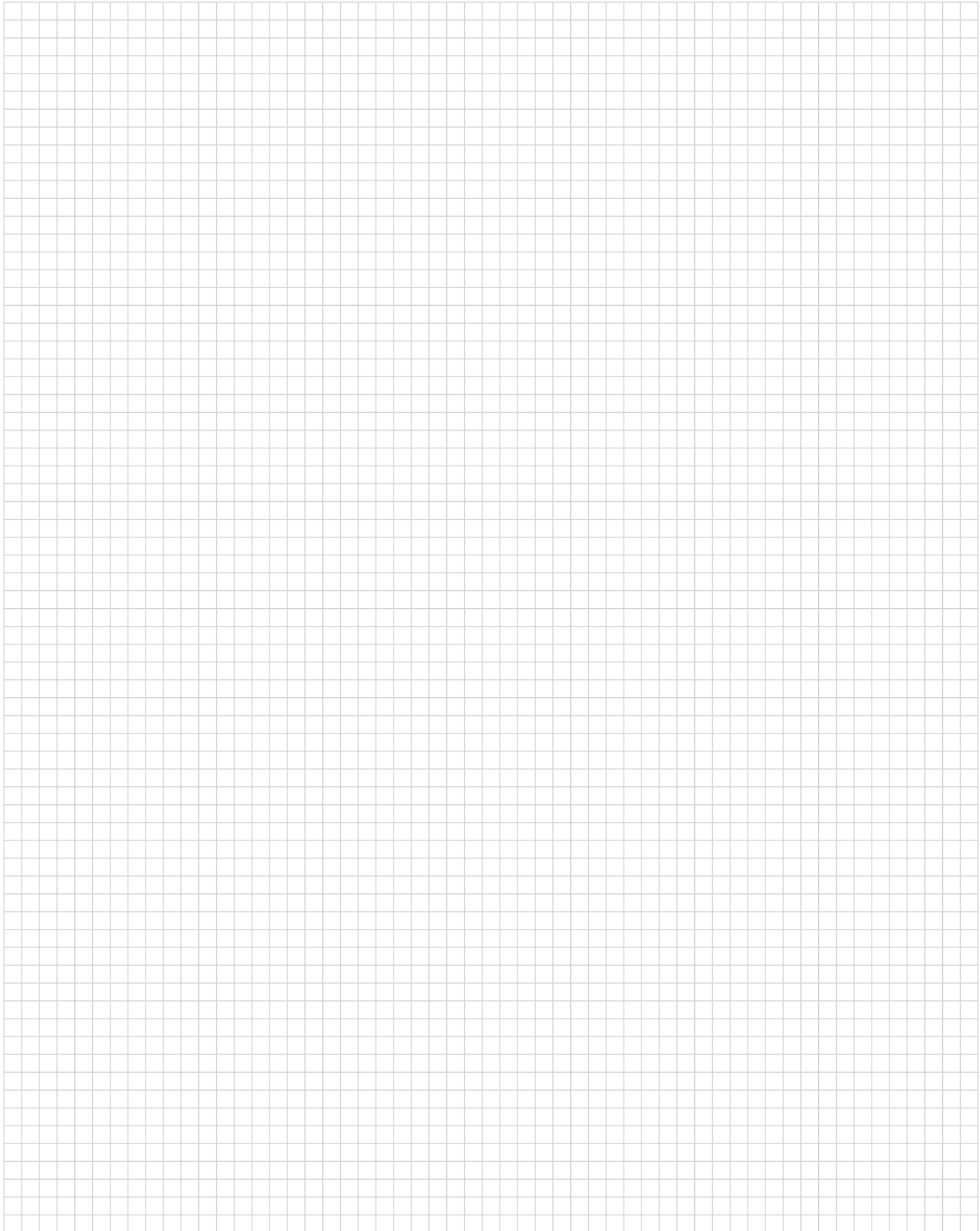
<sup>1</sup>Mini-Universal MATE-N-LOK 2 plug and cap housings accept pin or socket contacts. Use the appropriate contacts in the plug housing as required by the mating connector. All **Plugs** and **Caps** are **free-hanging**.  
<sup>2</sup>Duplex Finish — Plated with .000030 [.000762] min. gold in mating area and matte tin on solder tail end over .000050 [.00127] min. nickel underplate on entire contact.  
<sup>3</sup>Tin Finish — Plated with .000150 [.00381] min. tin over .000050 [.00127] min nickel underplate on entire contact.  
<sup>4</sup>All PC Board pin headers have 94V-0 flammability rating and can mate to V-0 or V-2 plug housings.

**Note:** All part numbers are RoHS Compliant.

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## Engineering Notes

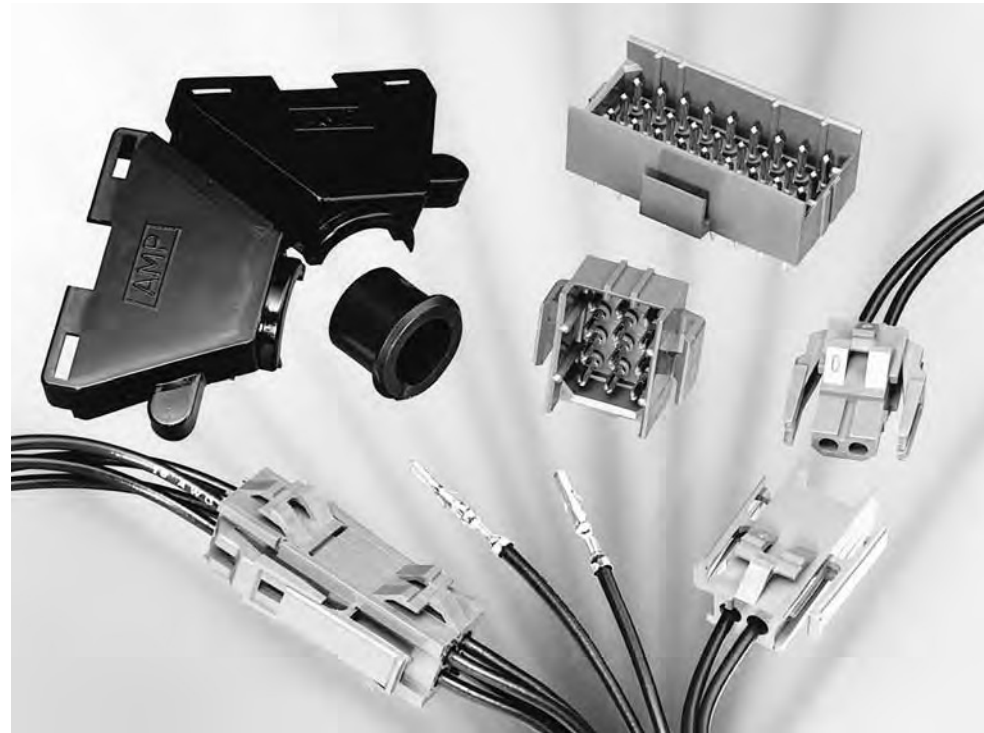
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## (MR) Miniature Rectangular Connectors

### Product Facts

- Housings positively lock to help prevent accidental disengagement
- Either cap or plug housing can be mounted in same rectangular panel cutout without additional hardware
- UL94V-0 housings
- Plug and cap design includes molded-in polarizing feature for proper mating
- Numbered cavities for easy circuit identification
- Egg crate design of plug half fully encloses socket contacts, reducing shock hazard
- Molded skirt extension on cap protects pin contacts
- Strain reliefs for 6 through 36 positions are available
- Choice of tin or gold plated contacts
- Not for interrupting current
- Socket solder tail contacts available for hot side PC Board mounting
- High density achieved through .165 [4.19] contact centerline spacing
- Extraction tool removes both pins and sockets
- Contacts accept 26-18 AWG [.12-.8 mm<sup>2</sup>] wire sizes and insulation diameters of .025-.115 [.635-2.92]
- Same applicator crimps pins and sockets
- Vertical PC Board pin headers are available
- Pin header standoffs on housings at board interface facilitates gas venting and cooling during soldering
- Recognized under the Component Program of Underwriters Laboratories Inc., File No. E28476 
- Certified by Canadian Standards Association, File No. LR 7189 



### Performance Characteristics

The Miniature Rectangular Connector performance characteristics found on pages 109-110 are based on free-hanging and panel mount connectors, loaded with contacts crimped on stranded wire.

**Dielectric Withstanding Voltage**—2.5 KVAC between adjacent circuits

**Insulation Resistance**—1500 megohms minimum initial between adjacent circuits

**Voltage Rating**—250 V AC

**Connector Mating**—Split Pin—1.0 lb. max. per circuit

**Connector Unmating**—Split Pin—.25 lb. min. per circuit

**Contact Insertion Force**—1.75 lb. max. per contact

**Contact Retention**—10 lb. min. per contact

**Durability**—25 cycles, mating and unmating

### Technical Documents

#### Product Specifications

108-1022 (MR) Miniature Rectangular Connectors

108-1078 (MR) Miniature Rectangular Headers

#### Application Specification

114-1014 (MR) Miniature Rectangular Contacts

#### Instruction Sheet

408-3231 Pin, Socket, Housing, Contacts, and Accessories

High Density

(MR) Miniature Rectangular Connectors  
.165 [4.20] Centerline

**(MR) Miniature Rectangular Connectors** (Continued)

**Performance Characteristics**

(Continued)

**Maximum Current**—Maximum current rating of Miniature Rectangular connectors is limited by the maximum operating temperature of the housings which is 105°C including the temperature rise of the contacts which is a maximum of 30°C. There are several variables which have a direct effect on this maximum current-carrying capability for a given connector and must be considered for each application. These variables are:

**Wire Size**—Larger diameter wire will carry more current since it has less internal resistance to current flow and thus generates less heat. Longer wire lengths also enhance current-carrying capabilities since the wire conducts heat away from the connector.

**Connector Size**—In general, the more circuits in a connector, the less current can be carried.

**Ambient Temperature**—The higher the ambient temperature, the less current can be carried in any given connector.

**Printed Wiring Board Conductor Size**—The finished trace conductor width and thickness should be maximized to allow for the greatest current-carrying capacity and heat dissipation.

Miniature Rectangular connectors also will withstand the following tests:

**Vibration**—10-55-10 cycles per minute at .06 inch total excursion

**Physical Shock**—18 drops, 50 G sawtooth at 10 milliseconds

**Housing Panel Retention**—50 lb. min.

**Housing Lock Strength**—20 lb. min.

**Thermal Shock**—-55°C to +85°C

**Temperature-Humidity Cycling**—25°C to 65°C at 95 RH

**Corrosion**—48 hr. at 5% salt concentration

**Wire-to-Wire  
MR Calculated Current Table**

Number of Circuits	Wire Gauge				
	18	20	22	24	26
2	9.00	8.00	6.50	5.50	5.00
3	8.50	7.00	6.00	5.00	4.50
4	7.00	6.50	5.50	5.00	4.00
6	6.00	6.00	5.00	4.00	4.00
9	5.00	5.00	4.00	4.00	3.50
12	4.50	4.50	4.00	3.50	3.00
15	4.50	4.00	3.50	3.00	2.50
20	4.00	4.00	3.50	3.00	2.50
24	4.00	3.50	3.00	2.50	2.00
36	3.50	3.00	2.50	2.00	2.00

Values are based on initial Temperature Rise versus Current Testing and are intended to be a guide in the selection of a connector family. All applications should be tested by the end user. The values listed are per circuit for fully loaded housings being 100% energized. **Note:** All combinations were not tested and this chart contains interpolated and extrapolated values.

**Minimum Wire Lengths for T-Rise vs. Current Testing**

AWG	Min. Length (in.)	AWG	Min. Length (in.)
30	2.6	18	9.4
28	3.2	16	11.3
26	4.1	14	13.7
24	5.1	12	16.4
20	7.8	10	19.3

**Note:** If wire lengths used are less than those listed above, the current-carrying ability of the system will be reduced due to less heat being conducted away from the connector. The customer should fully test all applications.

**Wire-to-Board**

Due to the vast differences in trace geometry and printed circuit board configurations, we are unable to provide a separate current carrying chart for our printed circuit board header products. However, the above Wire-to-Wire charts may be used as a guideline for headers if the trace width and thickness is equal to the listed wire gauge. For vertical headers, only 95% of the Wire-to-Wire value should be used. For right-angle headers, only 75% of the Wire-to-Wire value should be used. The charted values are only a tool for connector selection and will require the customer to fully test their application.

**Termination Resistance/Contact Crimp Tensile Force**

Wire Size	Termination Resistance	Contact Crimp Tensile Force			
		Test Current (Amps)	Resistance (Milliohms (Max. Init.))	lbs.	N
26	.12	1	5.00	5	22
24	.2	1.5	5.00	8	36
22	.3	3	4.50	14	62
20	.5	4.5	4.00	14	62
18	.8	6	4.00	30	133

**Note:** This is the total resistance between wire crimps of a mated pin and socket.

**Related Product Data**

**Product Specifications**

108-1022 (MR) Miniature Rectangular Connectors

108-1078 (MR) Miniature Rectangular Headers

**(MR) Miniature Rectangular Connectors** (Continued)

**(MR) Miniature Rectangular Connector Mating Combinations**

Connector Part Number				Mating Connector Part Number			
Number of Circuits	Flammability Rating	Style	Pin Housing (Cap) Part No.	Socket Housing (Plug) Part No.	PC Board Vertical Pin Headers		
					Plating	.062 Board	.120 Board
2	UL94V-0	In-Line	1-640507-0	1-640517-0	Tin	640497-1	640497-3
					Duplex <sup>1</sup>	2-640497-2	2-640497-4
3	UL94V-0	In-Line	1-640508-0	1-640518-0	Tin	640498-1	640498-3
					Duplex <sup>1</sup>	2-640498-2	2-640498-4
4	UL94V-0	Matrix	1-640509-0	1-640519-0	Tin	640499-1	640499-3
					Duplex <sup>1</sup>	2-640499-2	2-640499-4
6	UL94V-0	Matrix	1-640510-0	1-640520-0	Tin	640500-1	640500-3
					Duplex <sup>1</sup>	2-640500-2	2-640500-4
9	UL94V-0	Matrix	1-640511-0	1-640521-0	Tin	640501-1	640501-3
					Duplex <sup>1</sup>	2-640501-2	2-640501-4
12	UL94V-0	Matrix	1-640512-0	1-640522-0	Tin	640502-1	640502-3
					Duplex <sup>1</sup>	2-640502-2	2-640502-4
15	UL94V-0	Matrix	1-640513-0	1-640523-0	Tin	640503-1	640503-3
					Duplex <sup>1</sup>	2-640503-2	2-640503-4
20	UL94V-0	Matrix	1-640514-0	1-640524-0	Tin	640504-1	640504-3
					Duplex <sup>1</sup>	2-640504-2	2-640504-4
24	UL94V-0	Matrix	1-640515-0	1-640525-0	Tin	640505-1	640505-3
					Duplex <sup>1</sup>	2-640505-2	2-640505-4
36	UL94V-0	Matrix	1-640516-0	1-640526-0	Tin	640506-1	640506-3
					Duplex <sup>1</sup>	2-640506-2	2-640506-4

<sup>1</sup>Duplex Finish — Plated with .000030 [.000762] min. gold in mating area, matte tin on solder tail end over .000050 [.00127] min. nickel underplate on entire contact.

**Note:** All part numbers are RoHS Compliant.

High Density

(MR) Miniature Rectangular Connectors  
.165 [4.20] Centerline

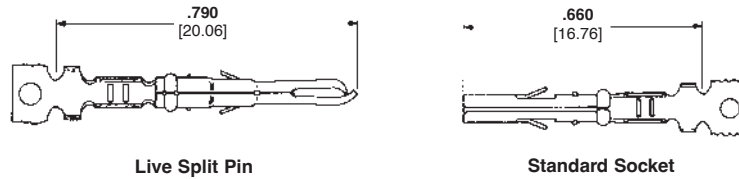
**(MR) Miniature Rectangular Connectors** (Continued)

**Contacts**

Pin diameter .068 [1.73]

**Material**

Phosphor bronze  
Stock thickness .008 [.203]



Wire Size Range AWG [mm <sup>2</sup> ]	Ins. Dia. Range	Finish	Contact Part Numbers				HDM Applicator Part No.	Hand Tool Part No.
			Live Split Pin		Standard Socket			
			Strip Form	Loose Piece	Strip Form	Loose Piece		
26-24 [.12-.2]	.025-.050 .635-1.27	Pre-tin	350968-1	640579-1	794000-1	794001-1	466352-1 <sup>3</sup>	91534-1
		Select Gold <sup>1</sup>	350968-2	640579-2	794000-2	794001-2	466352-3 <sup>3</sup>	
26-18 <sup>2</sup> [.12-.8]	.050-.115 1.27-2.92	Pre-tin	350967-1	640545-1	641294-1	641300-1	466351-1 <sup>3</sup>	91526-1
		Select Gold <sup>1</sup>	350967-2	640545-2	641294-2	641300-2	466351-2 <sup>3</sup> 466351-4 <sup>3</sup>	

<sup>1</sup>Select Gold Finish — Plated with .000030 min. [.000762] gold in mating area over .000050 [.00127] min. nickel underplate on entire contact.

<sup>2</sup>1650 CMA maximum.

<sup>3</sup>HDM Applicator part number ending in -1 is used on AMPOMATOR CLS Machine with T or G Terminators, -2 is used on AMP-O-LECTRIC Model K Machine, -3 or -4 is used on AMP-O-LECTRIC Model G Machine. See pages 207-210 for further information.

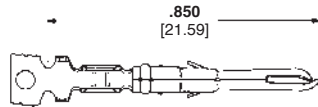
**Grounding Pins**

(Mate first, break last, not for interrupting current)

Pin diameter .068 [1.73]  
Stock thickness .008 [.203]

**Material**

Phosphor bronze



Wire Size Range AWG [mm <sup>2</sup> ]	Ins. Dia. Range	Finish	Grounding Pin Part Numbers		HDM Applicator Part No.	Hand Tool Part No.
			Strip Form	Loose Piece		
26-18 <sup>2</sup> [.12-.8]	.050-.115 1.27-2.92	Pre-tin	350969-1	640580-1	466351-1 <sup>3</sup>	91526-1
		Select Gold <sup>1</sup>	350969-2	640580-2	466351-2 <sup>3</sup> 466351-4 <sup>3</sup>	

<sup>1</sup>Select Gold Finish—Plated with .000030 [.000762] min. gold in mating area over .000050 [.00127] min. nickel underplate on entire contact.

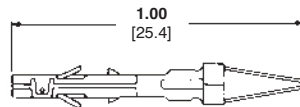
<sup>2</sup>1650 CMA maximum.

<sup>3</sup>HDM Applicator part number ending in -1 is used on AMPOMATOR CLS Machine with T or G Terminators, -2 is used on AMP-O-LECTRIC Model K Machine, -3 or -4 is used on AMP-O-LECTRIC Model G Machine. See pages 207-210 for further information.

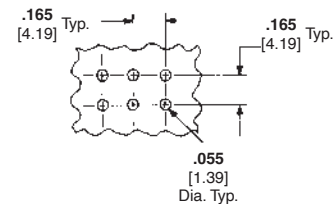
**Solder Tail Socket**

**Material and Finish**

Phosphor bronze, pre-tin  
Stock thickness .008 [.203]



**Part Number 350838-1**  
**Note:** Recommended for use with MR Socket Housings



**Recommended PC Board Hole Layout**  
.062 [1.57] or .093 [2.36] thick board

**Keying Plug**

IS 408-3231



**Part Number 350591-1**  
UL94V-0 Nylon material  
**Note:** Use in socket housings only.

**Related Product Data**

**Product Specification**

108-1022 (MR) Miniature Rectangular Connectors

**Application Specification**

114-1014 (MR) Miniature Rectangular Contacts

**Performance Characteristics**—pages 109-110

**Housings**—pages 113-114

**Technical Documents**—pages 109 and 205-206

**Application Tooling**—pages 207-210



**Contact Extraction Tool**  
Part No. 455822-2  
IS 408-9570



**Contact Insertion Tool**  
(For inserting contacts applied to small diameter wire)  
Part No. 455830-1  
IS 408-7984

**Note:** All part numbers are RoHS Compliant.

High Density

(MR) Miniature Rectangular Connectors  
.165 [4.20] Centerline

**(MR) Miniature Rectangular Connectors** (Continued)

**Housings**

**Free-Hanging or Panel Mount**

.165 [4.19] Centerline spacing

**Material**

Nylon, Natural (Color—Brick Red)

**Flammability Rating**—UL94V-0

**Related Product Data**

**Product Specification**

108-1022 (MR) Miniature Rectangular Connectors

**Performance Characteristics**—pages 109-110

**Panel Cutout Recommendations**—page 115

**Contacts**—page 112

**Keying Plug**—page 112

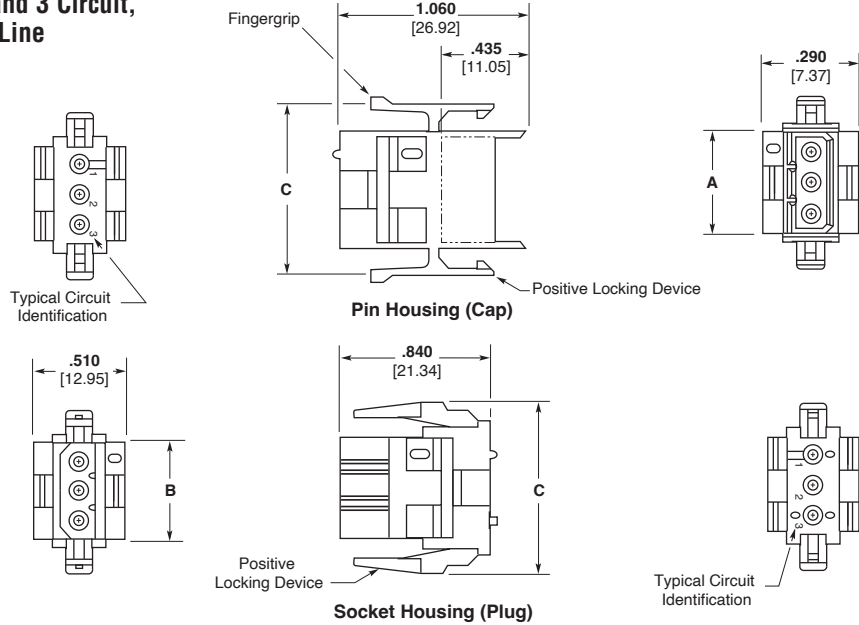
**Strain Reliefs**—page 116

**Commoning Bars**—page 116

**Technical Documents**—pages 109 and 205-206

**Mating Headers**—pages 117-118

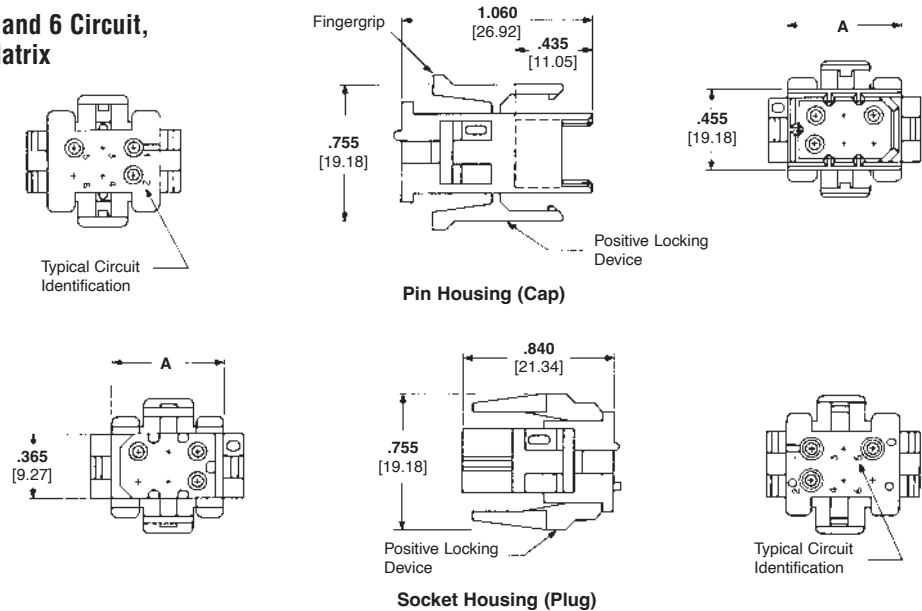
**2 and 3 Circuit, In-Line**



Number of Circuits	Dimensions			Part Numbers	
	A	B	C	Pin Housing (Cap)	Socket Housing (Plug)
2	.455 11.56	.365 9.27	.755 19.18	1-640507-0	1-640517-0
3	.620 15.75	.530 13.46	.920 23.37	1-640508-0	1-640518-0

**Note:** All part numbers are RoHS Compliant.

**4 and 6 Circuit, Matrix**



Number of Circuits	A Dim.	Part Numbers	
		Pin Housing (Cap)	Socket Housing (Plug)
4	.455 11.56	1-640509-0	1-640519-0
6	.620 15.75	1-640510-0	1-640520-0

**Note:** All part numbers are RoHS Compliant.

High Density  
(MR) Miniature Rectangular Connectors  
.165 [4.20] Centerline

**(MR) Miniature Rectangular Connectors** (Continued)

**Housings**

**Free-Hanging or Panel Mount**

.165 [4.19] Centerline spacing

**Material**

Nylon, Natural (Color—Brick Red)

**Flammability Rating**—UL94V-0

**Related Product Data**

**Product Specification**

108-1022 (MR) Miniature Rectangular Connectors

**Performance Characteristics**—pages 109-110

**Panel Cutout Recommendations**—page 115

**Contacts**—page 112

**Keying Plug**—page 112

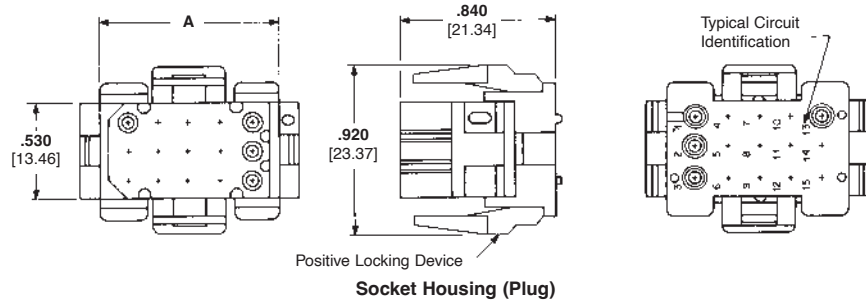
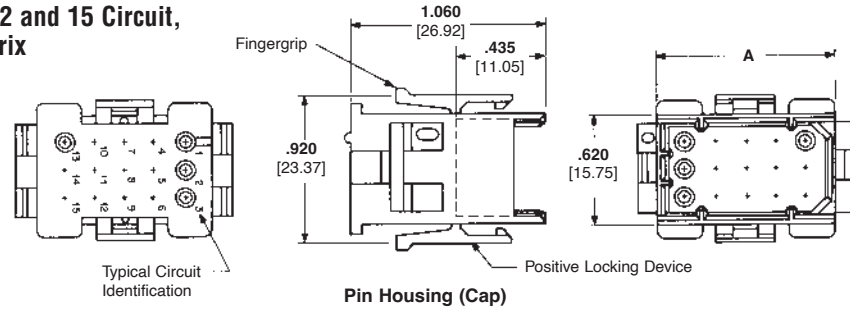
**Strain Reliefs**—page 116

**Commoning Bars**—page 116

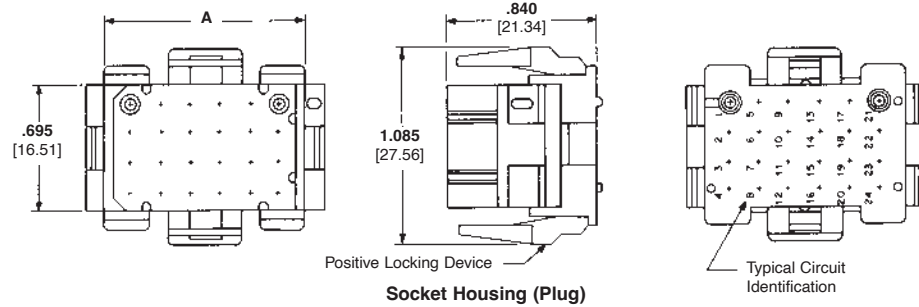
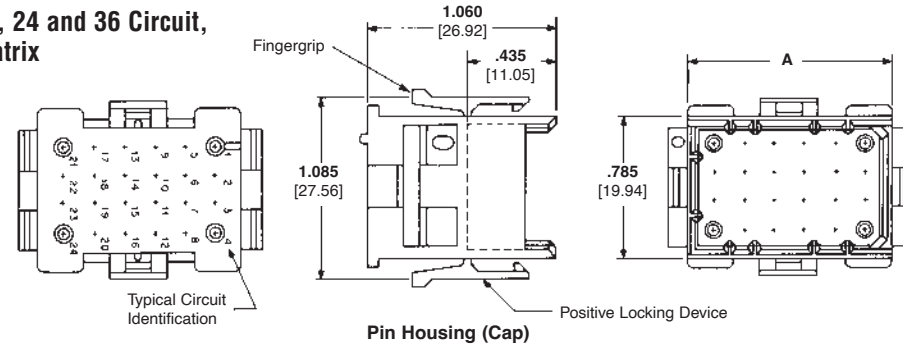
**Technical Documents**—pages 109 and 205-206

**Mating Headers**—pages 117-118

**9, 12 and 15 Circuit, Matrix**



**20, 24 and 36 Circuit, Matrix**



Number of Circuits	A Dim.	Part Numbers	
		Pin Housing (Cap)	Socket Housing (Plug)
9	.620 [15.75]	1-640511-0	1-640521-0
12	.785 [19.94]	1-640512-0	1-640522-0
15	.950 [24.13]	1-640513-0	1-640523-0
20	.950 [24.13]	1-640514-0	1-640524-0
24	1.115 [28.32]	1-640515-0	1-640525-0
36	1.610 [40.89]	1-640516-0	1-640526-0

**Note:** All part numbers are RoHS Compliant.

High Density

(MR) Miniature Rectangular Connectors  
.165 [4.20] Centerline

**(MR) Miniature Rectangular Connectors** (Continued)

**Recommended Panel  
Cutouts for Pin and Socket  
Housings**

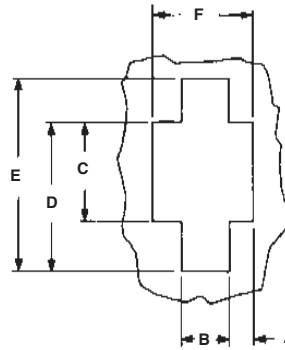
**Related Product Data**

**Product Specification**

108-1022 (MR) Miniature Rectangular Connectors

**Housings**—pages 113-114

**Technical Documents**—pages 109 and 205-206



View is from housing entry side

Panel Thickness .068 [1.75] Max.

Number of Circuits	Panel Cutout Dimensions					
	A	B	C	D	E	F
2	.105 2.67	.220 5.59	.475 12.07	.630 16.00	.785 19.94	.430 10.92
3	.105 2.67	.220 5.59	.640 16.26	.795 20.19	.950 24.13	.430 10.92
4	.157 3.99	.280 5.28	.475 12.07	.630 16.00	.785 19.94	.595 15.11
6	.208 5.28	.345 8.76	.475 12.07	.630 16.00	.785 19.94	.760 19.30
9	.208 5.28	.345 8.76	.640 16.26	.795 20.19	.950 24.13	.760 19.30
12	.225 5.72	.475 12.07	.640 16.26	.795 20.19	.950 24.13	.925 23.50
15	.308 7.82	.475 12.07	.640 16.26	.795 20.19	.950 24.13	1.090 27.69
20	.308 7.82	.475 12.07	.805 20.45	.960 24.38	1.115 28.32	1.090 27.69
24	.390 9.91	.475 12.07	.805 20.45	.960 24.38	1.115 28.32	1.255 31.88
36	.625 15.86	.500 12.70	.800 20.32	.950 24.13	1.100 27.94	1.750 44.45

**Notes:**

1. When mounted in a .060 [1.52] thick panel, the cap's mating end extends .800 [20.32] beyond the panel front; wire end extends .220 [55.88] from the panel rear. Plug mating end extends .580 [14.73] beyond the panel front; wire end extends .220 [55.88] from the panel rear.
2. The panel should be punched so that the housing enters the panel in the same direction as the punch for ease of assembly.

High Density

(MR) Miniature Rectangular Connectors  
.165 [4.20] Centerline

**(MR) Miniature Rectangular Connectors** (Continued)

**Strain Reliefs**

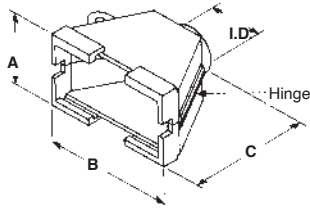
**One Piece—Clam Shell**

(Illustrated in closed position)  
IS 408-3231

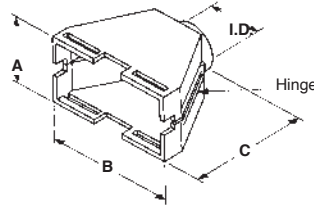
**Material**

Nylon, Natural (Color—Brick Red)

**Flammability Rating**—UL94V-0



6, 9, 12, 15 and 20 Circuit



24 and 36 Circuit

Number of Circuits	Dimensions				Part Numbers
	I.D.	A	B	C	
6	.374	.634	.760	1.000	350373-1
	9.50	16.10	19.30	25.4	
9	.420	.800	.760	1.000	350522-1
	10.67	20.32	19.30	25.4	
12	.420	.790	.925	1.000	350374-1
	10.67	20.07	23.50	25.4	
15	.420	.790	1.090	1.000	350523-1
	10.67	20.07	27.69	25.4	
20	.560	.960	1.090	1.280	480634-1
	14.22	24.38	27.69	23.51	
24	.560	.900	1.255	1.280	350524-1
	14.22	22.86	31.88	23.51	
36	.560	.900	1.750	1.280	480594-1
	14.22	22.86	44.45	23.51	

**Notes:**

1. These strain reliefs can be used with either pin or socket housings.
2. **Customer supplied:** One No. 6 Panhead Type B self-taping screw, 3/8 long. Plating is optional to conform to customer requirements.
3. Strain reliefs are also available in UL94V-2 nylon, black in color. To order strain reliefs in this material use the appropriate dash numbers: 1-XXXXXX-9.

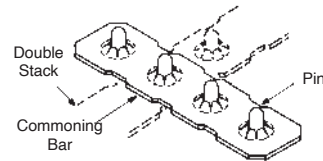
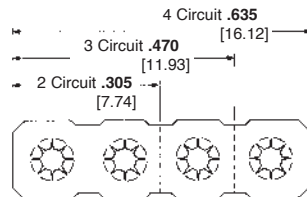
**Commoning Bars**

IS 408-3231

**Material**

Brass

Stock thickness .008 [.203]



Finish	Part Numbers		
	2 Circuit	3 Circuit	4 Circuit
Pre-tin	350020-1	350021-1	350022-1
Gold <sup>1</sup>	350020-2	350021-2	350022-2

<sup>1</sup>Gold Finish—Plated with .000030 [.000762] min. gold over .000050 [.00127] min. nickel underplate on entire contact.

**Related Product Data**

**Housings**—pages 113-114

**Notes:**

1. Commoning bars can be used to common adjacent pin contacts in any column or row. Maximum stack per pin is two.
2. The above illustrates the proper insertion of the Commoning Bar.
3. Use the mating socket housing to assemble the Commoning Bar onto the pins.



**Commoning Bar Extraction Tool**  
Part No. 457306-1  
IS 408-3231

**Note:** All part numbers are RoHS Compliant.

High Density

(MR) Miniature Rectangular Connectors  
.165 [4.20] Centerline

**(MR) Miniature Rectangular Connectors** (Continued)

**PC Board Vertical Pin Headers**

.165 [4.19] Centerline spacing

**Material**

**Housing**—Nylon, Natural (Color—Brick Red)

**Flammability Rating**—UL94V-0

**Contacts**—Phosphor bronze  
Solder tail diameter .040 [1.02]

**Related Product Data**

**Product Specification**

108-1078 (MR) Miniature Rectangular Headers

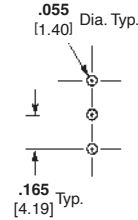
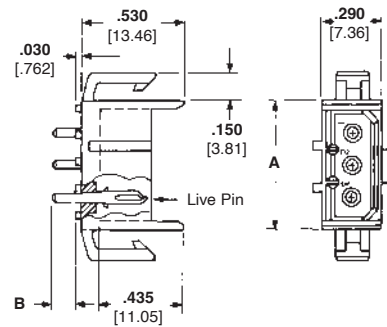
**Dimensions A and B**—page 118

**Performance Characteristics**—pages 109-110

**Technical Documents**—pages 109 and 205-206

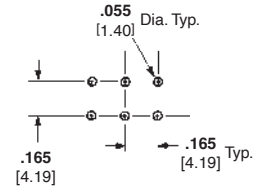
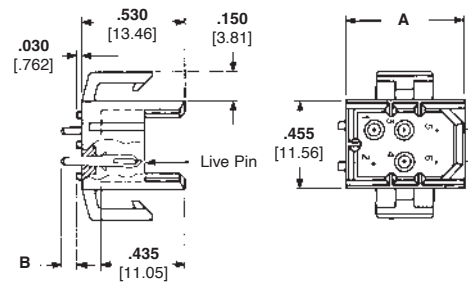
**Mating Socket Housings**—pages 113-114

**2 and 3 Circuit, In-Line**



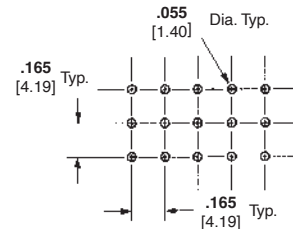
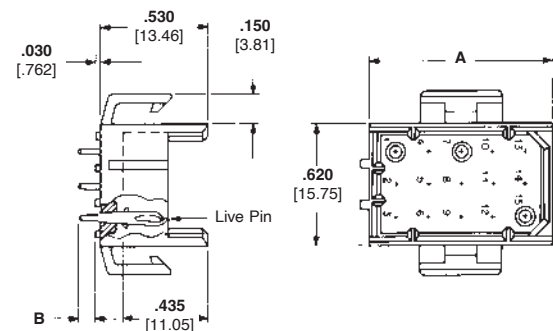
Recommended PC Board Hole Layout

**4 and 6 Circuit, Matrix**



Recommended PC Board Hole Layout

**9, 12 and 15 Circuit, Matrix**



Recommended PC Board Hole Layout

High Density

(MR) Miniature Rectangular Connectors  
.165 [4.20] Centerline

**(MR) Miniature Rectangular Connectors** (Continued)

**PC Board Vertical Pin Headers**

.165 [4.19] Centerline spacing

**Material**

**Housing**—Nylon, Natural (Color—Brick Red)

**Flammability Rating**—UL94V-0

**Contacts**—Phosphor bronze  
Solder tail diameter .040 [1.02]

**Related Product Data**

**Product Specification**

108-1078 (MR) Miniature Rectangular Headers

**Dimensions** (2 and 3 Circuit, In-Line; 4, 6, 9, 12 and 15 Circuit, Matrix)  
— page 118

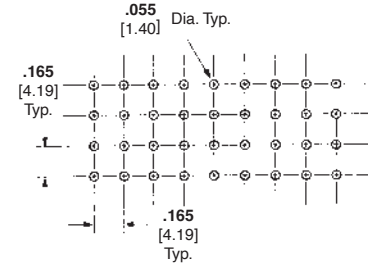
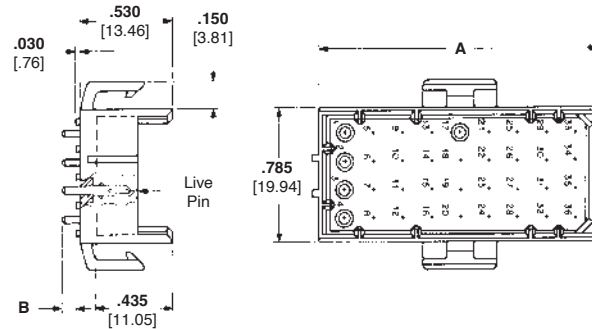
**Performance Characteristics**—  
pages 109-110

**Vertical Pin Headers and Recommended PC Board Hole Layouts**—pages 117-118

**Technical Documents**—pages 109 and 205-206

**Mating Socket Housings**—pages 113-114

**20, 24 and 36 Circuit, Matrix**



Recommended PC Board Hole Layout

Number of Circuits	Board Thickness	Dimensions		Header Part Numbers		Mates with Socket Housing Part No.
		A	B	Tin Finish	Duplex Finish <sup>1</sup>	
2	.062	.455	.120	640497-1	2-640497-2	1-640517-0
	1.57	11.56	3.05	640497-3	2-640497-4	
3	.120	.455	.180	640498-1	2-640498-2	1-640518-0
	3.05	11.56	4.57	640498-3	2-640498-4	
4	.062	.620	.120	640499-1	2-640499-2	1-640519-0
	1.57	15.75	3.05	640499-3	2-640499-4	
6	.120	.620	.180	640500-1	2-640500-2	1-640520-0
	3.05	15.75	4.57	640500-3	2-640500-4	
9	.062	.620	.120	640501-1	2-640501-2	1-640521-0
	1.57	15.75	3.05	640501-3	2-640501-4	
12	.120	.620	.180	640502-1	2-640502-2	1-640522-0
	3.05	15.75	4.57	640502-3	2-640502-4	
15	.062	.785	.120	640503-1	2-640503-2	1-640523-0
	1.57	19.94	3.05	640503-3	2-640503-4	
20	.120	.785	.180	640504-1	2-640504-2	1-640524-0
	3.05	19.94	4.57	640504-3	2-640504-4	
24	.062	.950	.120	640505-1	2-640505-2	1-640525-0
	1.57	24.13	3.05	640505-3	2-640505-4	
36	.120	.950	.180	640506-1	2-640506-2	1-640526-0
	3.05	24.13	4.57	640506-3	2-640506-4	

<sup>1</sup>Duplex Finish — Plated with .000030 [.000762] min. gold in mating area, matte tin on solder tail end over .000050 [.00127] min. nickel underplate on entire contact.



**Note:** All part numbers are RoHS Compliant.

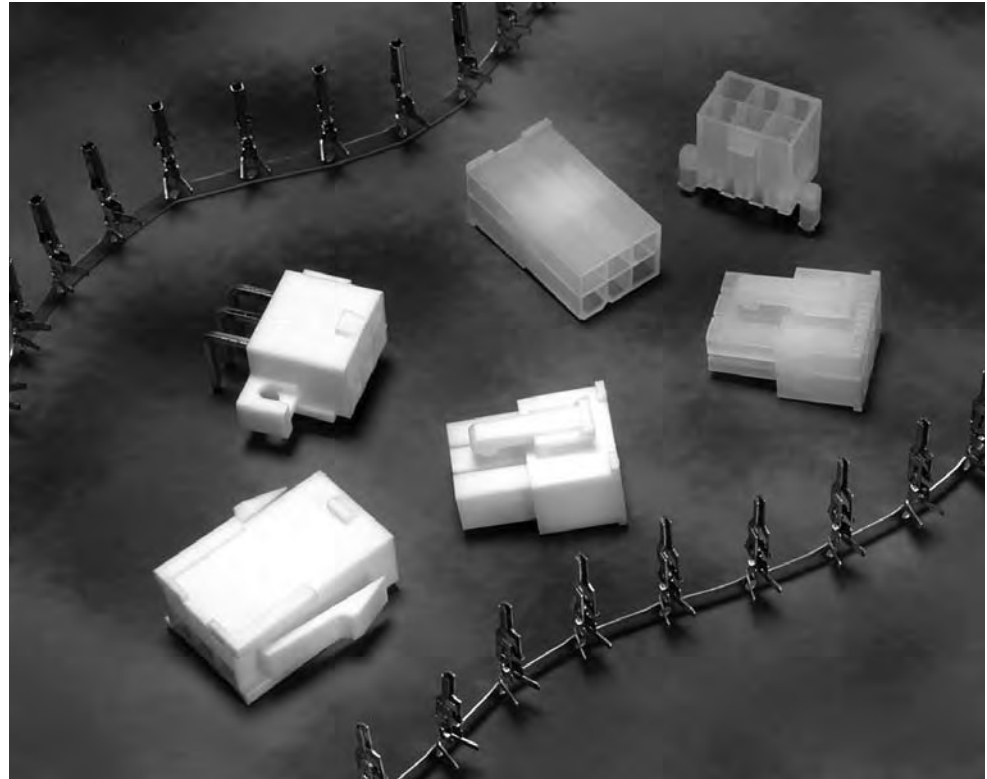
High Density

(MR) Miniature Rectangular Connectors .165 [4.20] Centerline

## VAL-U-LOK Connector System (Wire-to-Wire, Wire-to-Board and Wire-to-Panel)

### Product Facts

- Low cost, wire-to-wire, wire-to-board and wire-to-panel connectors with 4.2 mm centerline
- Easy mate and unmate with positive latch design
- Single row, 3-5 positions: receptacles, panel mount or free-hanging plugs
- Double row, 2-24 positions (even only): receptacles, panel mount or free-hanging plugs, and vertical or right-angle pin headers
- Available in UL 94V-2 or UL 94V-0 flammability rated nylon
- Products are lead free to help promote a cleaner environment
- Intermateable and interchangeable with Molex Mini-Fit, Jr. and intermateable AMP-DUAC connectors
- Recognized under the Component Program of Underwriters Laboratories Inc., File No. E28476 
- Certified by Canadian Standards Association, File No. 208567 
- Tyco Electronics Design For Environment (DFE) Standard 230-5



### Performance Characteristics

#### Electrical

- Voltage**—600 VAC
- Current**—9 amps max. in 2-position applications
- Dielectric Withstanding Voltage**—1500 VAC min.
- Insulation Resistance**—1000 megohms min.
- Operating Temperature**—-40°C to +105°C [-40°F to +221°F]

#### Mechanical

- Connector Mating**—1.55 lb. [6.90 N] max. per circuit
- Connector Unmating**—.11 lb. [.49 N] min. per circuit
- Contact Retention**—4.88 lb. [21.71 N] min. per contact
- Durability**—30 cycles, mating and unmating

### Material and Finish

- Housings**—Nylon, UL 94V-2 and UL 94V-0
- Contacts**—Brass or Phos. Bronze with tin plating (Lead-Free) or gold plating

### Technical Documents

- Design Objective** 108-2112
- Application Specification** 114-13172
- Engineering Test Report** 502-1204

### Applications

- Computer motherboards/power supplies
- Harness assemblies used in the Vending, Gaming and Appliance industries
- Car alarm systems
- Heating systems

High Density

VAL-U-LOK Connector System  
.165 [4.20] Centerline

Molex and Mini-Fit are trademarks of Molex Incorporated.

**VAL-U-LOK Connector System**  
**(Wire-to-Wire, Wire-to-Board and Wire-to-Panel)** (Continued)

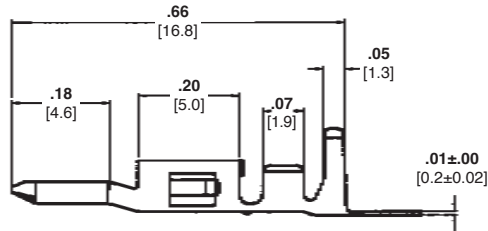
**Contacts**

Wire Range (AWG)	Insulation Range	Material & Finish	Pin		Socket		Applicator Part Number <sup>1</sup>	PRO-CRIMPER III Hand Tool Part Number
			Strip Form	Loose Piece	Strip Form	Loose Piece		
26-22	.047 - .069 [1.2 - 1.75]	Brass, Pre-Tin	794957-1	1586316-1	794958-1	1586317-1	1385448-X	91387-1
		Phos. Brz., Pre-Tin	794957-3	1586316-3	794958-3	1586317-3		
		Brass, Gold	794957-2	1586316-2	794958-2	1586317-2		
		Phos. Brz., Gold	794957-4	1586316-4	794958-4	1586317-4		
22-18	.060 - .122 [1.50 - 3.10]	Brass, Pre-Tin	794955-1	1586314-1	794956-1	1586315-1	1852668-X	91388-1
		Phos. Brz., Pre-Tin	794955-3	1586314-3	794956-3	1586315-3		
		Brass, Gold	794955-2	1586314-2	794956-2	1586315-2		
		Phos. Brz., Gold	794955-4	1586314-4	794956-4	1586315-4		
16	.071 - .122 [1.8 - 3.10]	Brass, Pre-Tin	1586054-1	1586840-1	1586055-1	1586841-1	1852294-X	1976444-1
		Phos. Brz., Pre-Tin	1586054-3	1586840-3	1586055-3	1586841-2		
		Brass, Gold	1586054-2	1586840-2	1586055-2	1586841-3		
		Phos. Brz., Gold	1586054-4	1586840-4	1586055-4	1586841-4		

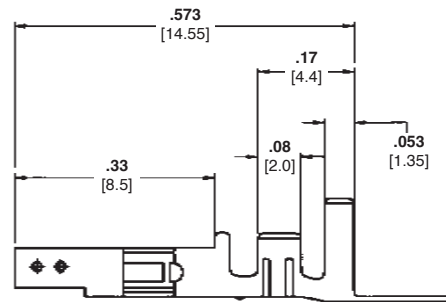
Extraction Tool Part Number 1586343-1

<sup>1</sup> For applicator and machine part numbers, contact Technical Support.

**Pin** — (used in Plug Housing)



**Socket** — (used in Receptacle Housing)



VAL-U-LOK Connector System  
High Density  
.165 [4.20] Centerline

## VAL-U-LOK Connector System (Wire-to-Wire, Wire-to-Board and Wire-to-Panel) (Continued)

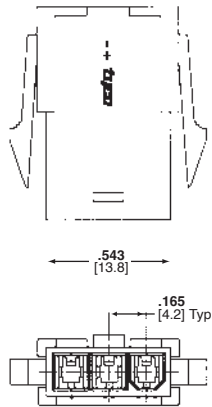
### Housings — Single Row

No. of Positions	UL 94V-2 Housings			UL 94V-0 Housings		
	Panel Mount Plug	Free-Hanging Plug	Receptacle Housing	Panel Mount Plug	Free-Hanging Plug	Receptacle Housing
3*	1586101-3	1586103-3	1586105-3	1586102-3	1586104-3	1586106-3
4	1586022-4	1586024-4	1586026-4	1586023-4	1586025-4	1586027-4
5	1586022-5	1586024-5	1586026-5	1586023-5	1586025-5	1586027-5

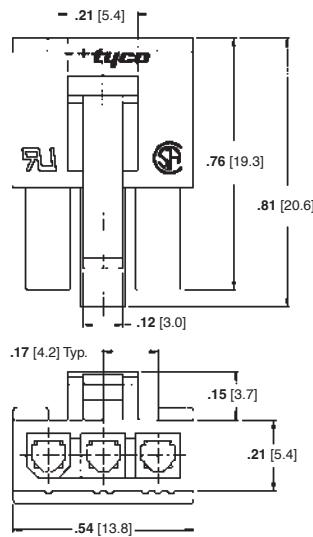
\*Note: 3 position housings are First Mate/Last Break.

Note: All part numbers are RoHS Compliant.

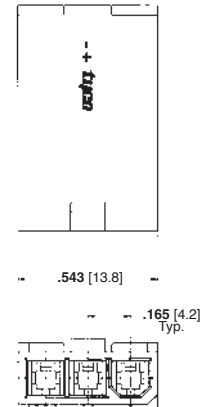
#### Panel Mount Plug Housing



#### Receptacle Housing



#### Free-Hanging Plug Housing

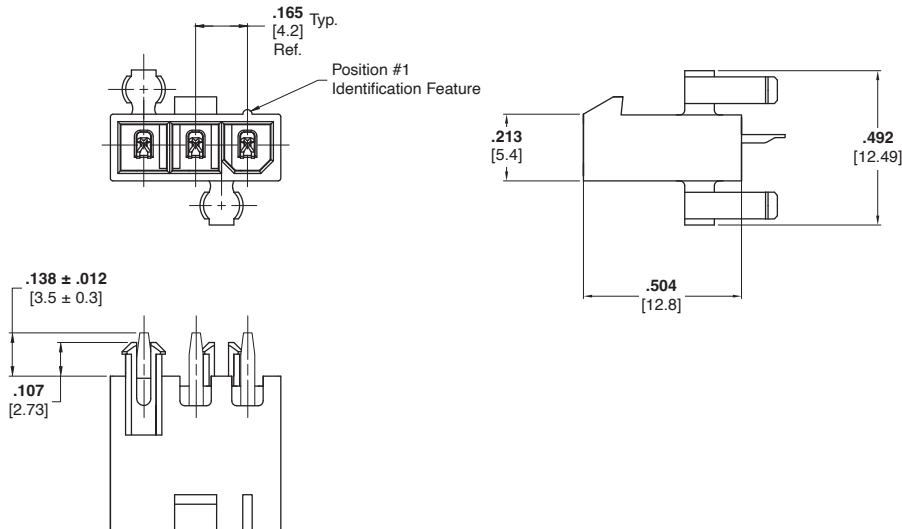


### Headers — Single Row, Vertical

No. of	UL 94V-2 Housings		UL 94V-0 Housings
	With Drain Holes	Without Drain Holes	With Drain Holes
3*	2029054-3	2029058-3	2029056-3
4	2029054-4	2029058-4	2029056-4
5	2029054-5	2029058-5	2029056-5

\*Note: 3 position housings are First Mate/Last Break.

Note: All part numbers are RoHS Compliant.



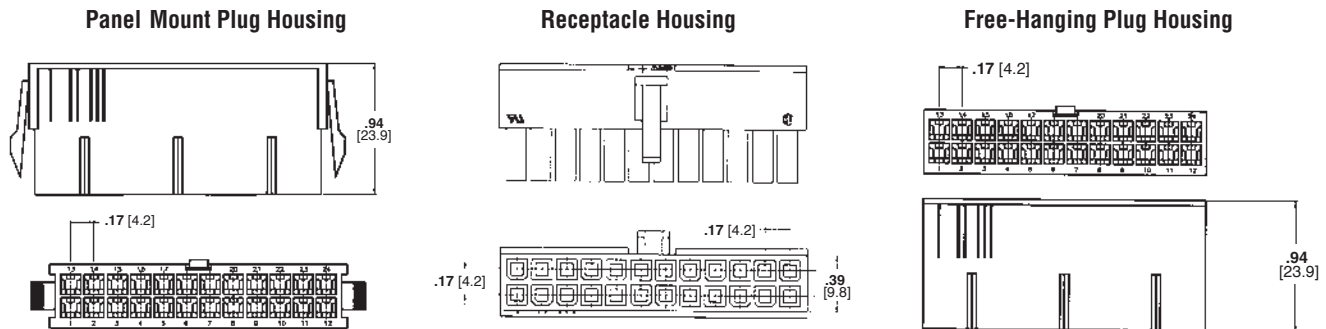
## VAL-U-LOK Connector System (Wire-to-Wire, Wire-to-Board and Wire-to-Panel) (Continued)

### Housings — Double Row

No. of Positions	UL 94V-2 Housings			UL 94V-0 Housings		
	Panel Mount Plug	Free-Hanging Plug	Receptacle Housing	Panel Mount Plug	Free-Hanging Plug	Receptacle Housing
2	794953-2	1586000-2	794954-2	1586018-2	1586017-2	1586019-2
4	794953-4	1586000-4	794954-4	1586018-4	1586017-4	1586019-4
6	794953-6	1586000-6	794954-6	1586018-6	1586017-6	1586019-6
8	794953-8	1586000-8	794954-8	1586018-8	1586017-8	1586019-8
10	1-794953-0	1-1586000-0	1-794954-0	1-1586018-0	1-1586017-0	1-1586019-0
12	1-794953-2	1-1586000-2	1-794954-2	1-1586018-2	1-1586017-2	1-1586019-2
14	1-794953-4	1-1586000-4	1-794954-4	1-1586018-4	1-1586017-4	1-1586019-4
16	1-794953-6	1-1586000-6	1-794954-6	1-1586018-6	1-1586017-6	1-1586019-6
18	1-794953-8	1-1586000-8	1-794954-8	1-1586018-8	1-1586017-8	1-1586019-8
20	2-794953-0	2-1586000-0	2-794954-0	2-1586018-0	2-1586017-0	2-1586019-0
22	2-794953-2	2-1586000-2	2-794954-2	2-1586018-2	2-1586017-2	2-1586019-2
24	2-794953-4	2-1586000-4	2-794954-4	2-1586018-4	2-1586017-4	2-1586019-4

Note: Plug housings accept pin contacts and receptacle housings accept socket contacts on page 114.

Note: All part numbers are RoHS Compliant.



### Housings — Colored

Color	No. of Positions	UL 94V-2 Housings			UL 94V-0 Housings		
		Panel Mount Plug	Free-Hanging Plug	Receptacle Housing	Panel Mount Plug	Free-Hanging Plug	Receptacle Housing
Black	2-24	X-2029088-X	X-2029027-X	X-1586075-X	X-2029035-X	X-2029028-X	X-2029029-X
Red	4-24	X-2029089-X	X-2029090-X	X-2029091-X	X-2029092-X	X-2029093-X	X-2029094-X
Blue	6-24	X-2029095-X	X-2029096-X	X-2029097-X	X-2029098-X	X-2029099-X	X-2029100-X

Note: Plug housings accept pin contacts and receptacle housings accept socket contacts on page 114.

Note: All part numbers are RoHS Compliant.

## VAL-U-LOK Connector System (Wire-to-Wire, Wire-to-Board and Wire-to-Panel) (Continued)

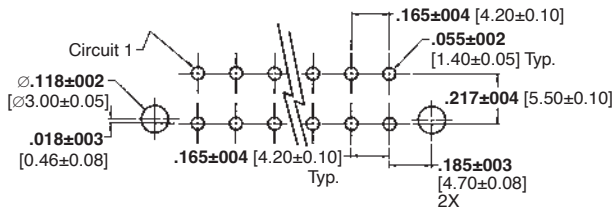
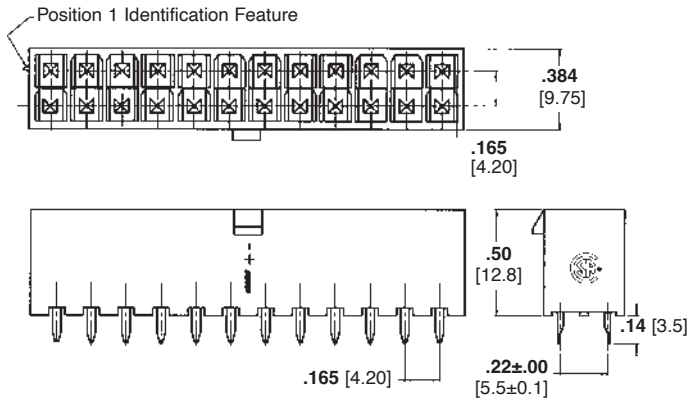
### Pin Headers

No. of Positions	UL 94V-2 Pin Headers				UL 94V-0 Pin Headers			
	Vertical		Right-Angle		Vertical		Right-Angle	
	w/o Pegs	w/Pegs	w/o Pegs	Screw Mount	w/o Pegs	w/Pegs	w/o Pegs	Screw Mount
2	1586037-2	1586039-2	1586041-2	1586043-2	1586038-2	1586040-2	1586042-2	1586044-2
4	1586037-4	1586039-4	1586041-4	1586043-4	1586038-4	1586040-4	1586042-4	1586044-4
6	1586037-6	1586039-6	1586041-6	1586043-6	1586038-6	1586040-6	1586042-6	1586044-6
8	1586037-8	1586039-8	1586041-8	1586043-8	1586038-8	1586040-8	1586042-8	1586044-8
10	1-1586037-0	1-1586039-0	1-1586041-0	1-1586043-0	1-1586038-0	1-1586040-0	1-1586042-0	1-1586044-0
12	1-1586037-2	1-1586039-2	1-1586041-2	1-1586043-2	1-1586038-2	1-1586040-2	1-1586042-2	1-1586044-2
14	1-1586037-4	1-1586039-4	1-1586041-4	1-1586043-4	1-1586038-4	1-1586040-4	1-1586042-4	1-1586044-4
16	1-1586037-6	1-1586039-6	1-1586041-6	1-1586043-6	1-1586038-6	1-1586040-6	1-1586042-6	1-1586044-6
18	1-1586037-8	1-1586039-8	1-1586041-8	1-1586043-8	1-1586038-8	1-1586040-8	1-1586042-8	1-1586044-8
20	2-1586037-0	2-1586039-0	2-1586041-0	2-1586043-0	2-1586038-0	2-1586040-0	2-1586042-0	2-1586044-0
22	2-1586037-2	2-1586039-2	2-1586041-2	2-1586043-2	2-1586038-2	2-1586040-2	2-1586042-2	2-1586044-2
24	2-1586037-4	2-1586039-4	2-1586041-4	2-1586043-4	2-1586038-4	2-1586040-4	2-1586042-4	2-1586044-4

Note: All Headers have Brass, Tin-Plated contacts.

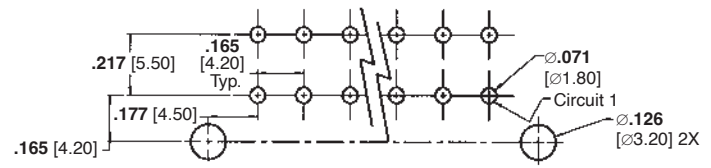
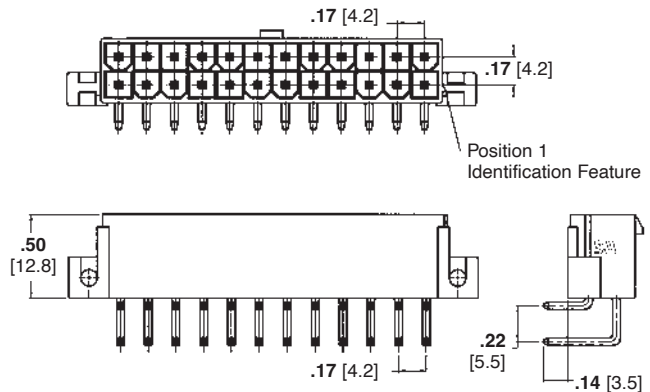
Note: All part numbers are RoHS Compliant.

#### Vertical Pin Headers (Part No. 1586037 shown w/o pegs)



PCB Layout: Component Side (shown with pegs)  
Recommended Board Thickness .070 [1.78]

#### Right-Angle Pin Headers (Part No. 1586043 Screw Mount)



PCB Layout: Component Side (screw mount shown)  
Recommended Board Thickness .063 [1.60]

High Density

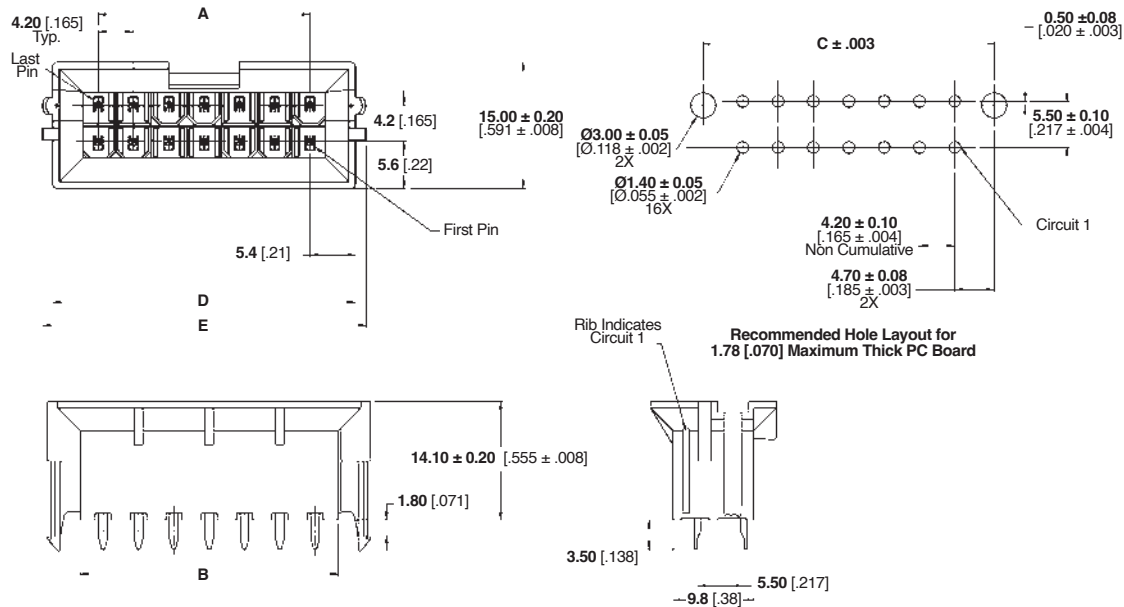
VAL-U-LOK Connector System  
.165 [4.20] Centerline

## VAL-U-LOK Connector System (Wire-to-Wire, Wire-to-Board and Wire-to-Panel) (Continued)

### Blindmate Headers

No. of Pos.	Dimensions					UL 94V-2 Housings		UL 94V-0 Housings	
	A	B	C	D	E	With Drain Holes	Without Drain Holes	With Drain Holes	Without Drain Holes
2	—	5.4 [0.21]	9.4 [0.37]	10.8 [0.43]	13.2 [0.52]	1586585-2	1586586-2	1586587-2	1586588-2
4	4.2 [0.17]	9.6 [0.38]	13.6 [0.54]	15.0 [0.59]	17.4 [0.69]	1586585-4	1586586-4	1586587-4	1586588-4
6	8.4 [0.33]	13.8 [0.54]	17.8 [0.70]	19.2 [0.76]	21.6 [0.85]	1586585-6	1586586-6	1586587-6	1586588-6
8	12.6 [0.50]	18.0 [0.71]	22.0 [0.87]	23.4 [0.92]	25.8 [1.02]	1586585-8	1586586-8	1586587-8	1586588-8
10	16.8 [0.66]	22.2 [0.87]	26.2 [1.03]	27.6 [1.09]	30.0 [1.18]	1-1586585-0	1-1586586-0	1-1586587-0	1-1586588-0
12	21.0 [0.83]	26.4 [1.04]	30.4 [1.20]	31.8 [1.25]	34.2 [1.35]	1-1586585-2	1-1586586-2	1-1586587-2	1-1586588-2
14	25.2 [0.99]	30.6 [1.20]	34.6 [1.36]	36.0 [1.42]	38.4 [1.51]	1-1586585-4	1-1586586-4	1-1586587-4	1-1586588-4
16	29.4 [1.58]	34.8 [1.37]	38.8 [1.53]	40.2 [1.58]	42.6 [1.69]	1-1586585-6	1-1586586-6	1-1586587-6	1-1586588-6
18	33.6 [1.32]	39.0 [1.54]	43.0 [1.69]	44.4 [1.75]	46.8 [1.84]	1-1586585-8	1-1586586-8	1-1586587-8	1-1586588-8
20	37.8 [1.49]	43.2 [1.70]	47.2 [1.86]	48.6 [1.91]	51.0 [2.01]	2-1586585-0	2-1586586-0	2-1586587-0	2-1586588-0
22	42.0 [1.65]	47.4 [1.87]	51.4 [2.02]	52.0 [2.08]	55.2 [2.17]	2-1586585-2	2-1586586-2	2-1586587-2	2-1586588-2
24	46.2 [1.82]	51.6 [2.03]	55.6 [2.19]	57.0 [2.24]	59.4 [2.32]	2-1586585-4	2-1586586-4	2-1586587-4	2-1586588-4

Note: All part numbers are RoHS Compliant.





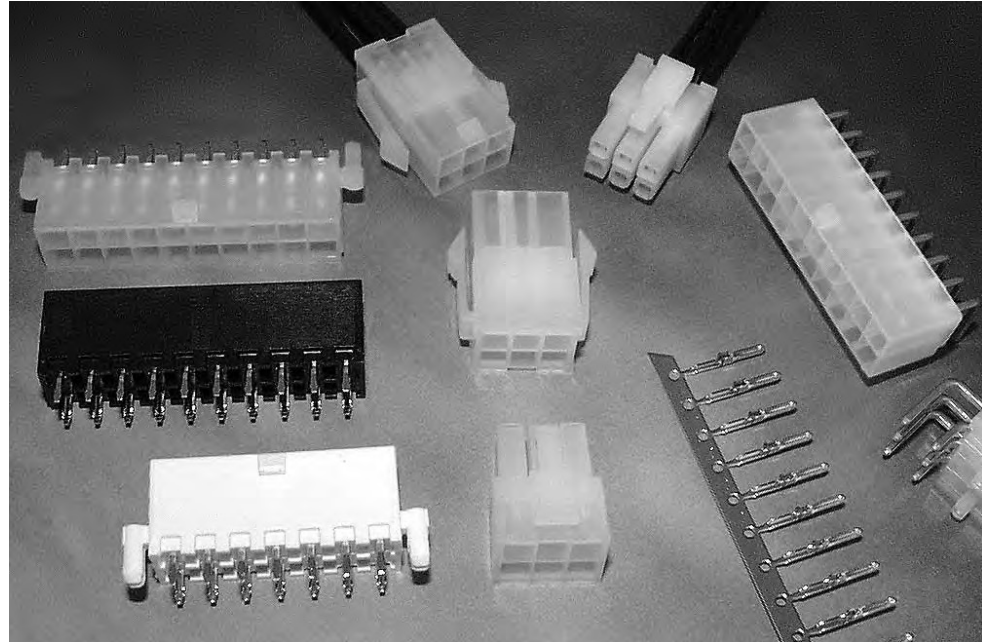
High Density

VAL-U-LOK Connector System  
.165 [4.20] Centerline

## AMP-DUAC Connectors

### Product Facts

- Wire-to-board and wire-to-wire connector system
- Free-hanging or panel mount plug housings
- Vertical header with or without mounting pegs and with or without drain holes
- Selective loading available on vertical headers
- 4.2 mm x 4.2 mm centerline
- Male and female contacts designed for 26-22 AWG and 22-18 AWG wire
- Receptacle housings accept female contacts with less orientation than competitive product
- Right-angle headers
- Designed for power applications
- Positive latch feature helps prevent disconnection
- AMP-DUAC (dual action) receptacle contacts
- Anti-stubbing contact design
- Polarized housings
- Intermateable with Molex Mini-Fit Jr. connectors
- Recognized under Component Program of Underwriters Laboratories Inc., File No. E28476 
- Certified by Canadian Standards Association, File No. LR7189 



AMP-DUAC Connectors, for power or signal applications, belong to the broad family of Tyco Electronics Soft Shell connectors.

The dual action design of the female receptacle contact provides for low insertion force, yet maintains high-performance current capacity. To help meet your production requirements, semiautomatic bench machines and hand tools are available for strip and loose piece contacts, respectively.

High density, 4.2 mm x 4.2 mm [.165 x .165] centerline, dual-row receptacle housings mate with plug housings (free-hanging or panel mount) or pc board headers (vertical or right-angle). Selective contact loading is available for vertical headers.

All housings are polarized for easier mating and locking latches help maintain reliable connections.

AMP-DUAC wire-to-board, wire-to-panel, and wire-to-wire connectors are intermateable with Molex Mini-Fit Jr. series connectors.

### Technical Documents

- Product Specifications**  
108-1699—Headers  
108-19099—Receptacles
- Application Specification**  
114-19048—Use of Receptacles
- Qualification Test Report**  
501-434  
501-576

### Performance Data

- Voltage Rating**—600 VAC
- Current Rating**—9 amps maximum in 2 position applications
- Low Level Resistance**—10 megohms max.
- Dielectric Withstanding Voltage**—1500 VAC/min.
- Insulation Resistance**—1000 megohms minimum
- Operating Temperature**—-55°C to +105°C [-67°F to +221°F]

### Need more information?

Call Technical Support.

Technical Support is staffed with specialists well versed in Tyco Electronics products. They can provide you with:

- Technical support
- Catalogs
- Technical Documents
- Product Samples
- Tyco Electronics Authorized Distributor Locations

**AMP-DUAC Connectors** (Continued)

**Receptacle Housings**

**2-24 Position Housings**

Accept female contacts.

**Material**

**Housings**—Nylon  
UL 94V-2, Natural color  
UL 94V-0, White color

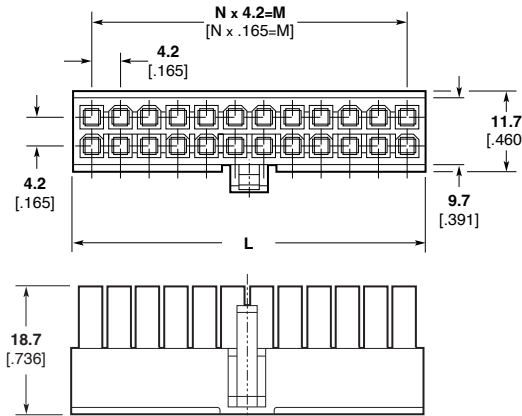
**Related Product Data**

**Mate with**—Vertical headers (pages 128-133), right-angle headers (page 128) and plug housings (page 127).

**Contacts**—See below.

**Strain Relief**—See below and page 127.

**Technical Documents**—pages 125 and 205-206



Number of Positions	Dimensions			Part Number	
	L	M	N	UL 94V-2 Natural	UL 94V-0 White
2	5.5 .216	—	1	106527-2	794657-2
4	9.7 .381	4.2 .165	1	106527-4	794657-4
6	13.9 .547	8.4 .330	2	106527-6	794657-6
8	18.1 .712	12.6 .496	3	106527-8	794657-8
10	22.3 .877	16.8 .661	4	1-106527-0	1-794657-0
12	26.5 1.043	21.0 .826	5	1-106527-2	1-794657-2
14	30.7 1.208	25.2 .992	6	1-106527-4	1-794657-4
16	34.9 1.374	29.4 1.157	7	1-106527-6	1-794657-6
18	39.1 1.539	33.6 1.322	8	1-106527-8	1-794657-8
20	43.3 1.704	37.8 1.488	9	2-106527-0	2-794657-0
22	47.5 1.870	42.0 1.653	10	2-106527-2	2-794657-2
24	51.7 2.035	46.2 1.818	11	2-106527-4	2-794657-4



**Strain Relief, 6 Position  
Part Number 1375618-1**

Used with plug or receptacle housings.

**Wire Bundle Range**—4.19-5.59  
[.165-.220]

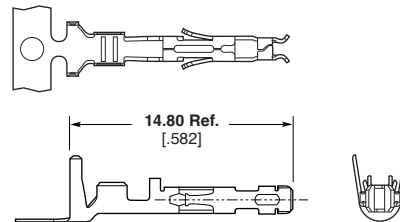
**Material**—Nylon,  
UL 94V-2, Natural color

**Female Contacts**

Used in receptacle housings.

**Material**—Phos. Bronze

**Application Tooling**—See chart and pages 207-210



**Technical Documents**

**Product Specifications**  
108-1699 AMP-DUAC Header  
108-19099 AMP-DUAC Receptacle

**Application Specification**  
114-19048 AMP-DUAC Receptacle Contact

Wire Size Range AWG [mm <sup>2</sup> ]	Ins. Dia. Range	Plating	Part Number		Applicator Part Number		
			Strip Form	Loose Piece	for AMP-O-LECTRIC Bench Machine	for AMP-O-MATIC Stripper/Crimper Machine	CERTI-CRIMP Hand Tool Part Number
22-18 [.3-.8]	1.5-2.4 .059-.094	Tin	106529-2	1-106529-2	680308-□*	567959-1	734202-2
		Gold	1-794138-3	1-794141-3			
26-22 [.12-.3]	1.3-1.75 .047-.069	Tin	106528-2	1-106528-2	680307-□*	567960-1	—
		Gold	1-794139-3	1-794142-3			
2@18 or 16 [.8-.9] [1.29]	3.3 Total Max. .130	Tin	794418-1	794421-1	680350-□*	—	90714-1
		Gold	1-794140-3	1-794143-3			

Extraction Tool Part Number 188688-1

\*Part Number suffix “-2” indicates Applicator for Model K Machine and “-3” for Model G Machine.

**Note: All part numbers are RoHS Compliant.**

High Density

AMP-DUAC Connectors  
.165 [4.20] Centerline

**AMP-DUAC Connectors** (Continued)

**Plug Housings**

**2-24 Position Housings**

Accept male contacts.

**Material**

**Housings**—Nylon  
UL 94V-2, Natural color  
UL 94V-0, White color

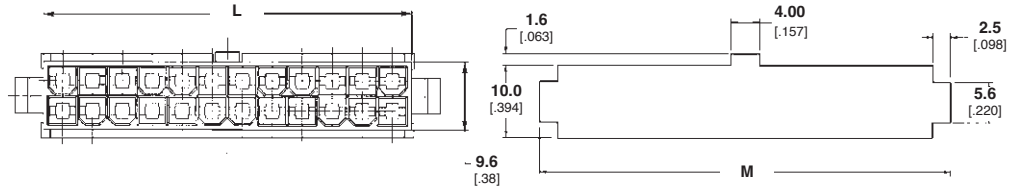
**Related Product Data**

**Mate with**—Receptacle housings (page 126)

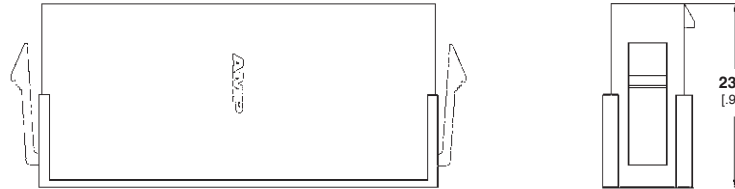
**Contacts**—See below.

**Strain Relief**—See below.

**Technical Documents**—pages 125 and 205-206



**Recommended Cutout for 2.00 [.079] Max. Thick Panel**



**Strain Relief, 6 Position Part Number 1375618-1**

Used with plug or receptacle housings.

**Wire Bundle Range**—4.19-5.59 [.165-.220]

**Material**—Nylon, UL 94V-2, Natural color

Number of Positions	Dimensions		Part Number			
	L	M	UL 94V-2, Natural		UL 94V-0, White	
			Free-Hanging	Panel Mount	Free-Hanging	Panel Mount
2	5.4 .213	10.8 .425	794542-2	794550-2	*794594-2	*794598-2
4	9.6 .378	15.0 .591	794542-4	794550-4	*794594-4	*794598-4
6	13.8 .543	19.2 .756	794542-6	794550-6	*794594-6	*794598-6
8	18.0 .709	23.4 .921	794542-8	794550-8	*794594-8	*794598-8
10	22.2 .874	27.6 1.087	1-794542-0	1-794550-0	*1-794594-0	*1-794598-0
12	26.4 1.039	31.8 1.252	1-794542-2	1-794550-2	*1-794594-2	*1-794598-2
14	30.6 .205	36.0 1.417	1-794542-4	1-794550-4	*1-794594-4	*1-794598-4
16	34.8 1.370	40.2 1.583	1-794542-6	1-794550-6	*1-794594-6	*1-794598-6
18	39.0 1.535	44.4 1.748	1-794542-8	1-794550-8	*1-794594-8	*1-794598-8
20	43.2 1.701	48.6 1.913	2-794542-0	2-794550-0	*2-794594-0	*2-794598-0
22	47.4 1.866	52.8 2.079	2-794542-2	2-794550-2	*2-794594-2	*2-794598-2
24	51.6 2.032	57.0 2.244	2-794542-4	2-794550-4	*2-794594-4	*2-794598-4

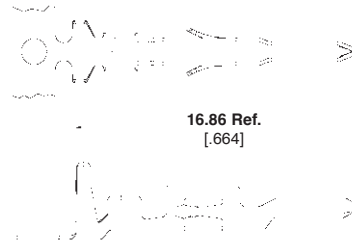
\*Call for availability.

**Male Contacts**

Used in plug housings.

**Material**—Phos. Bronze

**Application Tooling**—See chart and pages 207-210



Wire Size Range AWG [mm <sup>2</sup> ]	Ins. Dia. Range	Plating	Part Number		Applicator Part Number		
			Strip Form	Loose Piece	for AMP-O-LECTRIC Bench Machine	for AMP-O-MATIC Stripper/Crimper Machine	CERTI-CRIMP Hand Tool Part Number
22-18 [.3-.8]	1.5-2.4 .059-.094	Tin	794576-1	794577-1	680308-□*	567959-1	734202-2
		Gold	794576-4	—			
26-22 [.12-.3]	1.3-1.75 .047-.069	Tin	794578-1	794579-1	680307-□*	567960-1	—
		Gold	794578-4	—			

\*Part Number suffix “-2” indicates Applicator for Model K Machine and “-3” for Model G Machine.

**Note:** All part numbers are RoHS Compliant.

**AMP-DUAC Connectors** (Continued)

**Vertical Header Assemblies**

**2, 4 and 6 Position,  
with and without Pegs and  
with and without Drain  
Holes**

**Material and Finish**

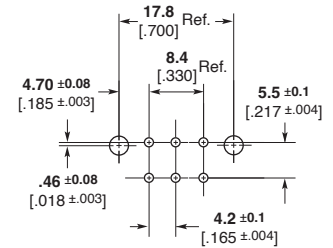
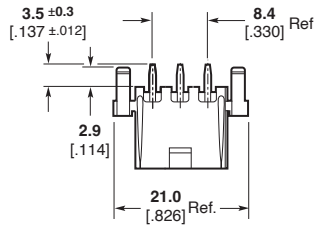
**Housing**—Nylon  
UL 94V-2, Natural color  
UL 94V-0, White color

**Contacts**—0.25 [.010] thick copper alloy

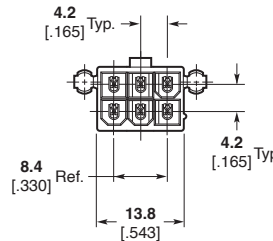
**Related Product Data**

**Mate with**—Receptacle housings (page 126).

**Technical Documents**—pages 125 and 205-206



**Recommended PC Board Layout**



Number of Positions	PCB Pegs	Drain Holes	Plating	Part Number	
				UL 94V-2, Natural	UL 94V-0, White
2	N	N	Tin	1586491-2	1586495-2
	N	N	30 Gold	1586492-2	1586496-2
	Y	N	Tin	1586489-2	1586493-2
	Y	N	30 Gold	1586490-2	1586494-2
	N	Y	Tin	1-794349-1	1-794543-1
	N	Y	30 Gold	1-794349-2	1-794543-2
	Y	Y	Tin	1-794302-1	1-794540-1
	Y	Y	30 Gold	1-794302-2	1-794540-2
4	Y	N	Tin	1586489-4	1586493-4
	Y	N	30 Gold	1586490-4	1586494-4
	N	N	Tin	1586491-4	1586495-4
	N	N	30 Gold	1586492-4	1586496-4
	Y	Y	Tin	1-794303-1	1-794466-1
	Y	Y	30 Gold	1-794303-2	1-794466-2
	N	Y	Tin	1-794350-1	1-794484-1
	N	Y	30 Gold	1-794350-2	1-794484-2
6	Y	Y	Tin	1-794304-1	1-794467-1
	Y	Y	30 Gold	1-794304-2	1-794467-2
	N	Y	Tin	1-794351-1	1-794485-1
	N	Y	30 Gold	1-794351-2	1-794485-2
	Y	N	Tin	1586489-6	1586493-6
	Y	N	30 Gold	1586490-6	1586494-6
	N	N	Tin	1586491-6	1586495-6
	N	N	30 Gold	1586492-6	1586496-6

**Note:** All part numbers are RoHS Compliant.

High Density

AMP-DUAC Connectors  
.165 [4.20] Centerline

**AMP-DUAC Connectors** (Continued)

**Vertical Header Assemblies**  
(Continued)

**8 and 10 Position,  
with and without Pegs and  
with and without Drain  
Holes**

**Material and Finish**

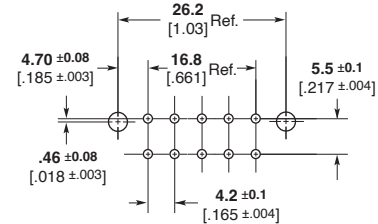
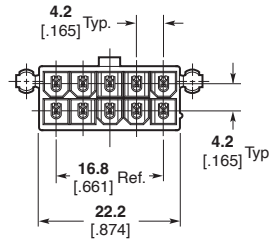
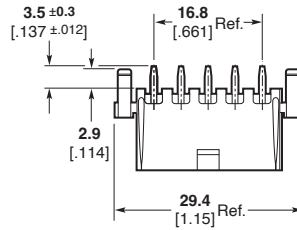
**Housing**—Nylon  
UL 94V-2, Natural color  
UL 94V-0, White color

**Contacts**—0.25 [.010] thick copper alloy

**Related Product Data**

**Mate with**—Receptacle housings  
(page 126).

**Technical Documents**—pages 125  
and 205-206



Recommended PC Board Layout

Number of Positions	PCB Pegs	Drain Holes	Plating	Part Number	
				UL 94V-2, Natural	UL 94V-0, White
8	Y	N	Tin	1586489-8	1586493-8
	Y	N	30 Gold	1586490-8	1586494-8
	N	N	Tin	1586491-8	1586495-8
	N	N	30 Gold	1586492-8	1586496-8
	Y	Y	Tin	1-794305-1	1-794468-1
	Y	Y	30 Gold	1-794305-2	1-794468-2
	N	Y	Tin	1-794352-1	1-794486-1
	N	Y	30 Gold	1-794352-2	1-794486-2
10	Y	N	Tin	1-1586489-0	1-1586493-0
	Y	N	30 Gold	1-1586490-0	1-1586494-0
	N	N	Tin	1-1586491-0	1-1586495-0
	N	N	30 Gold	1-1586492-0	1-1586496-0
	Y	Y	Tin	1-794306-1	1-794469-1
	Y	Y	30 Gold	1-794306-2	1-794469-2
	N	Y	Tin	1-794353-1	1-794487-1
	N	Y	30 Gold	1-794353-2	1-794487-2

**Note:** All part numbers are RoHS Compliant.

High Density

AMP-DUAC Connectors  
.165 [.420] Centerline

**AMP-DUAC Connectors (Continued)**

**Vertical Header Assemblies (Continued)**

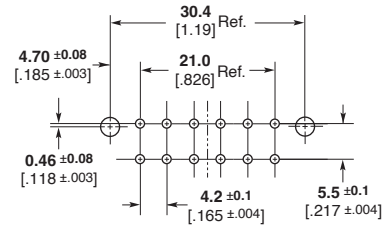
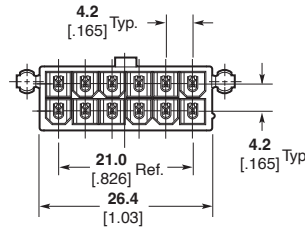
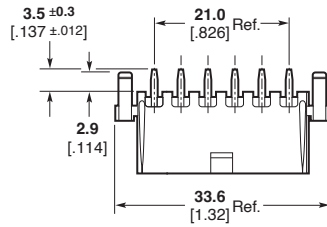
**12 Position, with and without Pegs and with and without Drain Holes**

**Material and Finish**

**Housing**—Nylon  
UL 94V-2, Natural color  
UL 94V-0, White color  
**Contacts**—0.25 [.010] thick copper alloy

**Related Product Data**

**Mate with**—Receptacle housings (page 126).  
**Technical Documents**—pages 125 and 205-206



Recommended PC Board Layout

Number of Positions	PCB Pegs	Drain Holes	Plating	Part Number	
				UL 94V-2, Natural	UL 94V-0, White
12	Y	N	Tin	1-1586489-2	1-1586493-2
	Y	N	30 Gold	1-1586490-2	1-1586494-2
	N	N	Tin	1-1586491-2	1-1586495-2
	N	N	30 Gold	1-1586492-2	1-1586496-2
	Y	Y	Tin	1-794307-1	1-794470-1
	Y	Y	30 Gold	1-794307-2	1-794470-2
	N	Y	Tin	1-794354-1	1-794488-1
	N	Y	30 Gold	1-794354-2	1-794488-2

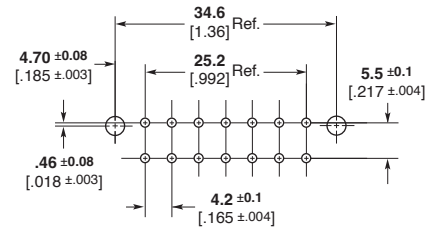
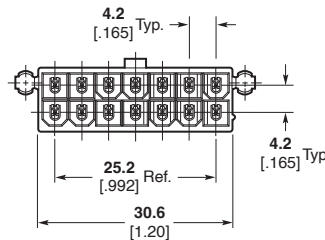
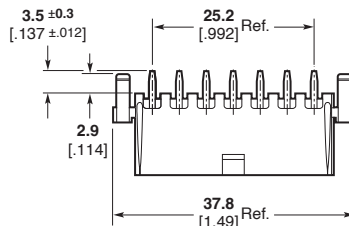
**14 Position, with and without Pegs and with and without Drain Holes**

**Material and Finish**

**Housing**—Nylon  
UL 94V-2, Natural color  
UL 94V-0, White color  
**Contacts**—0.25 [.010] thick copper alloy

**Related Product Data**

**Mate with**—Receptacle housings (page 126).  
**Technical Documents**—pages 125 and 205-206



Recommended PC Board Layout

Number of Positions	PCB Pegs	Drain Holes	Plating	Part Number	
				UL 94V-2, Natural	UL 94V-0, White
14	Y	N	Tin	1-1586489-4	1-1586493-4
	Y	N	30 Gold	1-1586490-4	1-1586494-4
	N	N	Tin	1-1586491-4	1-1586495-4
	N	N	30 Gold	1-1586492-4	1-1586496-4
	Y	Y	Tin	1-794308-1	1-794453-1
	Y	Y	30 Gold	1-794308-2	1-794453-2
	N	Y	Tin	1-794355-1	1-794489-1
	N	Y	30 Gold	1-794355-2	1-794489-2

**Note:** All part numbers are RoHS Compliant.

**AMP-DUAC Connectors (Continued)**

**Vertical Header Assemblies (Continued)**

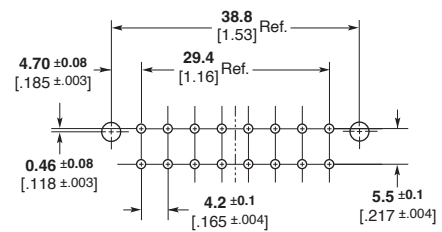
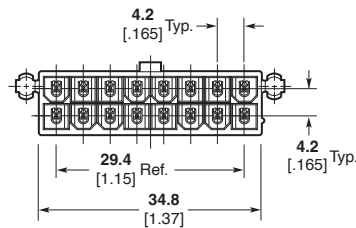
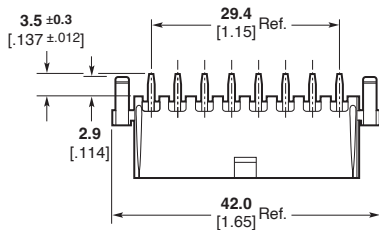
**16 Position, with and without Pegs and with and without Drain Holes**

**Material and Finish**

**Housing**—Nylon  
UL 94V-2, Natural color  
UL 94V-0, White color  
**Contacts**—0.25 [.010] thick copper alloy

**Related Product Data**

**Mate with**—Receptacle housings (page 126).  
**Technical Documents**—pages 125 and 205-206



Recommended PC Board Layout

Number of Positions	PCB Pegs	Drain Holes	Plating	Part Number	
				UL 94V-2, Natural	UL 94V-0, White
16	Y	N	Tin	1-1586489-6	1-1586493-6
	Y	N	30 Gold	1-1586490-6	1-1586494-6
	N	N	Tin	1-1586491-6	1-1586495-6
	N	N	30 Gold	1-1586492-6	1-1586496-6
	Y	Y	Tin	1-794309-1	1-794429-1
	Y	Y	30 Gold	1-794309-2	1-794429-2
	N	Y	Tin	1-794356-1	1-794490-1
	N	Y	30 Gold	1-794356-2	1-794490-2

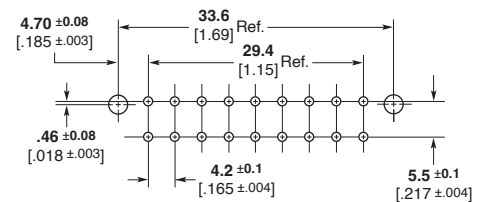
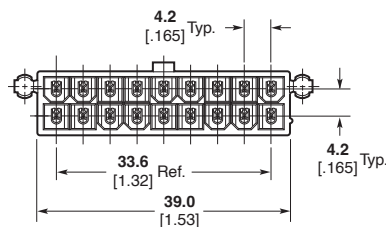
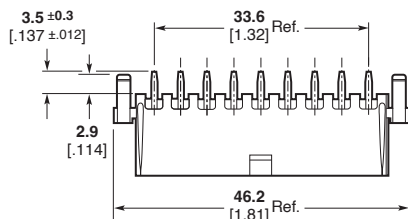
**18 Position, with and without Pegs and with and without Drain Holes**

**Material and Finish**

**Housing**—Nylon  
UL 94V-2, Natural color  
UL 94V-0, White color  
**Contacts**—0.25 [.010] thick copper alloy

**Related Product Data**

**Mate with**—Receptacle housings (page 126).  
**Technical Documents**—pages 125 and 205-206



Recommended PC Board Layout

Number of Positions	PCB Pegs	Drain Holes	Plating	Part Number	
				UL 94V-2, Natural	UL 94V-0, White
18	Y	N	Tin	1-1586489-8	1-1586493-8
	Y	N	30 Gold	1-1586490-8	1-1586494-8
	N	N	Tin	1-1586491-8	1-1586495-8
	N	N	30 Gold	1-1586492-8	1-1586496-8
	Y	Y	Tin	1-794310-1	1-794454-1
	Y	Y	30 Gold	1-794310-2	1-794454-2
	N	Y	Tin	1-794357-1	1-794491-1
	N	Y	30 Gold	1-794357-2	1-794491-2

**Note:** All part numbers are RoHS Compliant.

High Density  
AMP-DUAC Connectors  
.165 [4.20] Centerline

**AMP-DUAC Connectors (Continued)**

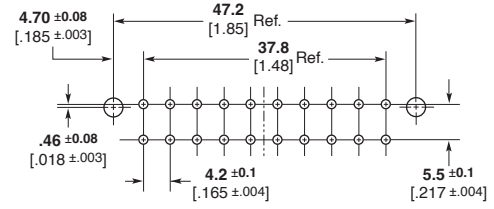
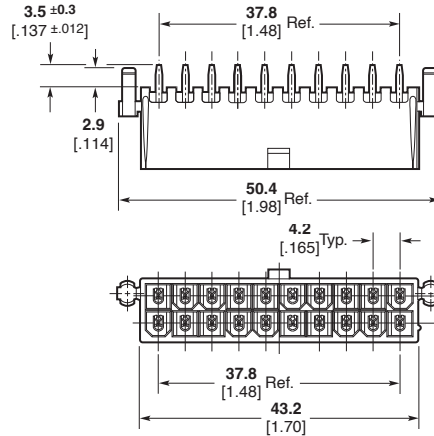
**Vertical Header Assemblies (Continued)**

**20 Position, with and without Pegs and with and without Drain Holes**

**Material and Finish**

**Housing**—Nylon  
UL 94V-2, Natural color  
UL 94V-0, White color

**Contacts**—0.25 [.010] thick copper alloy



Recommended PC Board Layout

**Related Product Data**

**Mate with**—Receptacle housings (page 126).

**Technical Documents**—pages 125 and 205-206

Number of Positions	PCB Pegs	Drain Holes	Plating	Part Number	
				UL 94V-2, Natural	UL 94V-0, White
20	Y	N	Tin	2-1586489-0	2-1586493-0
	Y	N	30 Gold	2-1586490-0	2-1586494-0
	N	N	Tin	2-1586491-0	2-1586495-0
	N	N	30 Gold	2-1586492-0	2-1586496-0
	Y	Y	Tin	1-794311-1	1-794455-1
	Y	Y	30 Gold	1-794311-2	1-794455-2
	N	Y	Tin	1-794358-1	1-794492-1
	N	Y	30 Gold	1-794358-2	1-794492-2

**High Temperature Headers**

IR Reflow compatible, UL 94V-0, Black color

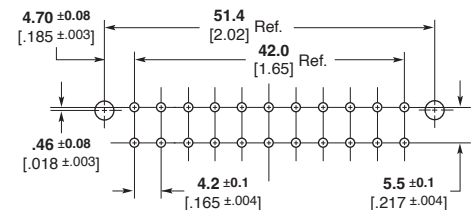
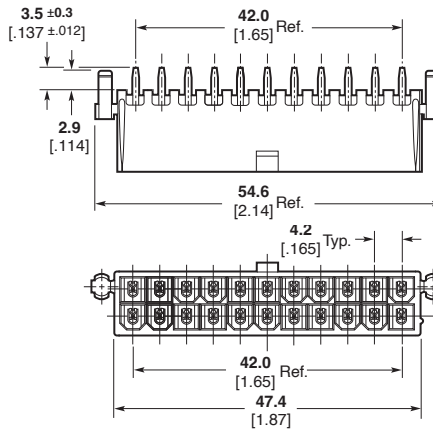
Number of Positions	PCB Pegs	Drain Holes	Plating	Part Number
				UL 94V-0, Black
20	N	N	Tin	1-794415-1
	N	N	30 Gold	1-794415-2

**22 Position, with and without Pegs and with and without Drain Holes**

**Material and Finish**

**Housing**—Nylon  
UL 94V-2, Natural color  
UL 94V-0, White color

**Contacts**—0.25 [.010] thick copper alloy



Recommended PC Board Layout

**Related Product Data**

**Mate with**—Receptacle housings (page 126).

**Technical Documents**—pages 125 and 205-206

Number of Positions	PCB Pegs	Drain Holes	Plating	Part Number	
				UL 94V-2, Natural	UL 94V-0, White
22	Y	N	Tin	2-1586489-2	2-1586493-2
	Y	N	30 Gold	2-1586490-2	2-1586494-2
	N	N	Tin	2-1586491-2	2-1586495-2
	N	N	30 Gold	2-1586492-2	2-1586496-2
	Y	Y	Tin	1-794312-1	1-794471-1
	Y	Y	30 Gold	1-794312-2	1-794471-2
	N	Y	Tin	1-794359-1	1-794493-1
	N	Y	30 Gold	1-794359-2	1-794493-2

**Note:** All part numbers are RoHS Compliant.

**AMP-DUAC Connectors (Continued)**

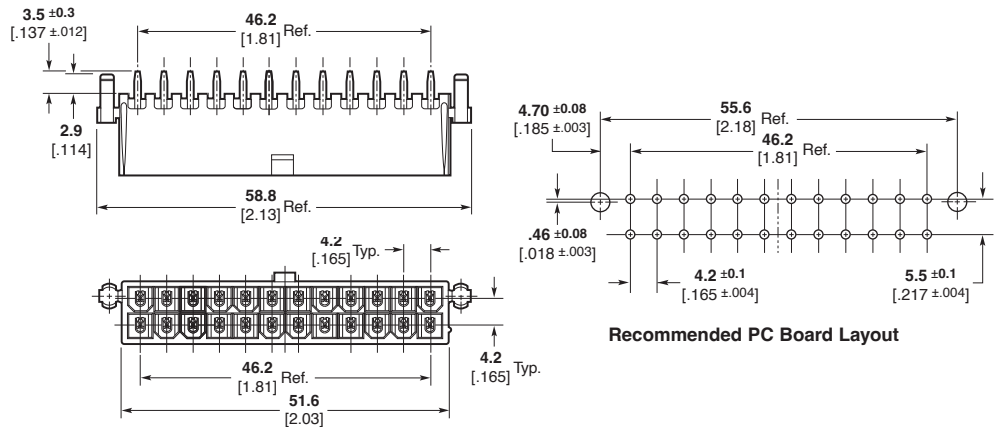
**Vertical Header Assemblies (Continued)**

**24 Position, with and without Pegs and with and without Drain Holes**

**Material and Finish**

**Housing**—Nylon  
UL 94V-2, Natural color  
UL 94V-0, White color

**Contacts**—0.25 [.010] thick copper alloy



Recommended PC Board Layout

**Related Product Data**

**Mate with**—Receptacle housings (page 126).

**Technical Documents**—pages 125 and 205-206

Number of Positions	PCB Pegs	Drain Holes	Plating	Part Number	
				UL 94V-2, Natural	UL 94V-0, White
24	Y	N	Tin	2-1586489-4	2-1586493-4
	Y	N	30 Gold	2-1586490-4	2-1586494-4
	N	N	Tin	2-1586491-4	2-1586495-4
	N	N	30 Gold	2-1586492-4	2-1586496-4
	Y	Y	Tin	794313-3	1-794472-1
	Y	Y	30 Gold	794313-4	1-794472-2
	N	Y	Tin	1-794360-1	1-794494-1
	N	Y	30 Gold	1-794360-2	1-794494-2

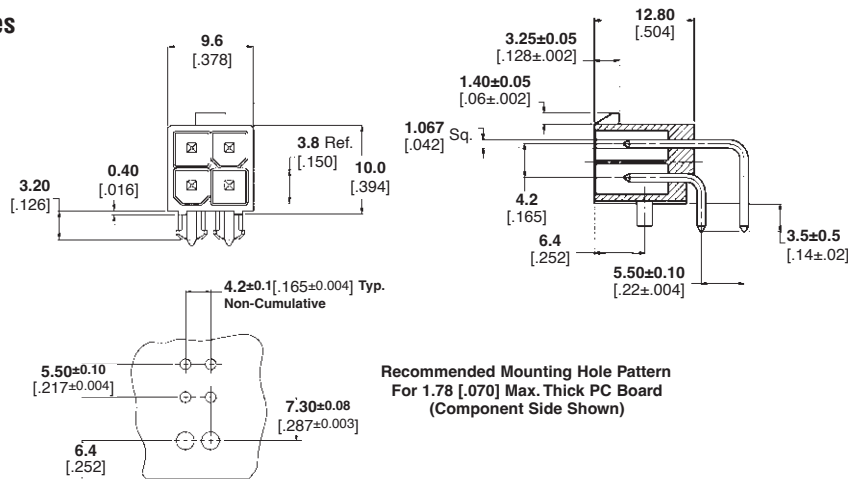
**Right-Angle Header Assemblies**

**2-24 Position, with Pegs and without Drain Holes**

**Material and Finish**

**Housing**—Nylon  
UL 94V-2, Natural color  
UL 94V-0, White color

**Contacts**—Copper alloy



Recommended Mounting Hole Pattern For 1.78 [.070] Max. Thick PC Board (Component Side Shown)

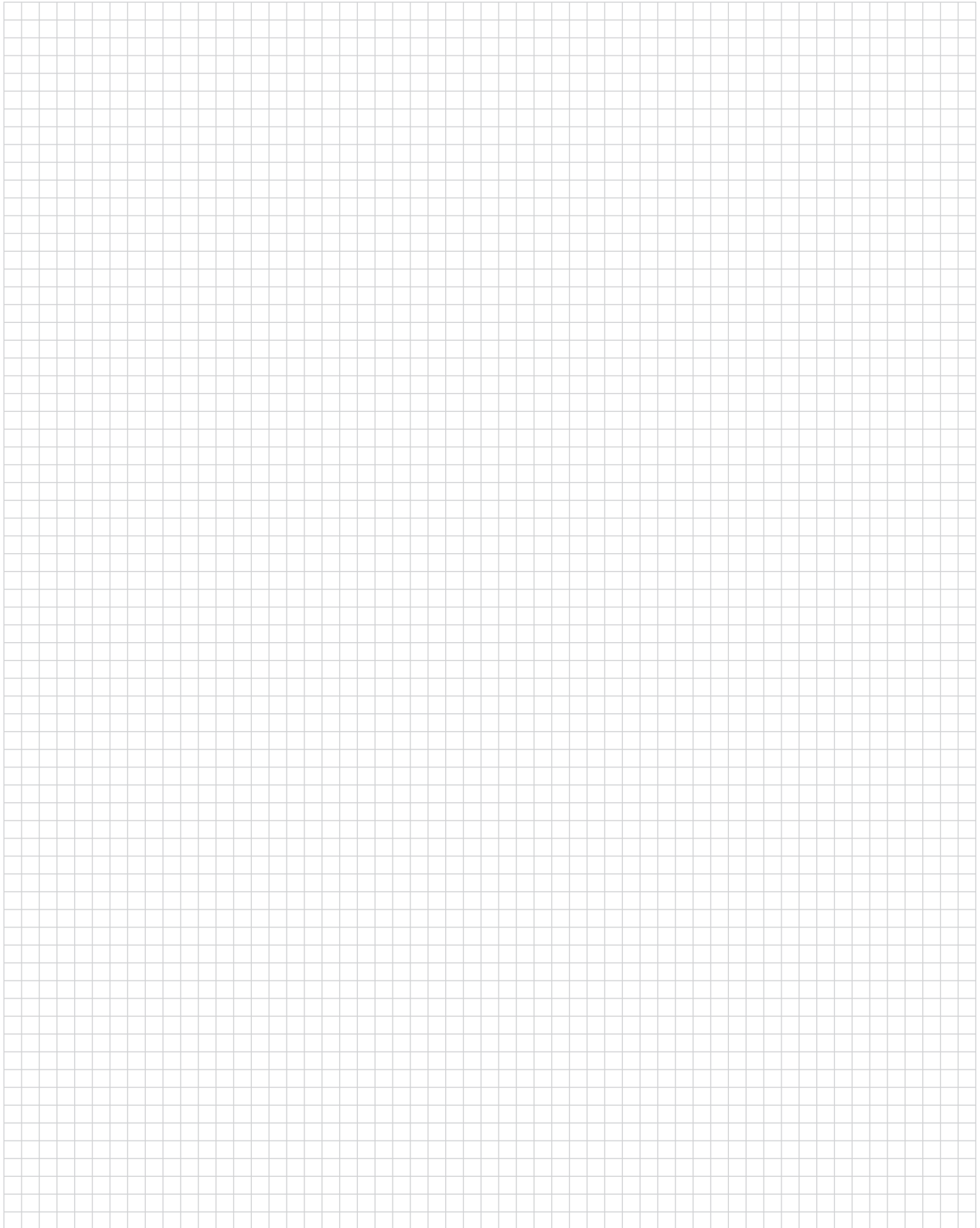
Number of Positions	PCB Pegs	Drain Holes	Plating	Part Number	
				UL 94V-2, Natural	UL 94V-0, White
2	Y	N	Tin	1-794507-1	1-794526-1
4	Y	N	Tin	1-794508-1	1-794527-1
6	Y	N	Tin	1-794448-1	1-794528-1
8	Y	N	Tin	1-794509-1	1-794529-1
10	Y	N	Tin	1-794510-1	1-794530-1
12	Y	N	Tin	1-794511-1	1-794531-1
14	Y	N	Tin	1-794512-1	1-794532-1
16	Y	N	Tin	1-794513-1	1-794533-1
18	Y	N	Tin	1-794514-1	1-794588-1
20	Y	N	Tin	1-794449-1	1-794534-1
22	Y	N	Tin	1-794515-1	1-794589-1
24	Y	N	Tin	1-794516-1	1-794590-1

**Note:** All part numbers are RoHS Compliant.

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## Engineering Notes

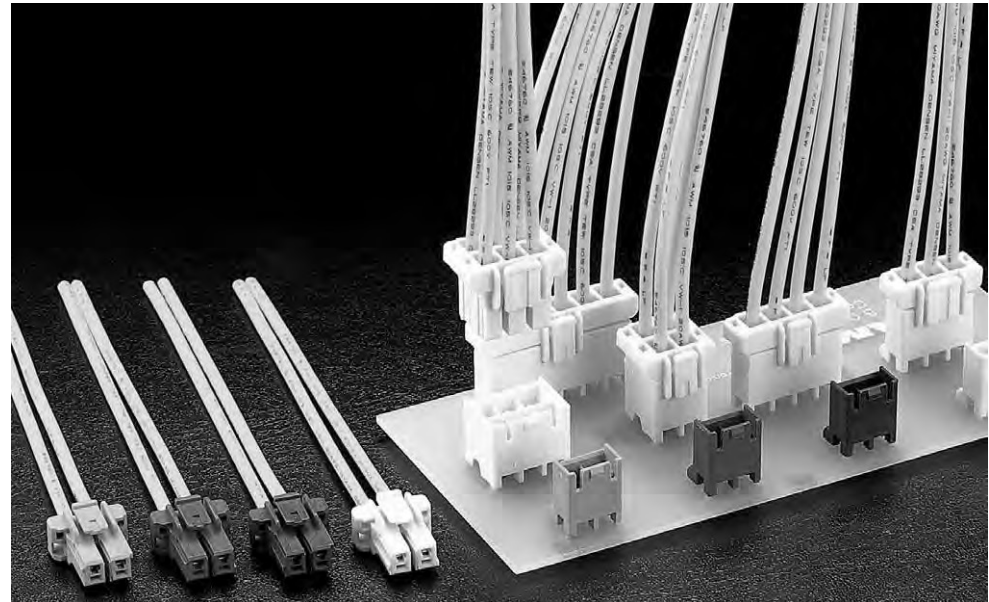
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## 5.0 mm Power Key Connectors (5.0 PKC) (Wire-to-Board)

### Product Facts

- Compact design with 19.4 mm mated height
- Power circuit connector with 5.0 mm contact centerline
- Wire-to-board connectors consisting of plug housings for wires and PCB header assemblies
- With a clear clicking sound, contact insertions can be made easier. The double lock plate provides for complete loading of contacts
- Locking levers are surrounded by walls, which protect levers and prevent tangling with wires
- Connector is designed to release bubbles created by the process of potting (PC board coating)
- Housing lances also help prevent tangling of wired contacts
- Recognized under the Component Program of Underwriters Laboratories Inc., File No. E28476 
- Certified by Canadian Standards Association, File No. LR7189 



5.0 mm Power Key Connectors are for power circuits of home appliances, especially targeting gas appliances. The connector features four kinds of keying per housing.

Only color-coding of housings limited the efficiency of blind mating where you could not see connectors. However, the new keying mechanism not only improves assembly efficiency but also helps prevent mismatching.

Part numbers involved can be reduced so that purchasing and stock level control can be made simpler.

### Performance Characteristics

**Voltage Rating**—300 VAC<sup>1</sup>  
**Current Rating**—10A max.<sup>2</sup>  
**Operating Temperature**—  
 -30°C ~ +105°C  
**Applicable Wire**—24-16 AWG  
**Applicable PC Board Thickness**—  
 1.6 mm

<sup>1</sup> Excludes header tyne round space. Usable for 150 VAC applications when the round dimensions are 3 mm or less.

<sup>2</sup> Specified values vary according to the number of contacts and the wire used. The 10 A maximum value applies to 16 AWG wire used with 2 contacts.

### Technical Documents

**Product Specification**  
 108-5699  
**Application Specification**  
 114-5292

Standard Density

5.0 mm Power Key Connectors  
 .197 [5.00] Centerline

**5.0 mm Power Key Connectors (5.0 PKC) (Wire-to-Board)** (Continued)

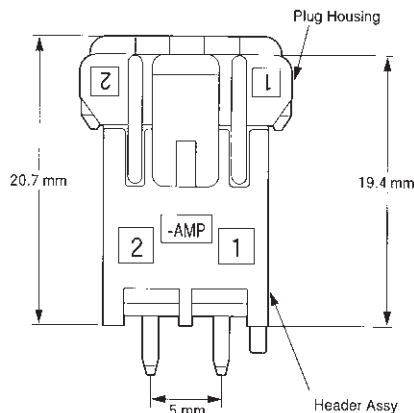
**Quick Reference Chart for Mating Part Numbers**

No. of Pos.	Plug Housing		Applicable Double Lock Plate Part Number	Mating Header Assy. Part Number	
	Type of Keying/Color	Part Number			
2	Type A/Natural	1376388-1	1376394-1	1376382-1	
	Type B/Red	1-1376388-2	1376394-1	1-1376382-2	
	Type C/Blue	2-1376388-3	1376294-1	2-1376382-3	
	Type D/Yellow	3-1376388-4	1376394-1	3-1376382-4	
3	Type A/Natural	1376389-1	1376395-1	1376383-1	1376421-1
	Type B/Red	1-1376389-2	1376395-1	1-1376383-2	1-1376421-2
	Type C/Blue	2-1376389-3	1376395-1	2-1376383-3	2-1376421-3
	Type D/Yellow	3-1376389-4	1376395-1	3-1376383-4	3-1376421-4
4	Type A/Natural	1376390-1	1376396-1	1376384-1	
	Type B/Red	1-1376390-2	1376396-1	1-1376384-2	
	Type C/Blue	2-1376390-3	1376396-1	2-1376384-3	
	Type D/Yellow	3-1376390-4	1376396-1	3-1376384-4	
6	Type A/Natural	1376391-1	1376397-1	1376385-1	
	Type B/Red	1-1376391-2	1376397-1	1-1376385-2	
	Type C/Blue	2-1376391-3	1376397-1	2-1376385-3	
	Type D/Yellow	3-1376391-4	1376397-1	3-1376385-4	
<b>2 Row</b>					
4	Type A/Natural	1376392-1	1376394-1	1376386-1	
	Type B/Red	1-1376392-2	1376394-1	1-1376386-2	
	Type C/Blue	2-1376392-3	1376394-1	2-1376386-3	
	Type D/Yellow	3-1376392-4	1376394-1	3-1376386-4	
6	Type A/Natural	1376393-1	1376395-1	1376387-1	
	Type B/Red	1-1376393-2	1376395-1	1-1376387-2	
	Type C/Blue	2-1376393-3	1376395-1	2-1376387-3	
	Type D/Yellow	3-1376393-4	1376395-1	3-1376387-4	

\*Included in Header Assy. line are Tube Stick version. Refer to the appropriate description in the catalog.

**Note:** All part numbers are RoHS Compliant.

**Mating Configurations**



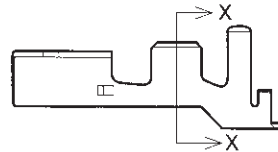
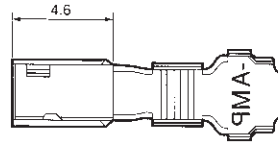
**Note:** Dimensions shown are metric.

Standard Density  
5.0 mm Power Key Connectors  
.197 [5.00] Centerline

**5.0 mm Power Key Connectors (5.0 PKC) (Wire-to-Board)** (Continued)

**Receptacle Contacts**

**Material and Finish**  
Pre-tinned Copper Alloy



Wire Range		Wire Ins. Dia.	Receptacle Contact Part No.	Applicator Part No.
AWG	mm <sup>2</sup>			
24~20	0.22~0.53	1.89~2.7	1376348-1 (Strip Form)	*
20~16	0.5~1.25	2.0~3.1	1376347-1 (Strip Form)	*

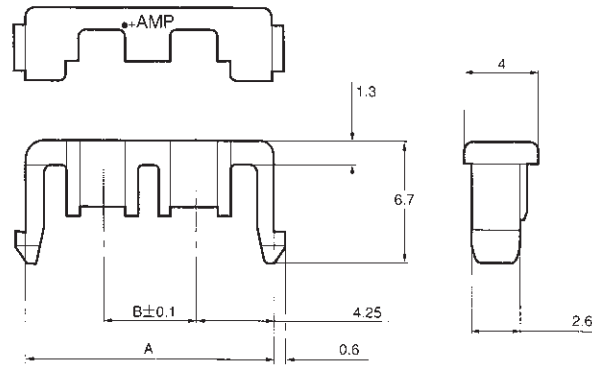
\* Contact the Tooling Assistance Center (TAC) at 1-800-722-1111 for Applicator Part Number.

**Note:** Dimensions shown are metric.

**Note:** All part numbers are RoHS Compliant.

**Double Lock Plates**

**Material and Finish**  
UL94V-0, 6/6 Nylon, glass filled, Black



No. of Pos.	Dimensions (Double Lock Plate)		Double Lock Plate Part No.	Applicable Plug Part No.	
	A	B			
2	13.5	5	1376394-1	□-1376388-□	□-1376392-□
3	18.5	10	1376395-1	□-1376389-□	□-1376393-□
4	23.5	15	1376396-1	□-1376390-□	
6	33.5	25	1376397-1	□-1376391-□	

\* Contact the Tooling Assistance Center (TAC) for Applicator Part Number.

**Note:** Dimensions shown are metric.

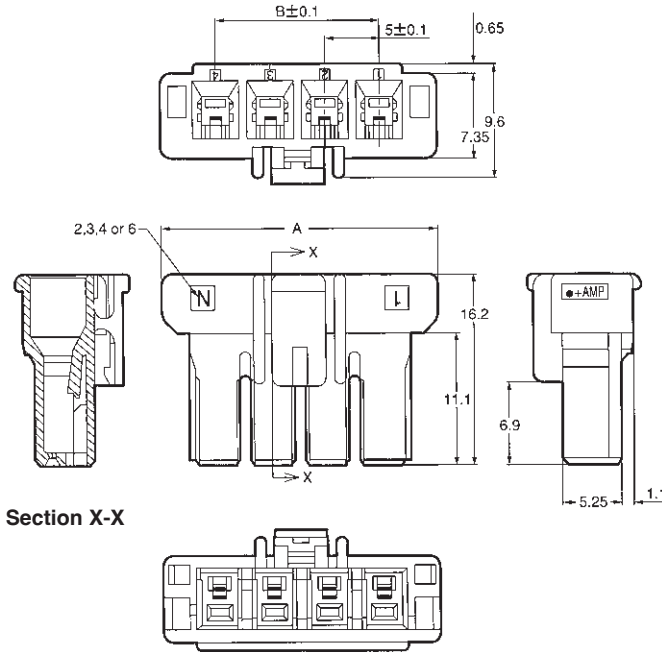
**Note:** All part numbers are RoHS Compliant.

**5.0 mm Power Key Connectors (5.0 PKC) (Wire-to-Board)** (Continued)

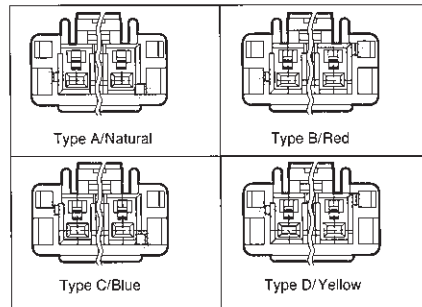
**Plug Housings  
(For Receptacle Contacts)**

**Material and Finish**  
Housing—6/6 Nylon, glass filled

**Related Product Data**  
Receptacle Contacts—page 137  
Double Lock Plates—page 137  
Mating Headers—page 140



**Type of Keying/Color**



No. of Pos.	Dimensions		Plug Housing Part No.				Applicable Double Lock Plate Part Number	Mating Header Assy. Part Number
	A	B	Type of Keying/Color					
			Type A Natural	Type B Red	Type C Blue	Type D Yellow		
2	15	—	1376388-1	1-1376388-2	2-1376388-3	3-1376388-4	1376394-1	□-1376382-□
3	20	10	1376389-1	1-1376389-2	2-1376389-3	3-1376389-4	1376395-1	□-1376383-□ □-1376421-□
4	25	15	1376390-1	1-1376390-2	2-1376390-3	3-1376390-4	1376396-1	□-1376384-□
6	35	25	1376391-1	1-1376391-2	2-1376391-3	3-1376391-4	1376397-1	□-1376385-□

**Note:** Dimensions shown are metric.

**Note:** All part numbers are RoHS Compliant.

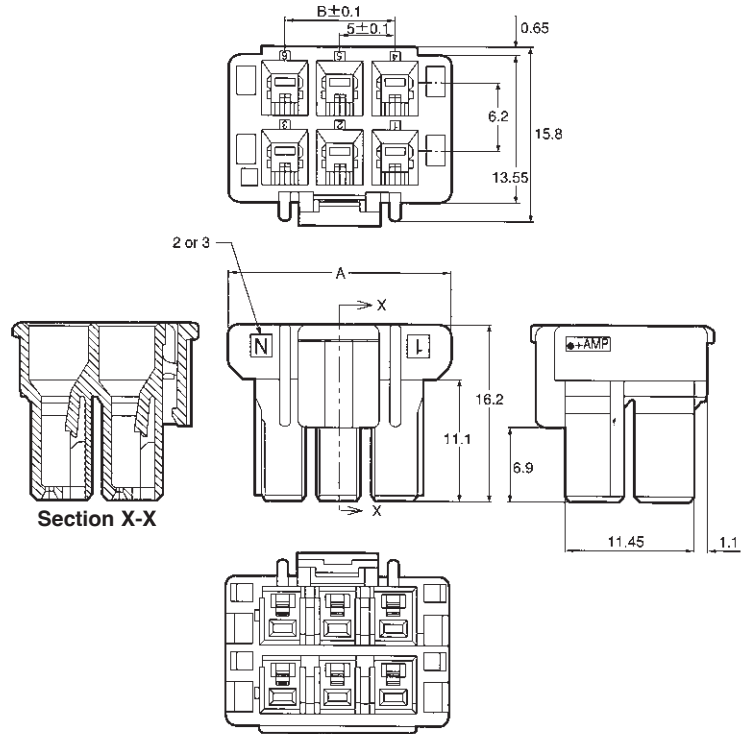
5.0 mm Power Key Connectors .197 [5.00] Centerline Standard Density

**5.0 mm Power Key Connectors (5.0 PKC) (Wire-to-Board)** (Continued)

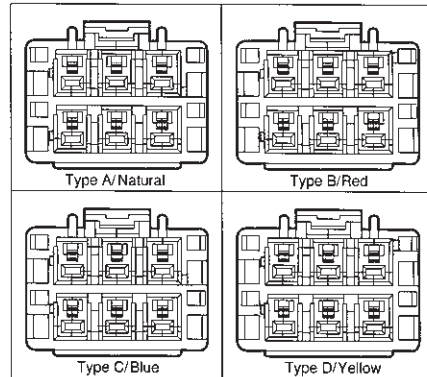
**Plug Housing (2 Rows)  
(For Receptacle Contacts)**

**Material and Finish**  
Housing—6/6 Nylon, glass filled

**Related Product Data**  
Receptacle Contacts—page 137  
Double Lock Plates—page 137  
Mating Headers—page 141



**Type of Keying/Color**



No. of Pos.	Dimensions		Plug Housing Part No. Type of Keying/Color				Applicable Double Lock Plate Part Number	Mating Header Assy. Part Number
	A	B	Type A Natural	Type B Red	Type C Blue	Type D Yellow		
4	15	—	1376392-1	1-1376392-2	2-1376392-3	3-1376392-4	1376394-1	□-1376386-□
6	20	10	1376393-1	1-1376393-2	2-1376393-3	3-1376393-4	1376395-1	□-1376387-□

**Note:** Dimensions shown are metric.

**Note:** All part numbers are RoHS Compliant.

Standard Density

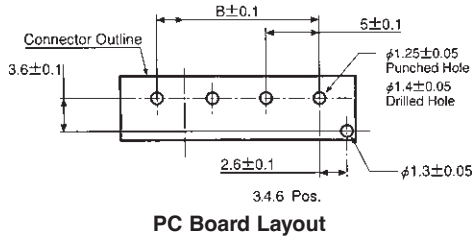
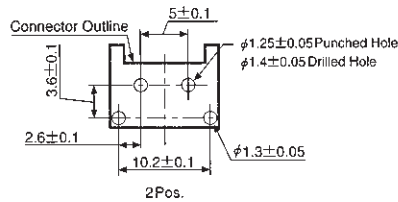
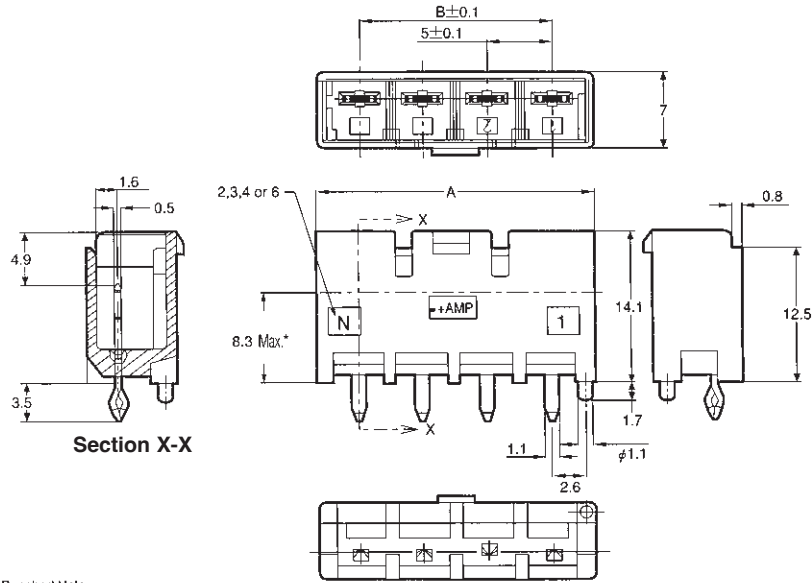
5.0 mm Power Key Connectors  
.197 [5.00] Centerline

**5.0 mm Power Key Connectors (5.0 PKC) (Wire-to-Board) (Continued)**

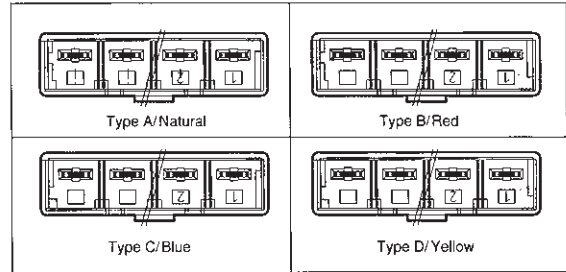
**Vertical Header Assembly**

**Material and Finish**  
**Housing**—6/6 Nylon, glass filled  
**Tab Contacts** -Copper Alloy, Tin plated

**Related Product Data**  
**Mating Plug Housings**—page 138



**Type of Keying/Color**



No. of Pos.	Dimensions		Loose Piece Tube (Qty.)	Vertical Header Assy. Part No.				Mating Plug Housing Part Number
	A	B		Type of Keying/Color				
				Type A Natural	Type B Red	Type C Blue	Type D Yellow	
2	11.6	—	L.P.	1376382-1	1-1376382-2	2-1376382-3	3-1376382-4	□-1376388-□
			Tube	1376437-1 (40)	1-1376437-2 (40)	2-1376437-3 (40)	3-1376437-4 (40)	
3	16.6	10	L.P.	1376383-1	1-1376383-2	2-1376383-3	3-1376383-4	□-1376389-□
			Tube	1376439-1 (25)	1-1376439-2 (25)	2-1376439-3 (25)	3-1376439-4 (25)	
4	21.6	15	L.P.	1376384-1	1-1376384-2	2-1376384-3	3-1376384-4	□-1376390-□
			Tube	1376440-1 (20)	1-1376440-2 (20)	2-1376440-3 (20)	3-1376440-4 (20)	
6	31.6	25	L.P.	1376385-1	1-1376385-2	2-1376385-3	3-1376385-4	□-1376391-□
			Tube	1376441-1 (15)	1-1376441-2 (15)	2-1376441-3 (15)	3-1376441-4 (15)	
2*	16.6	10	L.P.	1376421-1	1-1376421-2	2-1376421-3	3-1376421-4	□-1376389-□
			Tube	1376444-1 (25)	1-1376444-2 (25)	2-1376444-3 (25)	3-1376444-4 (25)	

\*10 mm centerline

**Note:** Dimensions shown are metric.

**Note:** All part numbers are RoHS Compliant.

5.0 mm Power Key Connectors .197 [5.00] Centerline Standard Density

**5.0 mm Power Key Connectors (5.0 PKC) (Wire-to-Board)** (Continued)

**Vertical Header Assembly  
(2 Rows)**

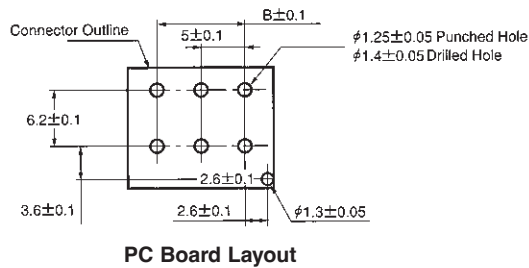
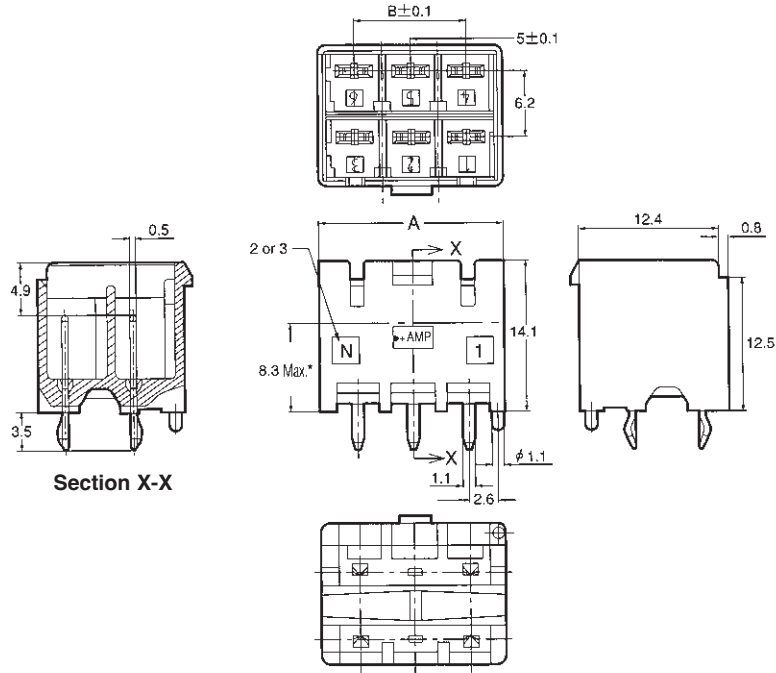
**Material and Finish**

**Housing**—6/6 Nylon, glass filled

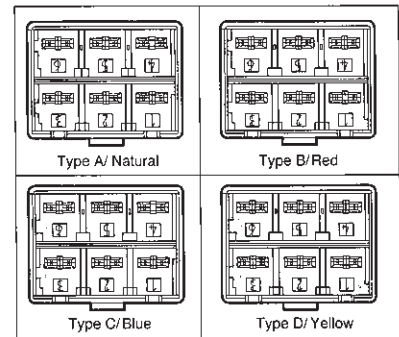
**Tab Contacts**—Copper Alloy, Tin plated

**Related Product Data**

**Mating Plug Housings**—page 139



**Type of Keying/Color**



No. of Pos.	Dimensions		Loose Piece Tube (Qty.)	Vertical Header Assy. Part No.				Mating Plug Housing Part Number
	A	B		Type of Keying/Color				
				Type A Natural	Type B Red	Type C Blue	Type D Yellow	
4	11.6	—	L.P.	1376386-1	1-1376386-2	2-1376386-3	3-1376386-4	□-1376392-□
			Tube	1376442-1 (40)	1-1376442-2 (40)	2-1376442-3 (40)	3-1376442-4 (40)	
6	16.6	10	L.P.	1376387-1	1-1376387-2	2-1376387-3	3-1376387-4	□-1376393-□
			Tube	1376443-1 (25)	1-1376443-2 (25)	2-1376443-3 (25)	3-1376443-4 (25)	

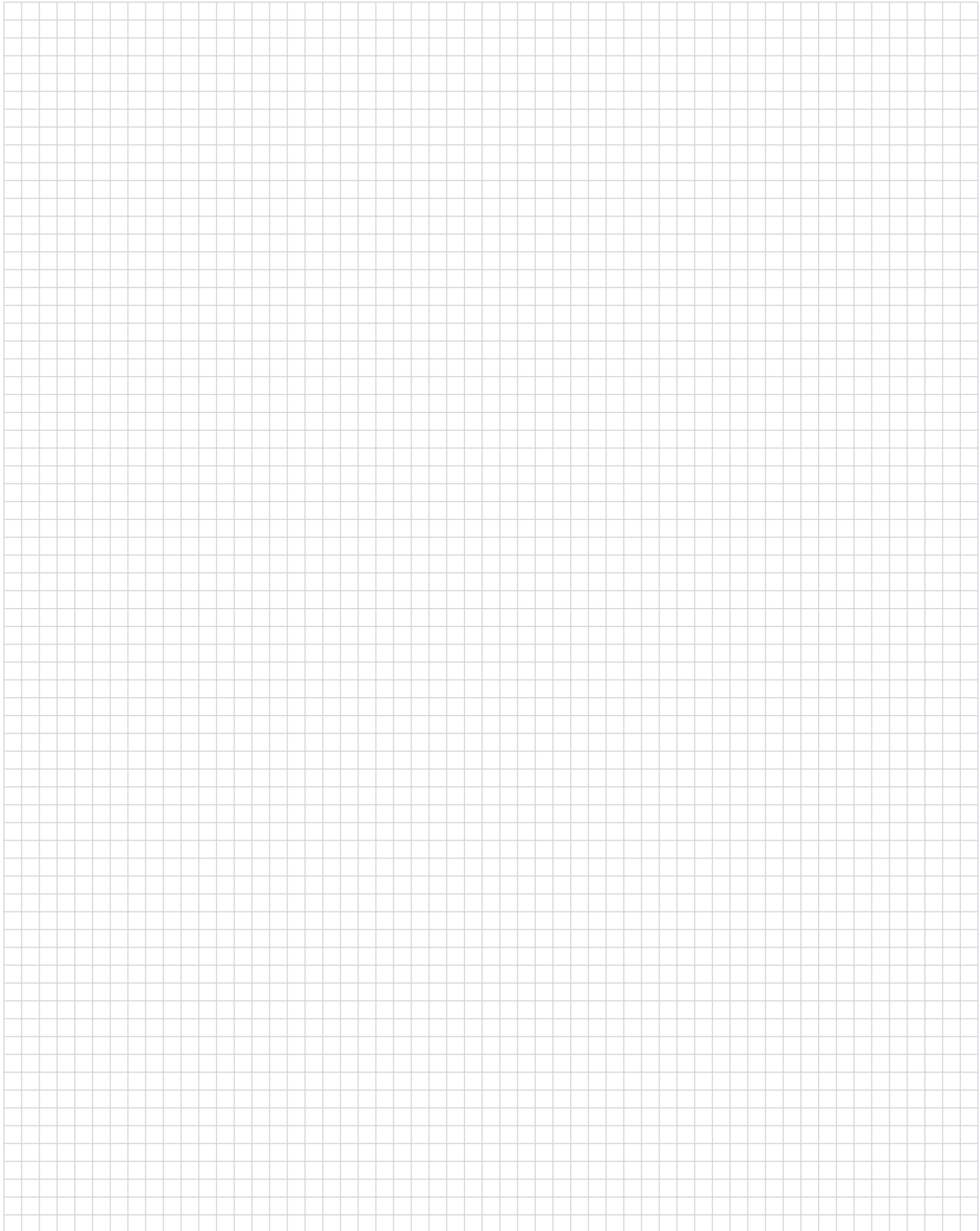
**Note:** Dimensions shown are metric.

**Note:** All part numbers are RoHS Compliant.

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## Engineering Notes

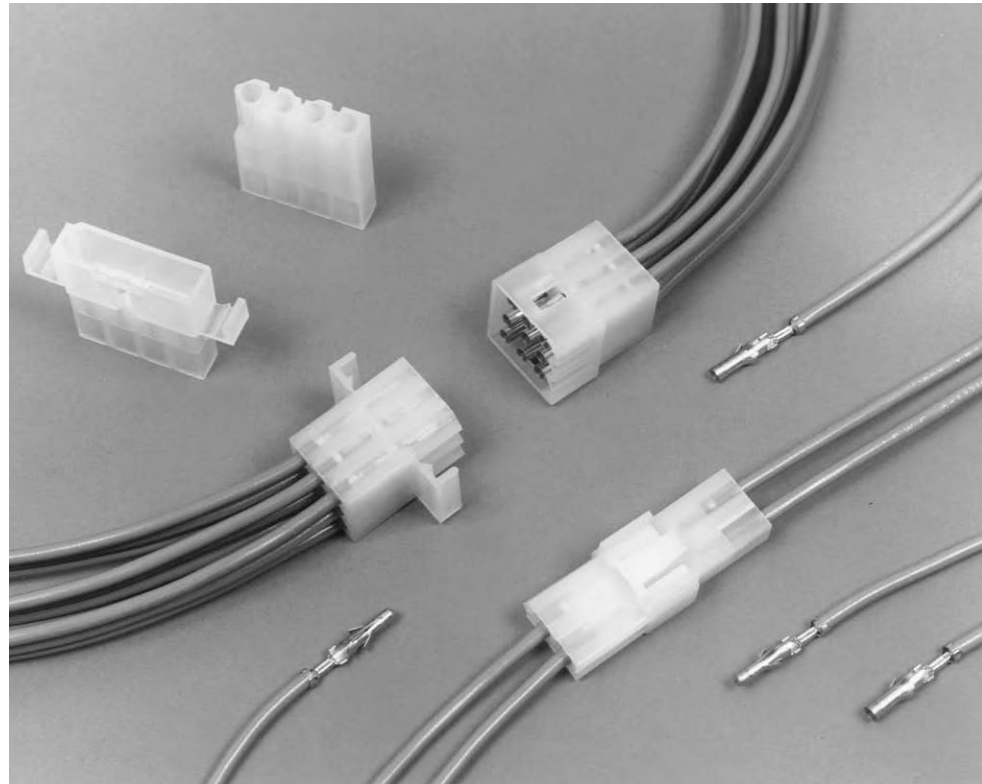
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## .093 [2.36] Commercial Pin and Socket Connectors

### Product Facts

- Polarized
- Cavity identification
- Low contact-mating force
- Dual locking lances
- Detent and positive locking
- Contacts available in brass and phosphor bronze with tin and gold plating
- Panel mounting and free-hanging styles
- “F” crimp contacts
- Applicator and hand tool available
- Economical commercial-grade connectors
- Compatible with high-speed application machinery and competitive soft shells
- Wire range 24 to 14 AWG [0.2 to 2 mm<sup>2</sup>]
- Accepts wires with insulation diameters as large as .180 [4.57]
- Housings available in 1 to 15 positions
- .093 plug and receptacle housings accept pin or socket contacts. The preferred convention is to use socket contacts with receptacle housings
- Not for interrupting current
- Recognized under the Component Program of Underwriters Laboratories Inc., File No. E28476 
- Certified by Canadian Standards Association, File No. LR 7189 



### Performance Characteristics

The .093 Commercial Pin and Socket Connectors performance characteristics found on pages 143-144 are based on free-hanging and panel mount connectors, loaded with contacts crimped on stranded wire.

**Thermal Shock**— -55°C to +105°C

**Temperature-Humidity Cycling**— +25°C to +65°C at 90–95% RH

**Corrosion**—48 hr. at 5% salt concentration

**Vibration**—10-55-10 cycles per minute at .06 [1.52] total excursion

**Physical Shock**—18 shocks, 50 Gs sawtooth in 11 milliseconds

**Durability**—50 mating cycles

**Dielectric Withstanding Voltage**— 1.0 kVAC

**Insulation Resistance**— 1000 megohms min. initial

**Voltage Rating**—250 V AC or DC

**Connector Mating**— 2.5 lb. [11.1 N] max. per contact

**Connector Unmating**— 1.5 lb. [6.7 N] min. per contact

**Contact Retention**— 10 lb. [44.5 N] min.

### Technical Documents

**Application Specification**  
114-49000 .093 Commercial Pin and Socket Connectors

**Product Specification**  
108-1038 .093 Commercial Pin and Socket Connectors

**Performance Characteristics** (continued)

**Maximum Current**—Maximum current rating of .093 Commercial Pin and Socket Connectors is limited by the maximum operating temperature of the housings which is 105°C including the temperature rise of the contacts which is a maximum of 30°C. There are several variables which have a direct effect on this maximum current-carrying capability for a given connector and must be considered for each application. These variables are:

**Wire Size**—Larger diameter wire will carry more current since it has less internal resistance to current flow and thus generates less heat. Longer wire lengths also enhance current-carrying capabilities since the wire conducts heat away from the connector.

**Connector Size**—In general, the more circuits in a connector, the less current can be carried.

**Ambient Temperature**—The higher the ambient temperature, the less current can be carried in any given connector.

**Related Product Data**

**Product Specification** — 108-1038

**.093 [2.36] Commercial Pin and Socket Connectors** (Continued)

**Current Rating Verification for 30°C Maximum Temperature Rise 100% Energized**

**Wire-to-Wire**

**.093 Commercial Pin and Socket Connectors — Calculated Current Table**

Number of Circuits	Wire AWG					
	14	16	18	20	22	24
2	13.00	12.00	11.00	8.00	6.00	6.00
3	13.00	11.00	10.00	8.00	6.00	5.00
4 In-Line	11.00	10.00	9.00	7.00	5.00	4.00
4 Matrix	11.00	10.00	9.00	7.00	5.00	4.00
5	10.00	9.00	8.00	6.00	5.00	4.00
6	10.00	9.00	8.00	6.00	4.00	4.00
9	9.00	7.00	6.00	5.00	4.00	3.00
12	8.00	7.00	6.00	4.00	3.00	3.00
15	7.00	6.00	5.00	4.00	3.00	3.00

Values are based on initial Temperature Rise versus Current Testing and are intended to be a guide in the selection of a connector family. All applications should be tested by the end user. The values listed are per circuit for fully loaded housings being 100% energized. **Note:** All combinations were not tested and this chart contains interpolated and extrapolated values.

**Minimum Wire Lengths for T-Rise vs. Current Testing**

AWG	Min. Length (in.)	AWG	Min. Length (in.)
30	2.6	18	9.4
28	3.2	16	11.3
26	4.1	14	13.7
24	5.1	12	16.4
20	7.8	10	19.3

**Note:** If wire lengths used are less than those listed above, the current-carrying ability of the system will be reduced due to less heat being conducted away from the connector. The customer should fully test all applications.

**Termination Resistance/Contact Crimp Tensile Force**

Wire Size		Termination Resistance		Contact Crimp Tensile Force	
AWG	mm <sup>2</sup>	Test Current (Amps)	Resistance Milliohms (Max. Init.)	Force (Min.)	
				lbs.	N
24	0.2	2.0	4.0	8	35.6
22	0.3–0.4	3.0	4.0	10	44.5
20	0.5–0.6	4.5	4.0	15	66.7
18	0.8–0.9	6.0	3.5	25	111.2
16	1.25–1.4	8.0	3.5	25	111.2
14	2	10.0	3.0	30	133.4

**Note:** This is the total resistance between wire crimps of a mated pin and socket.

**.093 [2.36] Commercial Pin and Socket Connectors** (Continued)

**Contacts**

Pin Diameter .093 [2.36]

**Material**

.010 [0.25] Stock Thickness  
Pin and socket contacts can be used in either plug or receptacle housings.

**Related Product Data**

**Product Specification** — 108-1038

**Application Specification**  
114-49000

**Performance Characteristics** —  
pages 143-144

**Housings**

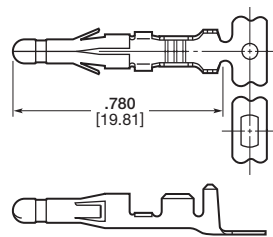
.198 [5.03] Centerline—pages 146-147  
.250 [6.35] Centerline—pages 148-149

**Panel Cutouts**

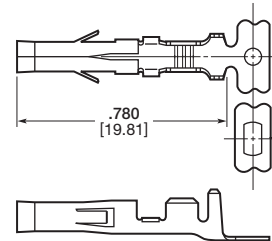
.198 [5.03] Centerline Housings—  
page 147  
.250 [6.35] Centerline Housings—  
page 148

**Technical Documents**—pages 143  
and 205-206

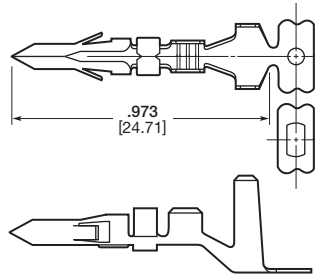
**Application Tooling**—pages 207-210



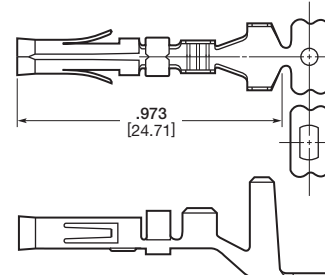
Pin



Socket



Pin  
Part No. 770385-1



Socket  
Part No. 770383-1



**Contact Insertion Tool**  
(For Pins and Sockets)  
Part No. 91002-1  
IS 408-7347



**Contact Extraction Tool**  
Part No. 318837-1  
IS 408-4375

Wire Size AWG	mm <sup>2</sup>	Ins. Dia.	Material & Finish	Contact Part Numbers				HDM Applicator Part No.	Hand Tool Part No.
				Pin		Socket			
				Strip Form	Loose Piece	Strip Form	Loose Piece		
24-18	0.2-0.9	.110 2.79	Brass, Pre-tin	350418-1	770147-1	350417-1	770146-1	466656-15	90872-1
			Brass, Gold <sup>2</sup>	—	—	350417-3 <sup>2</sup>	770146-3 <sup>2</sup>	466656-2 <sup>5</sup>	
			Brass Select Gold <sup>1</sup>	350418-5 <sup>1</sup>	770147-5 <sup>1</sup>	350417-5 <sup>1</sup>	770146-5 <sup>1</sup>	466656-3 <sup>5</sup>	
20-14	0.6-2	.140 3.56	Brass, Pre-tin	350416-1	770145-1	350415-1	770144-1	466878-15	90871-1
			Brass, Select Gold <sup>1</sup>	350416-5 <sup>1</sup>	770145-5 <sup>1</sup>	350415-5 <sup>1</sup>	770144-5 <sup>1</sup>	466878-2 <sup>5</sup>	
			Phos. Brz., Pre-tin	—	—	350415-6	770144-6	466878-3 <sup>5</sup>	
18-14 or 2 (18)	0.8-2 or 2 (0.8-0.9)	.180 4.57	Brass, Pre-tin	770530-1 <sup>4</sup>	—	770529-1 <sup>4</sup>	—	567337-3 <sup>6</sup>	—
			Phos. Brz., Pre-tin	—	—	770529-1 <sup>4</sup>	—	567337-4 <sup>6</sup>	
18-14 or 2 (18)	0.8-2 or 2 (0.8-0.9)	.180 4.57	Brass, Pre-tin	770385-1 <sup>3</sup>	—	—	—	567273-2 <sup>7</sup>	—
			Phos. Brz., Pre-tin	—	—	770383-1 <sup>3</sup>	—	567273-3 <sup>7</sup>	
								567273-4 <sup>7</sup>	

<sup>1</sup>Select Gold — .000030 [.000762] min gold in mating area over .000050 [.00127] min nickel.

<sup>2</sup>Gold — .000030 [.000762] min gold in mating area, overall gold flash over .000050 [.00127] min nickel.

<sup>3</sup>These contacts have a .0125 [.318] stock thickness and accept two wires, each with maximum .180 [4.57] insulation diameters. They can be used only with the following housing part numbers: 770364-1, 770365-1, 770450-1, 770451-1, 770452-1, and 770453-1 (see page 143).

<sup>4</sup>Contact length is .875 [22.23]

<sup>5</sup>HDM Applicator part number ending in -1 is used on AMPOMATOR CLS Machine with T or G Terminators, -2 is used on AMP-O-LECTRIC Model K Machine, -3 is used on AMP-O-LECTRIC Model G Machine. See pages 207-210 for further information.

<sup>6</sup>HDM Applicator part number ending in -3 is used on AMPOMATOR CLS Machine with T or G Terminators, -4 is used on AMP-O-LECTRIC Model K Machine, -6 is used on AMP-O-LECTRIC Model G Machine. See pages 207-210 for further information.

<sup>7</sup>HDM Applicator part number ending in -3 is used on AMPOMATOR CLS Machine with T or G Terminators, -2 is used on AMP-O-LECTRIC Model K Machine, -4 is used on AMP-O-LECTRIC Model G Machine. See pages 207-210 for further information.

**Note:** Phosphor bronze contacts should be used in high-temperature/humidity cycling applications.

**Note:** All part numbers are RoHS Compliant.

Standard Density

.093 [2.36] Commercial Pin and Socket Connectors  
.198 [5.03] Centerline

**.093 [2.36] Commercial Pin and Socket Connectors** (Continued)

**Housings**

**Free-Hanging or Panel Mount**

.198 [5.03] Centerline spacing

**Material**

**Housing**—Nylon, natural color

**Flammability Rating**—

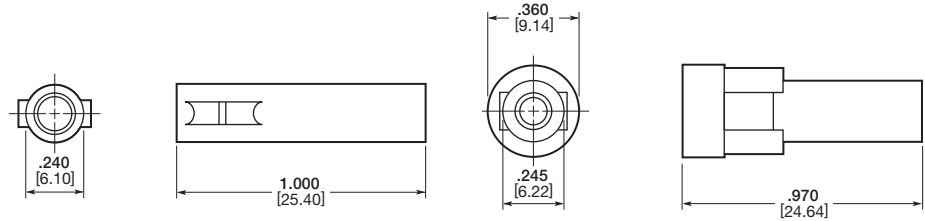
UL94-V-2

**Related Product Data**

**Contacts**—page 145

**Product Specification**—108-1038

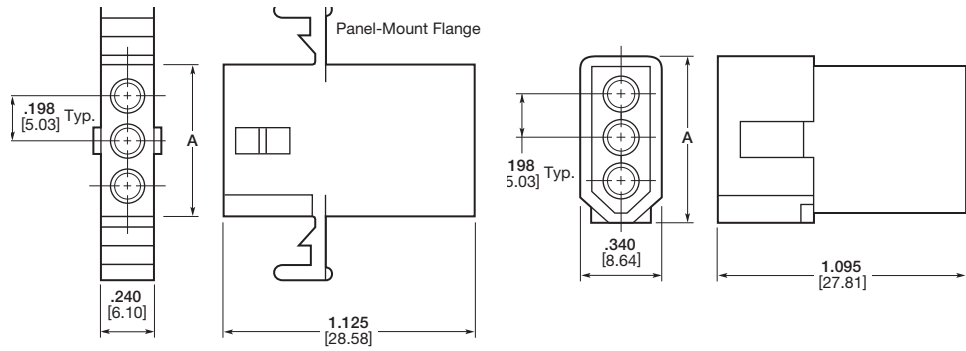
**1 Circuit**



Receptacle

Plug

**2, 3, and 4 Circuit, In-Line**



Receptacle

Plug

No. of Circuits	A Dimension		Receptacle Part Numbers				Plug Part Numbers	
	Receptacle	Plug	Panel Mount		Free-Hanging		Panel Mount	Free-Hanging
			Without Detents	With Detents	Without Detents	With Detents		
1	—	—	—	—	—	770063-1	—	770064-1
2	.540 13.72	.640 16.26	—	770066-11,5	—	770065-11,5 770266 <sup>1,3,5</sup>	770068-1 <sup>1</sup>	770069-1 <sup>1</sup>
3	.670 17.02	.770 19.56	—	770071-1	—	770070-1 770264-1 <sup>3</sup>	770073-1	770074-1
4 (In-Line)	.870 22.10	.970 24.64	—	770076-1	—	770075-1	770077-1	770078-1
4 (Matrix)	.443 11.25	.540 13.71	—	—	—	770843-1	—	770842-1
5	1.070 27.18	1.170 29.72	—	—	—	770083-1 794015-1 <sup>3</sup>	—	770084-1
6 (In-Line)	1.268 32.21	1.378 35.00	—	—	—	770782-1 <sup>4</sup>	—	770892-1 <sup>4</sup>
6 (Matrix)	.435 11.05	.535 13.59	770085-1	770087-1	770088-1	770086-1	770089-1	770090-1
9	.670 17.02	.770 19.56	770091-1	770093-1	770094-1	770092-1	770095-1 <sup>2</sup> 770108-1	770096-1
12	.870 22.10	.970 24.64	770097-1	770099-1	770100-1	770098-1	770101-1	770102-1
15	1.070 27.18	1.170 29.72	770103-1	—	770105-1	—	770106-1	770107-1

<sup>1</sup>2.248 [6.30] centerline.

<sup>2</sup>Mounting ears at wire end.

<sup>3</sup>Tool removable.

<sup>4</sup>Positive lock.

<sup>5</sup>600 V AC or DC

**Note:** All part numbers are RoHS Compliant.

Standard Density

.093 [2.36] Commercial Pin and Socket Connectors  
.198 [5.03] Centerline

**.093 [2.36] Commercial Pin and Socket Connectors** (Continued)

**Housings**

**Free-Hanging or Panel Mount**

.198 [5.03] Centerline spacing

**Material**

**Housing**—Nylon, natural color

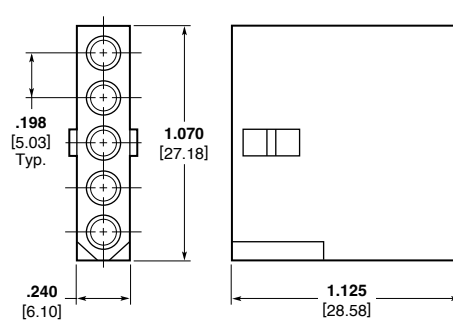
**Flammability Rating**—  
UL94V-2

**Related Product Data**

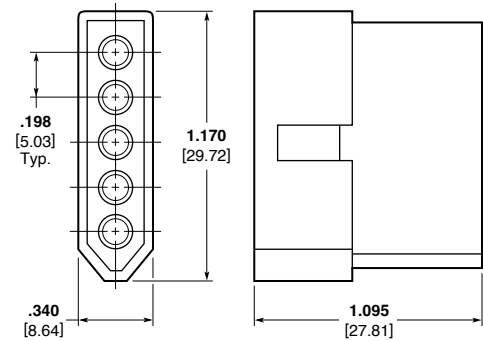
**Contacts**—page 145

**Product Specification**—108-1038

**5 Circuit, In-Line**

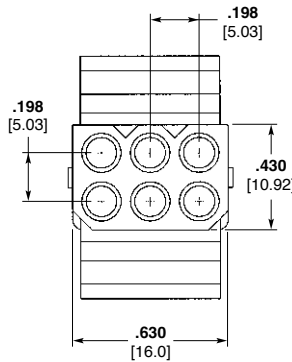


Receptacle (Free-Hanging)

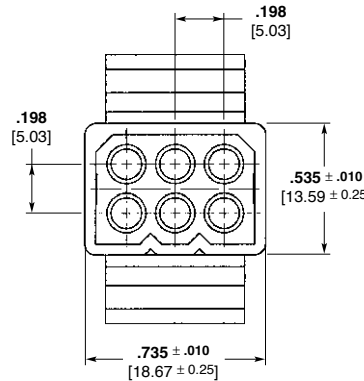
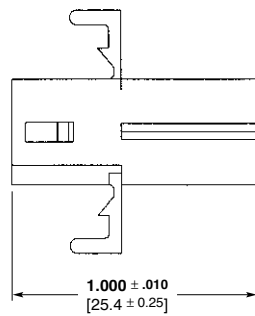


Plug (Free-Hanging)

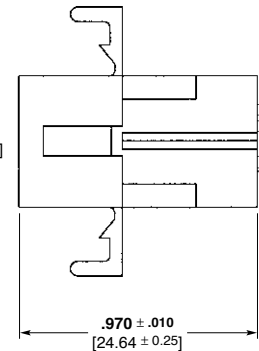
**4, 6, 9, 12, and 15 Circuit, Matrix**



Receptacle

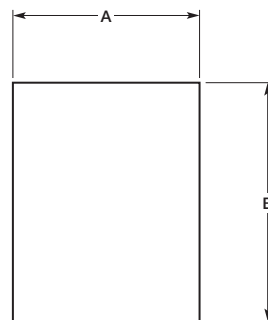


Plug



**Recommended Panel Cutouts**

Maximum panel thickness is .090 [2.29].



No. of Circuits	Panel Cutout Dimensions			
	Receptacle		Plug	
	A	B	A	B
2	.312 7.92	.725 18.42	.375 9.53	.800 20.32
3	.312 7.92	.840 21.34	.375 9.53	.933 23.70
4 (In-Line)	.312 7.92	1.038 26.37	.375 9.53	1.131 28.73
6	.600 15.24	.718 18.24	.695 17.65	.750 19.05
9	.725 18.42	.828 21.03	.660 16.76	.937 23.80
12	.725 18.42	1.050 26.67	.760 19.30	1.155 29.34
15	.655 16.64	1.240 31.50	.760 19.30	1.343 34.11

**Note:** The panel should be punched so that the housing enters in the same direction as the punch.

**.093 [2.36] Commercial Pin and Socket Connectors** (Continued)

**Housings**

**Free-Hanging or Panel Mount**

.250 [6.35] Centerline spacing

**Material**

**Housing**—Nylon, natural color

**Flammability Rating**—  
UL94V-2

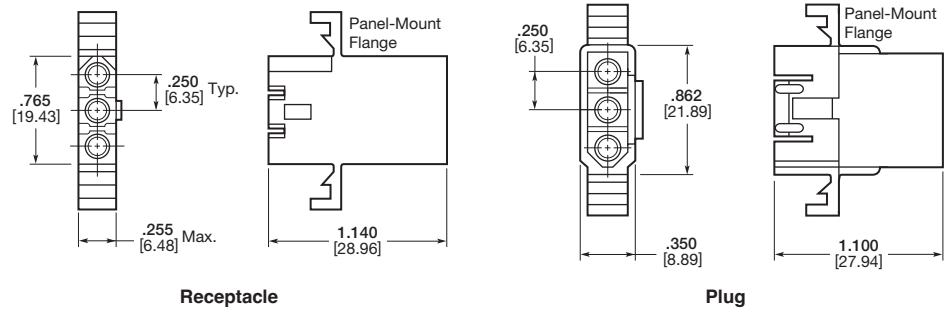
**Voltage Rating**—600 V AC or DC

**Related Product Data**

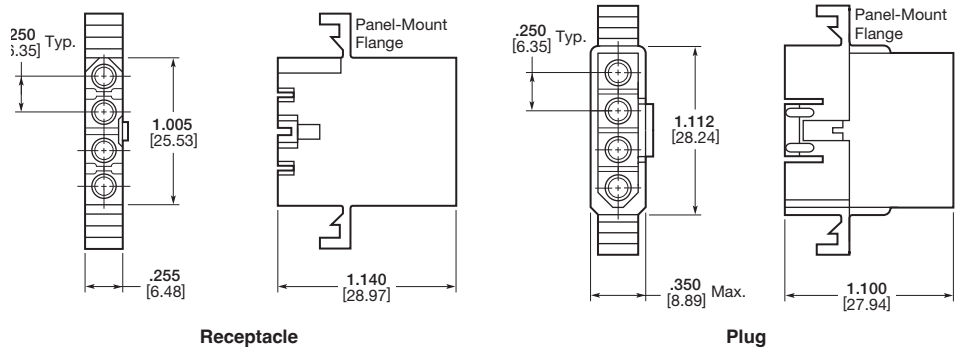
**Contacts**—page 145

**Product Specification**—108-1038

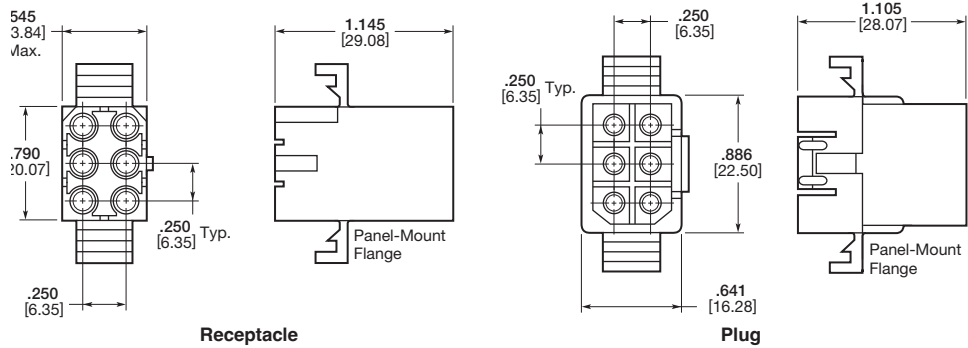
**3 Circuit, In-Line**



**4 Circuit, In-Line**



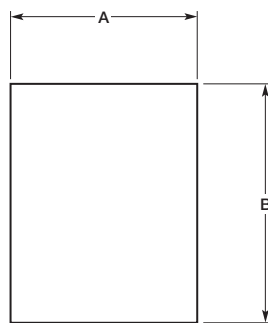
**6 Circuit, Matrix**



**Recommended Panel Cutouts**

Maximum panel thickness is  
.062 [1.57].

**Note:** The panel should be punched so that the housing enters in the same direction as the punch.



No. of Circuits	Receptacle Part Numbers		Plug Part Numbers	
	Panel Mount	Free-Hanging	Panel Mount	Free-Hanging
3	770269-1 770771-1 <sup>1</sup>	770339-1	770338-1	770276-1
4	770329-1	770337-1	770330-1	770336-1
6	770372-1	770360-1	770373-1	770361-1

<sup>1</sup>Pre-bent mounting ears.

No. of Circuits	Panel Cutout Dimensions			
	Receptacle		Plug	
	A	B	A	B
3	.310 7.87	.920 23.37	.365 9.27	1.022 25.96
4	.310 7.87	1.168 29.67	.365 9.27	1.270 32.26
6	.608 15.44	.946 24.03	.658 16.71	1.048 26.62

**Note:** All part numbers are RoHS Compliant.

Standard Density

.093 [2.36] Commercial Pin and Socket Connectors  
.198 [5.03] Centerline

**.093 [2.36] Commercial Pin and Socket Connectors** (Continued)

**Housings**

**Free-Hanging or Panel Mount**

.250 [6.35] Centerline spacing

**Material**

**Housing**—Nylon, natural color

**Flammability Rating**—  
UL94V-2

**Voltage Rating**—600 V AC or DC

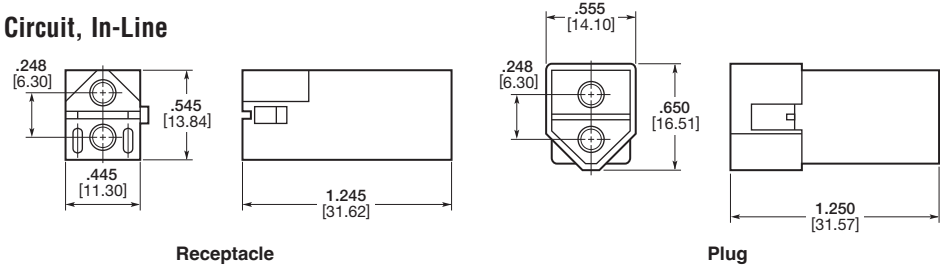
**Related Product Data**

**Contacts**—page 145

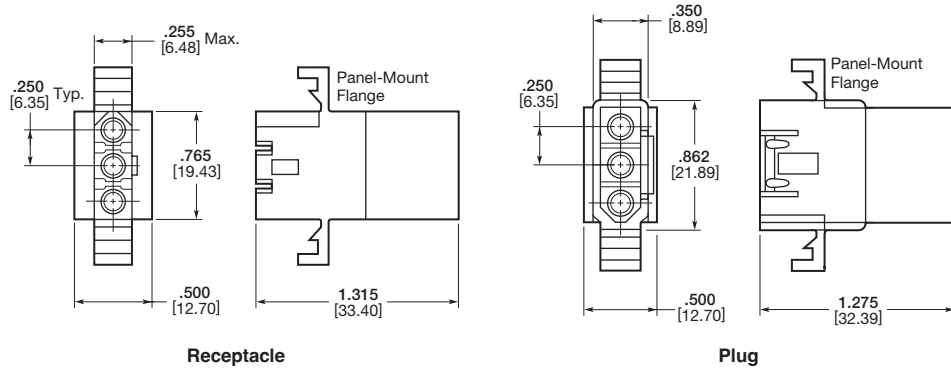
**Product Specification**—108-1038

**Dual Wire**

**2 Circuit, In-Line**



**3 Circuit, In-Line**



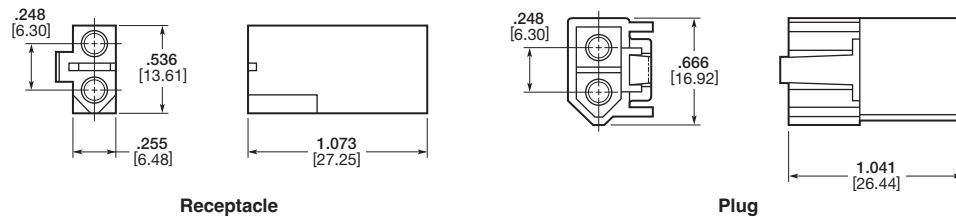
No. of Circuits	Receptacle Part Numbers		Plug Part Numbers	
	Panel Mount	Free-Hanging	Panel Mount	Free-Hanging
2	—	770364-1 <sup>1</sup>	—	770365-1 <sup>1</sup>
3	770453-1 <sup>2</sup>	770451-1	770452-1 <sup>2</sup>	770450-1

<sup>1</sup>1.248 [6.30] centerline.

<sup>2</sup>See panel cutout dimensions on page 58.

**Positive Lock**

**2, 3 and 4 Circuit, In-Line**



No. of Circuits	Receptacle Part Numbers	Plug Part Numbers
	Free-Hanging	Free-Hanging
2	770424-1 <sup>1</sup>	770425-1 <sup>1</sup>
3	770785-1	770783-1
4	770784-1	770810-1

<sup>1</sup>1.248 [6.30] centerline.

**Note:** All part numbers are RoHS Compliant.

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## Engineering Notes

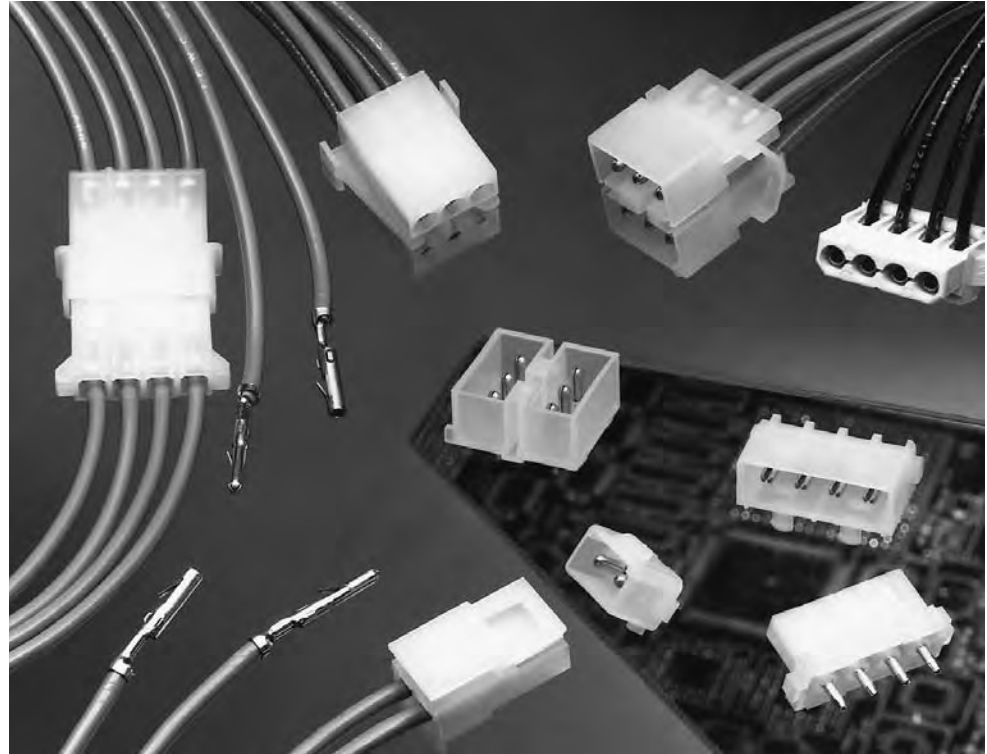
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## Commercial MATE-N-LOK Connectors

### Product Facts

- Fully polarized nylon housings
- Easy cavity identification
- Locking devices are integral part of design. Connector halves will hold together under severe conditions of vibration and shock
- Built-in contact stabilization and self-aligning features
- Hot side egg-crate design for safety
- Precision molded to exacting tolerances
- Contacts accept a wire size range of 30-14 AWG [.05-2.0 mm<sup>2</sup>]
- Keying plug available
- “Clean” design contact—no sharp projections to impede insertion or damage housings
- Low insertion/extraction forces
- Contacts available in pre-tin or gold over nickel plated to fit the application requirements
- Wire-to-PC Board capability using pin or socket headers
- Solderability—Headers meet MIL-STD 202 method 208
- Four circuit PC Board-to-PC Board capability available by mating vertical socket header with either vertical, right-angle or surface mount pin header
- Four circuit insulation displacement connector (IDC) available
- Ultraviolet (UV) stable housings available in 1, 2 and 3 circuit
- Not for interrupting current
- Recognized under the Component Program of Underwriters Laboratories Inc., File No. E28476 
- Certified by Canadian Standards Association, File No. LR 7189A 



### Performance Characteristics

The Commercial MATE-N-LOK Connector performance characteristics found on pages 151-152 are based on free-hanging and panel mount connectors, loaded with contacts crimped on stranded wire.

**Dielectric Withstanding Voltage**—1.5 KVAC between adjacent circuits

**Insulation Resistance**—500 megohms minimum initial between adjacent circuits

**Voltage Rating**—250 V AC or DC

**Connector Mating**—4 lb. max. per circuit

**Connector Unmating**—0.7 lb. min. per circuit

**Contact Retention**—15 lb. min. per contact

**Durability**—50 cycles, mating and unmating

### Technical Documents

#### Product Specifications

108-1000 Commercial MATE-N-LOK Connectors

108-1077 Commercial MATE-N-LOK PC Board Headers

108-49000 IDC Connectors

#### Application Specifications

114-1012 Commercial MATE-N-LOK Contacts

114-49001 IDC Connectors

#### Instruction Sheets

408-7209, 408-7166, 408-7200, 408-7201, 408-7215, 408-3186, 408-7300

**Commercial MATE-N-LOK Connectors** (Continued)

**Performance Characteristics** (Continued)

**Maximum Current**—Maximum current rating of Commercial MATE-N-LOK connectors is limited by the maximum operating temperature of the housings which is 105°C including the temperature rise of the contacts which is a maximum of 30°C. There are several variables which have a direct effect on this maximum current-carrying capability for a given connector and must be considered for each application. These variables are:

**Wire Size**—Larger diameter wire will carry more current since it has less internal resistance to current flow and thus generates less heat. Longer wire lengths also enhance current-carrying capabilities since the wire conducts heat away from the connector.

**Connector Size**—In general, the more circuits in a connector, the less current can be carried.

**Ambient Temperature**—The higher the ambient temperature, the less current can be carried in any given connector.

**Printed Wiring Board Conductor Size**—The finished trace conductor width and thickness should be maximized to allow for the greatest current-carrying capacity and heat dissipation.

Commercial MATE-N-LOK connectors also will withstand the following tests:

**Vibration**—10-55-10 cycles per minute at .06 inch total excursion

**Physical Shock**—18 drops, 50 G sawtooth at 11 milliseconds

**Housing Panel Mount Retention**—40 lb. min. 3 and 4 circuit  
65 lb. min. 6, 9, 12, and 15 circuit

**Housing Lock Strength with Positive Locking Devices Engaged**—25 lb. min.

**Thermal Shock**—-55°C to +85°C

**Temperature-Humidity Cycling**—25°C to 65°C at 95 RH

**Corrosion**—48 hr. at 5% salt concentration

**Related Product Data**

**Product Specifications**

- 108-1000 Commercial MATE-N-LOK Connectors
- 108-1077 Commercial MATE-N-LOK PC Board Headers

**Current Rating Verification for 30°C Maximum Temperature Rise 100% Energized**

**Wire-to-Wire**

**Motor Mount Calculated Current Table**

Number of Circuits	Wire Gauge						
	14	16	18	20	22	24	30
6	13.00	10.50	9.50	7.50	6.00	5.00	2.50
8	12.00	9.50	8.50	7.00	5.50	4.50	2.50
10	11.00	9.00	8.00	6.50	5.00	4.50	2.00
12	10.50	8.50	7.50	6.00	5.00	4.00	2.00
16	9.50	8.00	7.00	5.50	4.50	3.50	2.00

Values are based on initial Temperature Rise versus Current Testing and are intended to be a guide in the selection of a connector family. All applications should be tested by the end user. The values listed are per circuit for fully loaded housings being 100% energized. **Note:** All combinations were not tested, and this chart contains interpolated and extrapolated values.

**Calculated Current Table**

Number of Circuits	Wire Gauge						
	14	16	18	20	22	24	30
1	19.00	15.50	14.00	11.00	9.00	7.50	4.00
2	18.00	14.50	13.00	10.50	8.50	7.00	4.00
3	16.00	13.00	12.00	9.50	7.50	6.50	3.50
4	15.00	12.50	11.00	9.00	7.00	6.00	3.00
6 Matrix	13.00	10.50	9.50	7.50	6.00	5.00	3.00
8	12.50	10.50	9.00	7.50	6.00	5.00	2.50
9	11.00	9.00	8.00	6.50	5.50	4.50	2.50
10	12.00	9.50	8.50	7.00	5.50	4.50	2.50
12	10.50	8.50	7.50	6.00	5.00	4.00	2.00
15	9.50	8.00	7.00	5.50	4.50	4.00	2.00

Values are based on initial Temperature Rise versus Current Testing and are intended to be a guide in the selection of a connector family. All applications should be tested by the end user. The values listed are per circuit for fully loaded housings being 100% energized. **Note:** All combinations were not tested, and this chart contains interpolated and extrapolated values.

**Wire-to-Board**

Due to the vast differences in trace geometry and printed circuit board configurations, we are unable to provide a separate current carrying chart for our printed circuit board header products. However, the above Wire-to-Wire charts may be used as a guideline for headers if the trace width and thickness is equal to the listed wire gauge. For vertical headers, only 95% of the Wire-to-Wire value should be used. For right-angle headers, only 75% of the Wire-to-Wire value should be used. The chart values are only a tool for connector selection and will require the customer to fully test their application.

**Minimum Wire Lengths for T-Rise vs. Current Testing**

AWG	Min. Length (in.)	AWG	Min. Length (in.)
30	2.6	18	9.4
28	3.2	16	11.3
26	4.1	14	13.7
24	5.1	12	16.4
20	7.8	10	19.3

**Note:** If wire lengths used are less than those listed above, the current carrying ability of the system will be reduced due to less heat being conducted away from the connector. The customer should fully test all applications.

**Termination Resistance/Contact Crimp Tensile Force**

Wire Size		Termination Resistance		Contact Crimp Tensile Force	
AWG	mm <sup>2</sup>	Test Current (Amps)	Resistance Milliohms (Max. Init.)	Force (Min.) lbs.	N
30	.05	.50	4.00	2	9
28	.08	.75	3.50	3	13
26	.12	1.00	3.50	7	31
24	.2	1.5	3.50	10	44
22	.3	3	3.50	15	67
20	.5	4.5	3.00	20	89
18	.8	6	3.00	30	133
16	1.2	8	2.75	30	133
14	2.0	10	2.75	35	156

**Note:** This is the total resistance between wire crimps of a mated pin and socket.

Standard Density

Commercial MATE-N-LOK Connectors  
.200 [5.08] Centerline

**Commercial MATE-N-LOK Connectors** (Continued)

**Commercial MATE-N-LOK Connector Mating Combinations**

Connector Part Number					Mating Connector Part Number							
Number of Circuits	Flammability Rating	Style	Housing Type	Connector Part No.	Housing Part No.	Housing Type	PC Board Headers					
							Plating	Vertical Pin		Right-Angle Pin	Vertical Socket	
							Standard Tail	Long Tail		Standard Tail	Long Tail	
1	UL94V-2	In-Line	Socket: FH	1-480349-0	1-480350-0	Pin: FH	—	—	—	—	—	—
			Socket: FH Positive Lock	1-480400-0	1-480351-0	Pin: FH Positive Lock	—	—	—	—	—	—
			Socket: FH UV Stable	1-480401-1	1-480401-1	Pin: FH UV Stable	—	—	—	—	—	—
2	UL94V-2	In-Line	Socket: FH	1-480318-0	1-480319-0	Pin: FH	Pre-tin	350209-1	350422-1	794120-1	—	—
			Socket: FH UV Stable	1-480393-1	1-480498-1	Pin: FH UV Stable	—	—	—	—	—	—
			Socket: FH Positive Lock	1-480720-0	794012-1	Pin: FH Positive Lock	Pre-tin	350539-1	350540-1	—	—	—
			Socket: FH Positive Lock	1-480720-0	794012-1	Pin: FH Positive Lock	Duplex <sup>1</sup>	1586530-2	—	—	—	—
3	UL94V-2	In-Line	Socket: FH	1-480303-0	1-480305-0	Pin: FH	Pre-tin	350210-1	350423-1	643488-1	—	—
			Socket: PM	1-480304-0	1-480305-0	Pin: FH	Duplex <sup>1</sup>	1586514-2	—	—	—	—
			Socket: FH Positive Lock	1-480721-0	—	—	Pre-tin	350541-1	350542-1	—	—	—
			Socket: FH UV Stable	1-480388-0	1-480387-0	Pin: FH UV Stable	Duplex <sup>1</sup>	1586532-2	—	—	—	—
4			<b>See next page for 4 position mating combinations</b>									
6	UL94V-2	Matrix	Socket: FH Positive Lock	1-480270-0	1-480340-0	Pin: FH Positive Lock	Pre-tin	1-380999-0	350425-1	—	—	—
			Socket: PM Positive Lock	1-480273-0	1-480271-0	Pin: MM Positive Lock	Duplex <sup>1</sup>	2-1586546-0	1586526-2	—	—	—
			Pin: PM Positive Lock	1-480276-0	1-480276-0	Pin: PM Positive Lock	Pre-tin	—	—	—	—	—
8	UL94V-2	Dual Row	Socket: FH Positive Lock	1-480283-0	1-480345-0	Pin: FH Positive Lock	Pre-tin	350212-1	350426-1	—	—	—
			Pin: PM Positive Lock	1-480277-0	1-480284-0	Pin: MM Positive Lock	Duplex <sup>1</sup>	1586518-2	1586528-2	—	—	—
9	UL94V-2	Matrix	Pin: PM Positive Lock	1-480277-0	1-480274-0	Socket: PM Positive Lock	Pre-tin	—	—	—	350642-1	350577-1
			Socket: FH Positive Lock	1-480285-0	1-480274-0	Socket: PM Positive Lock	Duplex <sup>1</sup>	—	—	—	—	—
10	UL94V-2	Dual Row	Socket: FH Positive Lock	1-480285-0	1-480339-0	Pin: FH Positive Lock	Pre-tin	1-380991-0	350219-1	—	—	—
			Pin: PM Positive Lock	1-480278-0	1-480286-0	Pin: MM Positive Lock	Duplex <sup>1</sup>	2-1586544-0	—	—	—	—
12	UL94V-2	Dual Row	Socket: MM Positive Lock	1-480287-0	1-480288-0	Pin: MM Positive Lock	Pre-tin	350213-1	350220-1	—	—	—
			Pin: PM Positive Lock	1-480278-0	1-480275-0	Socket: PM Positive Lock	Duplex <sup>1</sup>	1586520-2	1586524-2	—	—	—
15	UL94V-2	Matrix	Pin: PM Positive Lock	1-480324-0	1-480275-0	Socket: PM Positive Lock	Pre-tin	—	—	—	350643-1	350578-1
			Socket: PM Positive Lock	1-480324-0	1-480323-0	Socket: PM Positive Lock	Duplex <sup>1</sup>	—	—	—	—	—
16	UL94V-2	Dual Row	Socket: MM Positive Lock	1-480438-0	1-480439-0	Pin: MM Positive Lock	Pre-tin	350214-1	350427-1	—	—	—
			Socket: MM Positive Lock	1-480438-0	1-480439-0	Pin: MM Positive Lock	Duplex <sup>1</sup>	1586522-2	1586529-2	—	—	—

**FH: Free-Hanging**

**PM: Panel Mount**

**MM: Motor Mount**

<sup>1</sup>Duplex Finish — Plated with .000030 [.000762] min. gold in mating area, matte tin on solder tail end over .000050 [.00127] min. nickel underplate on entire contact.

**Note: All part numbers are RoHS Compliant.**

**Commercial MATE-N-LOK Connectors** (Continued)

**Commercial MATE-N-LOK 4 Position In-Line Mating Combinations** (Note: These connectors are used by the disk drive industry.)

Flammability Rating	Connector Type	Connector Part No.	Mating Connector Part Number													
			Socket Connectors					PC Board Pin Headers								
			Housing Part No.	Housing Type	Plating	Insulation Displacement Connector	AWG	PC Board Vertical Socket Header	Vertical Standard Tail	Vertical Long Tail	Surface Mount	Standard	Right-Angle W/Fixed Belt	W/Fixed Belt Reverse Pol.		
	Socket Housing Positive Lock	1-480772-0	—	—	Pre-tin Duplex <sup>1</sup>	—	—	—	350543-1 1586534-2	350544-1 1586536-2	—	—	—	—	—	—
	Socket Housing Detent Lock	1-480424-0	1-480426-0	Pin	Pre-tin	—	—	—	350211-1 770328-13	350424-1	770829-1	641737-1 770846-1	174804-1	174552-1	—	—
UL94V-2	Pin Housing Detent Lock	1-480426-0	1-480424-0	Socket	Pre-tin	770156-2 22 770156-3 18 770156-4 20 770156-5 16	—	—	—	770997-1 794287-12	—	—	—	—	—	—
	Pin Housing Detent Lock High Temp	3-480426-0	3-480425-0	Socket High Temp	—	—	—	—	—	—	—	—	—	—	—	—
	Socket Header	770997-1 794287-12	1-480426-0	Pin	Pre-tin	—	—	—	350211-1	350424-1	770829-1	641737-1 770846-1	174804-1	174552-1	—	—
UL94V-0	Insulation Displacement Connector (IDC)	770156-2 770156-3 770156-4 770156-5	1-480426-0	Pin	Pre-tin	—	—	—	350211-1	350424-1	770829-1	641737-1 770846-1	174804-1	174552-1	—	—
	Socket Housing	770827-1	794132-1	Pin	Pre-tin	—	—	—	—	—	—	—	—	—	—	—
	Insulation Displacement Connector (IDC)	794036-1 794036-2 794036-3 794036-4	794132-1	—	Pre-tin	—	—	—	—	—	—	—	—	—	—	—
UL94V-0	Right-Angle Pin Header	1-641737-1	770827-1	Socket	Pre-tin	794036-1 18 794036-2 20 794036-3 22 794036-4 16	—	—	794236-1	—	—	—	—	—	—	—

**PM: Panel Mount**

<sup>1</sup>Duplex Finish — Plated with .000030 [.000762] min. gold in mating area, matte tin on solder tail end over .000050 [.00127] min. nickel underplate on entire contact.

<sup>2</sup>Surface Mount Compatible.

<sup>3</sup>With Drainholes

**Note: All part numbers are RoHS Compliant.**

**Commercial MATE-N-LOK Connectors** (Continued)

**Contacts**

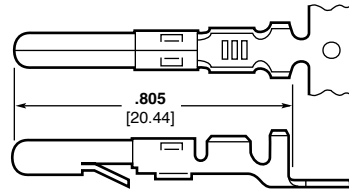
Pin diameter .084 [2.13]  
Stock thickness .012 [.305]  
These contacts are to be used in Commercial MATE-N-LOK housings **only**.

**Related Product Data**

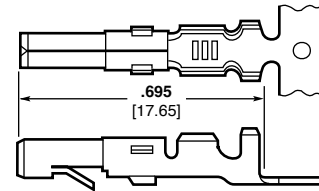
**Product Specification**  
108-1000 Commercial MATE-N-LOK Connectors

**Application Specification**  
114-1012 Commercial MATE-N-LOK Contacts

**Performance Characteristics**—pages 151-152  
**Housings**—pages 157-159  
**Technical Documents**—pages 151 and 205-206  
**Application Tooling**—pages 207-210



Pin



Socket

Wire Size Range AWG [mm <sup>2</sup> ]	Ins. Dia. Range	Material & Finish	Contact Part Numbers				HDM Applicator Part No.	Hand Tool Part No.
			Pin		Socket			
			Strip Form	Loose Piece	Strip Form	Loose Piece		
30-22 [.05-.3]	.040-.075 1.02-1.91	Brass, Pre-tin	350079-1	61174-1	350078-1	61173-1	466426-1 <sup>3</sup> 466426-2 <sup>3</sup> 466426-3 <sup>3</sup>	91515-1
		Phos. Brz., Pre-tin	350079-4	—	350078-4	61173-4		
		Brass, Gold <sup>1</sup>	350079-5	61174-5	350078-5	61173-5		
		Brass, Pre-tin	61116-1	60618-1	61314-1	60617-1		
24-18 [.2-.8]	.060-.100 1.52-2.54	Phos. Brz., Pre-tin	61116-4	60618-4	61314-4	60617-4	466320-1 <sup>3</sup> 466320-2 <sup>3</sup> 466320-4 <sup>3</sup>	91512-1 91528-1 <sup>4</sup>
		Brass, Gold <sup>1</sup>	61116-5	60618-5	61314-5	60617-5		
		Phos. Brz., Select Gold <sup>2</sup>	61116-6	60618-6	61314-6	60617-6		
		Brass, Select Gold <sup>2</sup>	61116-7	—	61314-7	—		
20-14 [.5-2.0]	.100-.130 2.54-3.30	Brass, Pre-tin	61118-1	60620-1	61117-1	60619-1	687763-1 <sup>3</sup> 687763-2 <sup>3</sup> 687763-6 <sup>3</sup>	91504-1
		Phos. Brz., Pre-tin	61118-4	60620-4	61117-4	60619-4		
		Brass, Gold <sup>1</sup>	61118-5	60620-5	61117-5	60619-5		
		Phos. Brz., Gold <sup>1</sup>	61118-6	—	61117-6	60619-7		
(2) 18 [.8] or (2) .115 Max. (1) 18 [.8] and 2.92 (1) 16 [1.2] (stacked)		Brass, Pre-tin	350558-1	350639-1	350557-1	—	687898-1 <sup>3</sup> 687898-2 <sup>3</sup> 687898-4 <sup>3</sup>	91504-1
		Phos. Brz., Pre-tin	350558-4	—	350557-4	350638-4		

<sup>1</sup>Gold Finish — Plated with .000030 [.000762] min. gold in mating area and inside wire barrel over .000050 [.00127] min. nickel underplate on entire contact.

<sup>2</sup>Select Gold Finish — Plated with .000030 [.000762] min. gold in mating area over .000050 [.00127] min. nickel underplate on entire contact.

<sup>3</sup>HDM Applicator part number ending in -1 is used on AMPOMATOR CLS Machine with T or G Terminators, -2 is used on AMP-O-LECTRIC Model K Machine; -3, -4, or -6 is used on AMP-O-LECTRIC Model G Machine. See pages 207-210 for further information.

<sup>4</sup>Use Hand Tool No. 91528-1 for .043-.075 [1.09-1.90] insulation diameter.

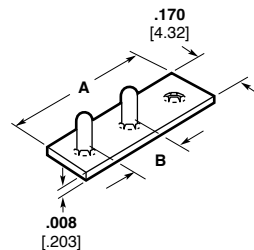
**Notes:**

1. Extraction Tools: Pins — No. **1-305183-1** (IS 408-7158); Sockets — No. **1-305183-2** (IS 408-7158); Pins and Sockets — No. **465644-1** (IS 408-7211)
2. Insertion Tools: No. **455830-1** (IS 408-7984)

**Commoning Tabs**

**Material and Finish**

Brass, tin plated  
Stock thickness .008 [.203]



Number of Holes	Dimensions		Part Number
	A	B	
2	.377 9.58	.203 5.16	60843-1
2	.355 9.02	.195 4.95	350444-1
3	.579 14.71	.203 5.16	60842-1
3	.550 13.97	.195 4.95	350444-2

**Note:** Commoning tabs are designed to be used with pin housings.

**Note:** All part numbers are RoHS Compliant.

**Commercial MATE-N-LOK Connectors** (Continued)

**Contacts**

Pin diameter .084 [2.13]  
Stock thickness .012 [.305]  
These contacts are to be used in Commercial MATE-N-LOK housings only.

**Related Product Data**

**Product Specification**

108-1000 Commercial MATE-N-LOK Connectors

**Application Specification**

114-1012 Commercial MATE-N-LOK Contacts

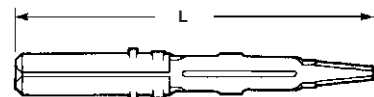
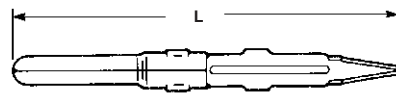
**Performance Characteristics**—pages 151-152

**Housings**—pages 157-159

**Technical Documents**—pages 151 and 205-206

**Application Tooling**—pages 207-210

**PC Board Contacts**



Pin

Socket

Type of Contact	L Dim.		Material & Finish	Part Numbers	
	Pin	Socket		Pin Loose Piece	Socket Loose Piece
PC Board	1.110 [28.19]	1.010 [25.65]	Phos. Brz., Pre-tin	61518-11	61320-11
	1.210 [30.73]	1.110 [28.19]	Phos. Brz., Pre-tin	350074-12	350073-12

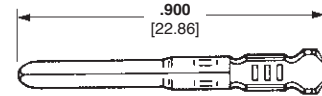
<sup>1</sup>For .062 [1.57] max. board thickness — Board hole size .057 [1.45]

<sup>2</sup>For .125 [3.14] max. board thickness — Board hole size .057 [1.45]

**Grounding Pin**

(.095 [2.41] longer than standard pin)

(Mate first, break last, not for interrupting current)



Wire Size Range AWG [mm <sup>2</sup> ]	Ins. Dia. Range	Material & Finish	Contact Part Numbers		HDM Applicator Part No.	Hand Tool Part No.
			Strip Form	Loose Piece		
24-18 [2-.8]	.060-.100 1.52-2.54	Brass, Pre-tin	61527-2	—	466320-11 466320-21 466320-41	91512-1

<sup>1</sup>HDM Applicator part number ending in -1 is used on AMPOMATOR CLS Machine with T or G Terminators, -2 is used on AMP-O-LECTRIC Model K Machine; -3, -4, or -6 is used on AMP-O-LECTRIC Model G Machine. See pages 207-210 for further information.

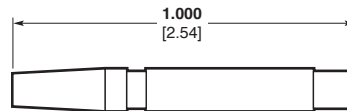
**Keying Plug**

IS 408-7582

**Material**

**Housing**—Nylon, natural color

**Flammability Rating**—UL94V-2



Part Number  
200821-1

Note: Keying plug snaps into socket housing

**Note:** All part numbers are RoHS Compliant.

Standard Density

Commercial MATE-N-LOK Connectors  
.200 [5.08] Centerline

**Commercial MATE-N-LOK Connectors** (Continued)

**Housings**

**Free-Hanging**

.200 [5.08] Centerline spacing

**Material**

**Housing**—Nylon, natural color

**Flammability Rating**—UL94V-2

**Related Product Data**

**Product Specification**

108-1000 Commercial MATE-N-LOK Connectors

**Performance Characteristics**—pages 151-152

**Contacts**—pages 155-156

**Commoning Tabs**—page 155

**Keying Plug**—page 156

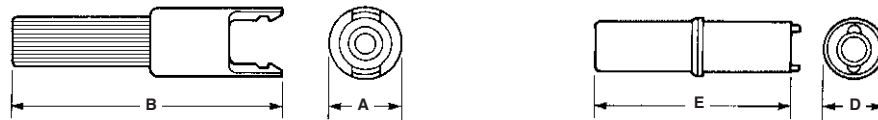
**Technical Documents**—pages 151 and 205-206

**Mating Pin Headers**—pages 161-164

**Mating Socket Headers**—page 162

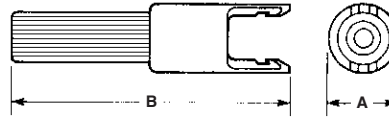
**Mating IDC**—page 163

**1 Circuit**



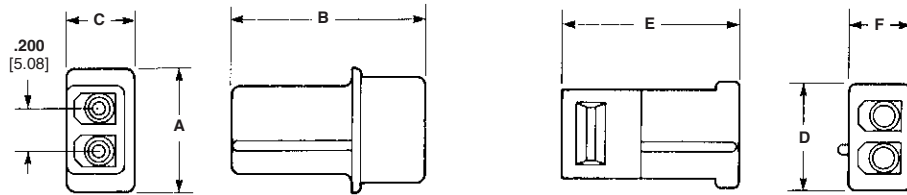
Pin Housing (Cap) Detent Lock

Socket Housing (Plug)



Pin Housing (Cap) Positive Lock

**2, 3 and 4 Circuit, In-Line**



Pin Housing (Cap)

Socket Housing (Plug)

Number of Circuits	Dimensions						Part Numbers	
	A	B	C	D	E	F	Pin Housing (Cap)	Socket Housing (Plug)
1	.300	1.200	—	.260	.870	—	1-480350-0 <sup>1</sup>	1-480349-0
	7.62	30.48	—	6.60	22.10	—	1-480351-0 <sup>2</sup>	1-480349-0
	.300	1.240	—	.260	.870	—	1-480401-0 <sup>1,3</sup>	1-480400-0 <sup>3</sup>
2	.300	1.325	—	.260	.995	—	1-480401-0 <sup>1,3</sup>	1-480400-0 <sup>3</sup>
	7.62	33.65	—	6.60	25.27	—	1-480319-0 <sup>1,5</sup>	1-480318-0 <sup>5</sup>
	.610	.930	.330	.530	.860	.295	1-480498-1 <sup>1,3,5</sup>	1-480393-1 <sup>3,5</sup>
3	.610	.930	.330	.530	.860	.295	1-480305-0 <sup>1,5</sup>	1-480303-0 <sup>5</sup>
	15.49	23.62	8.38	13.46	21.84	7.49	1-480387-0 <sup>1,3,5</sup>	1-480388-0 <sup>3,5</sup>
	.810	.930	.325	.825	.850	.290	1-480387-0 <sup>1,3,5</sup>	1-480388-0 <sup>3,5</sup>
4	.810	.930	.325	.825	.850	.290	1-480426-0 <sup>1,5,6</sup>	1-480424-0 <sup>5,6</sup>
	20.57	23.62	8.25	20.95	21.60	7.37	1-480426-0 <sup>1,5,6</sup>	1-480424-0 <sup>5,6</sup>
	1.010	.930	.330	1.030	.850	.310	794132-14.5 <sup>6</sup>	770827-14.5 <sup>6</sup>
	25.65	23.62	8.38	26.16	21.60	7.88		
	—	—	—	1.030	.850	.310		
				26.16	21.60	7.88		

<sup>1</sup>Detent lock

<sup>2</sup>Positive lock

<sup>3</sup>UV Stable black color

<sup>4</sup>Housing Material UL94V-0 rated

<sup>5</sup>Housing accepts double wire applications where individual insulation diameters do not exceed .115 [2.92].

<sup>6</sup>Used by the disk drive industry.

**Note:** All part numbers are RoHS Compliant.

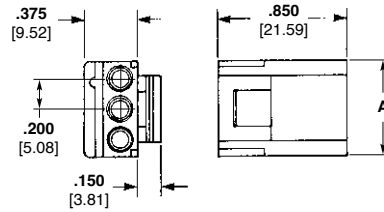
**Commercial MATE-N-LOK Connectors** (Continued)

**Housings**  
Free-Hanging, Positive Lock

**Material**

Housing—Nylon, natural color  
Flammability Rating—UL94V-2

**2, 3, and 4 Circuit, In-Line**  
.200 [5.08] Centerline spacing

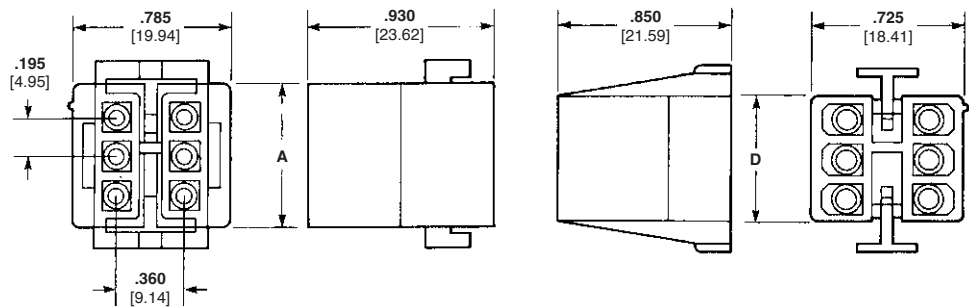


Socket Housing (Plug)

Number of Circuits	A Dim.	Part Numbers		
		Socket Housing (Plug)	Mates with Pin Headers	Mates with Cap Housing
2	.435 11.04	1-480720-0	350539, 350540	794012-1
3	.630 16.00	1-480721-0	350541	—
4	.830 21.09	1-480722-0 <sup>1</sup>	350543 <sup>1</sup> , 350544 <sup>1</sup>	—

<sup>1</sup>Used by the disk drive industry.

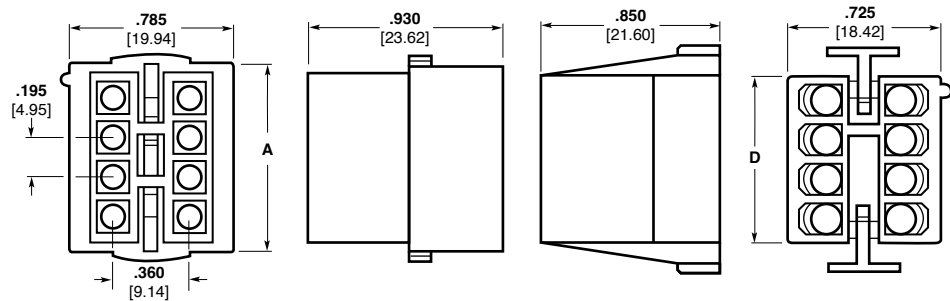
**6 Circuit, Dual Row**



Pin Housing (Cap)

Socket Housing (Plug)

**8 and 10 Circuit, Dual Row**



Pin Housing (Cap)

Socket Housing (Plug)

**Related Product Data**

**Product Specification**

108-1000 Commercial MATE-N-LOK Connectors

**Performance Characteristics**—pages 151-152

**Contacts**—pages 155-156

**Commoning Tabs**—page 155

**Keying Plug**—page 156

**Technical Documents**—pages 151 and 205-206

**Mating Headers**—pages 161-164

Number of Circuits	Dimensions		Part Numbers	
	A	D	Pin Housing (Cap)	Socket Housing (Plug)
6	.705 17.91	.610 15.49	1-480340-0	1-480270-0 <sup>1</sup>
8	.900 22.86	.805 20.44	1-480345-0	1-480283-0 <sup>1</sup>
10	1.095 27.81	1.000 25.40	1-480339-0	1-480285-0 <sup>1</sup>

<sup>1</sup>Housing accepts double wire applications where individual insulation diameters do not exceed .115 [2.92].

**Note:** All part numbers are RoHS Compliant.

Standard Density

Commercial MATE-N-LOK Connectors  
.200 [5.08] Centerline

**Commercial MATE-N-LOK Connectors (Continued)**

**Housings**

**Panel Mount, Positive Lock**

**Material**

Housing—Nylon, natural color

Flammability Rating—UL94V-2

**Related Product Data**

**Product Specification**

108-1000 Commercial MATE-N-LOK Connectors

Performance Characteristics—pages 151-152

Contacts—pages 155-156

Commoning Tabs—page 155

Keying Plug—page 156

Technical Documents—pages 151 and 205-206

Mating Socket Headers—page 162

Mating IDC—page 163

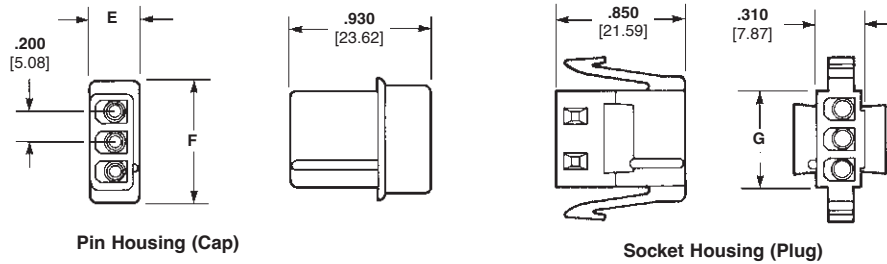
**Recommended Panel Cutout for Panel Mount Socket Housing**

View is from socket housing entry side

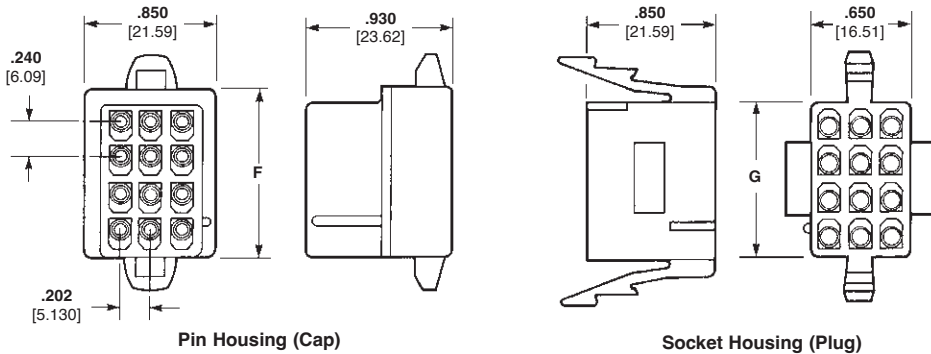
**Mounting Information**

1. Recommended panel thickness—.025-.065 [.635-1.65].
2. Both locking legs are to be squeezed together and the housing is to be inserted "straight-in", as opposed to a rocking manner.
3. The panel should be punched so that the housing enters the panel in the same direction as the punch.
4. The panel must not have any material (paint, porcelain, etc.) applied in the mounting hole area that would decrease the retention of the housing in the panel.
5. If the two items above are not complied with, the "A" dimension should be reduced .020 [5.08] for proper retention.

**3 and 4 Circuit, In-Line**



**6, 9, 12 and 15 Circuit, Matrix**

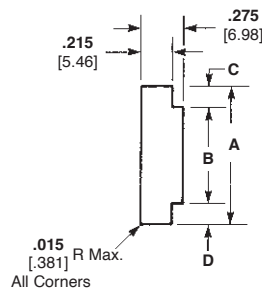


Number of Circuits	Dimensions			Part Numbers	
	E	F	G	Pin Housing (Cap)	Socket Housing (Plug)
3	.325 8.26	.810 20.57	.630 16.00	1-480305-0 <sup>2</sup>	1-480304-0
4	.330 8.38	1.010 25.65	.825 20.96	1-480426-0 <sup>2,4</sup> 3-480426-0 <sup>1,2,4</sup>	1-480425-0 <sup>4</sup> 3-480425-0 <sup>1,4</sup>
6	—	.665 16.89	.555 14.10	1-480276-0 <sup>3</sup>	1-480273-0
9	—	.905 22.99	.795 20.19	1-480277-0 <sup>3</sup>	1-480274-0
12	—	1.145 29.08	1.045 26.54	1-480278-0 <sup>3</sup>	1-480275-0
15	—	1.382 35.10	1.280 32.51	1-480324-0 <sup>3</sup>	1-480323-0

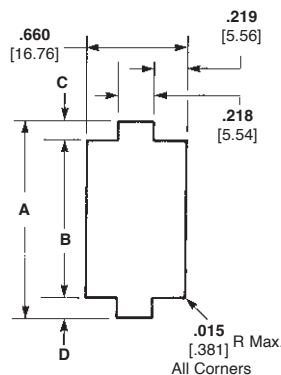
<sup>1</sup>Housing material has 125°C temperature rating  
<sup>2</sup>Detent lock  
<sup>3</sup>Positive lock  
<sup>4</sup>Used by disk drive industry

**Note: All part numbers are RoHS Compliant.**

**3 and 4 Circuit, In-Line**



**6, 9, 12 and 15 Circuit, Matrix**

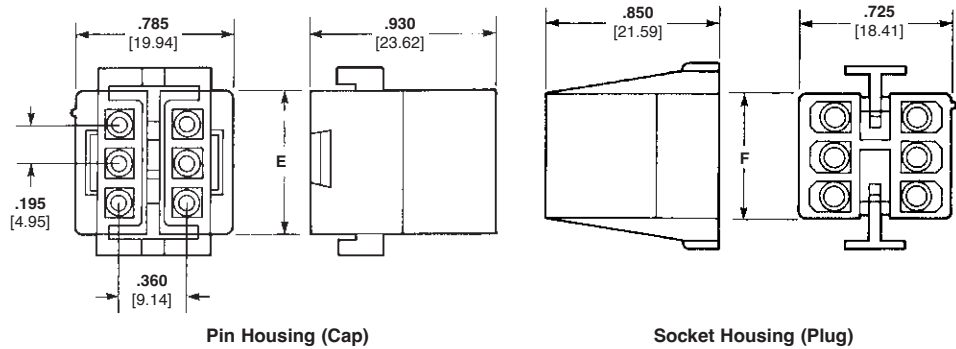


Number Circuits	Dimensions	
	A	B
3	.890 22.61	.645-.635 16.38-16.13
4	1.100 27.94	.845-.835 21.46-21.21
6	.840 21.34	.575-.570 14.61-14.48
9	1.075 27.31	.815-.810 20.70-20.57
12	1.320 33.53	1.055-1.050 26.80-26.67
15	1.550 39.37	1.290-1.285 32.77-32.64

**Note:** Dimensions "C" and "D" are to be equal.

**Commercial MATE-N-LOK Connectors** (Continued)

**Motor Mount, Positive Lock 6, 8, 10, 12 and 16 Circuit, Dual Row**



Number of Circuits	Dimensions		Part Numbers	
	E	F	Pin Housing (Cap)	Socket Housing (Plug)
UL94V-2 Nylon, Natural Color				
6	.705 17.90	.610 15.49	1-480271-0	1-480270-0 <sup>1</sup>
8	.900 22.86	.805 20.45	1-480284-0	1-480283-0 <sup>1</sup>
10	1.095 27.81	1.000 25.4	1-480286-0	1-480285-0 <sup>1</sup>
12	1.290 32.77	1.195 30.35	1-480288-0	1-480287-0
16	1.680 42.67	1.585 40.26	1-480439-0	1-480438-0

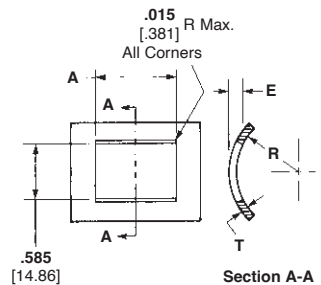
<sup>1</sup>Housing accepts double wire applications where individual insulation diameters do not exceed .115 [2.92].

**Note:** All part numbers are RoHS Compliant.

Standard Density

**Recommended Panel Cutout for Motor Mount Pin Housing**

View is from pin housing entry side.



**Note:** Motor mount housings may be used in flat panels

Number of Circuits	A Dim.
6	.715 18.16
8	.910 23.11
10	1.105 28.07
12	1.300 33.02
16	1.690 42.93

**Mounting Information**

1. Recommended panel thickness "E" is .040-.100 [1.02-2.54] and is dependent on "T" and "R".
2. The pin housing must be inserted in a rocking manner.
3. The panel must be punched so that the housing enters the panel in the same direction as the punch.

Commercial MATE-N-LOK Connectors .200 [5.08] Centerline

**Commercial MATE-N-LOK Connectors** (Continued)

**PC Board Vertical Pin Headers**

**Material**

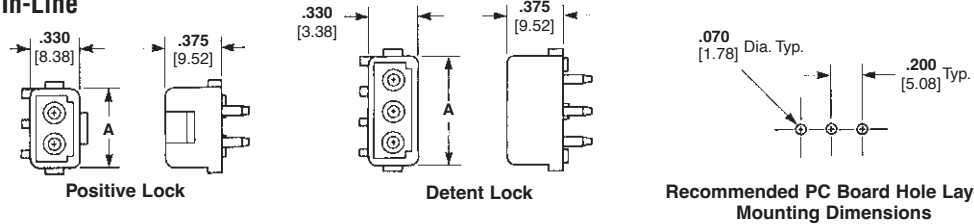
**Housing** — Nylon, natural color  
**Flammability Rating** — UL94V-2  
**Contacts** — Phosphor bronze  
 Solder tail diameter .062 [1.57]

**Related Product Data**

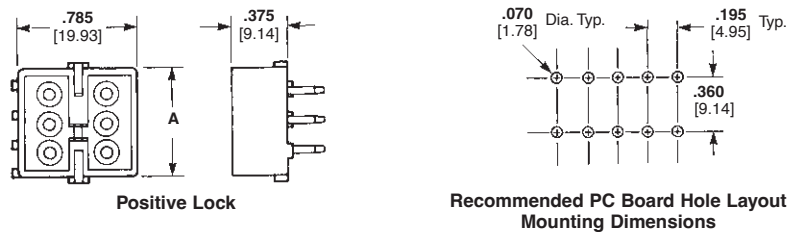
**Product Specifications**  
 108-1077 Commercial MATE-N-LOK  
 PC Board Headers

**Performance Characteristics** —  
 pages 151-152  
**Technical Documents** — pages 151  
 and 205-206  
**Mating Socket Housings** —  
 pages 157-160  
**Mating Socket Headers** — page 162  
**Mating IDC** — page 163

**2, 3, and 4 Circuit,  
In-Line**



**6, 8, 10, 12 and 16 Circuit,  
Dual Row**



Number of Circuits	A Dim.	Type Lock	Finish	Part Numbers		Mates with Socket Housing Part Number
				Standard <sup>2</sup> Tail	Long <sup>3</sup> Tail	
2	.515 13.09	Positive	Pre-tin	350539-1	350540-1	1-480720-0
			Duplex <sup>1</sup>	1586530-2	—	
		Detent	Pre-tin	350209-1	350422-1	1-480318-0
			Duplex <sup>1</sup>	1586512-2	—	
3	.715 18.17	Positive	Pre-tin	350541-1	350542-1	1-480721-0
			Duplex <sup>1</sup>	1586532-2	—	
		Detent	Pre-tin	350210-1	350423-1	1-480303-0
			Duplex <sup>1</sup>	1586514-2	—	
4	.915 23.24	Positive	Pre-tin	350543-1 <sup>5</sup>	350544-1 <sup>5</sup>	1-480722-0 <sup>5</sup>
			Duplex <sup>1</sup>	1586534-2 <sup>5</sup>	1586536-2 <sup>5</sup>	
			Pre-tin	350211-1 <sup>5</sup>	350424-1 <sup>5</sup>	
		Post-tin	794236-1 <sup>5,8</sup>	—		
		Duplex <sup>1</sup>	1586627-1 <sup>5,6,7</sup>	—		
		Detent	Duplex <sup>1</sup>	1586515-2 <sup>5</sup>	1586525-2 <sup>5</sup>	—
Pre-tin	1-380999-0		350425-1	—		
6	.705 17.91	Positive	Duplex <sup>1</sup>	2-1586546-0	1586526-2	1-480270-0
			Pre-tin	350212-1	350426-1	1-480283-0
8	.900 22.86	Positive	Duplex <sup>1</sup>	1586518-2	1586528-2	1-480283-0
			Pre-tin	1-380991-0	350219-1	1-480285-0
10	1.095 27.81	Positive	Duplex <sup>1</sup>	2-1586544-0	—	1-480285-0
			Pre-tin	350213-1	350220-1	1-480287-0
12	1.290 32.77	Positive	Duplex <sup>1</sup>	1586520-2	1586524-2	1-480287-0
			Pre-tin	350214-1	350427-1	1-480438-0
16	1.680 42.68	Positive	Duplex <sup>1</sup>	1586522-2	1586529-2	1-480438-0
			Pre-tin	350214-1	350427-1	1-480438-0

<sup>1</sup>Duplex Finish — Plated with .000030 [.000762] min. gold in mating area, matte tin on solder tail end over .000050 [.00127] min. nickel underplate on entire contact.  
<sup>2</sup>Use standard tail for .062 [1.57] thick PC Board.  
<sup>3</sup>Use long tail for .125 [3.18] thick PC Board.  
<sup>4</sup>Other mating connectors include a vertical PC Board socket header and the insulation displacement connectors (IDC).  
<sup>5</sup>Used by the disk drive industry.  
<sup>6</sup>With drain holes.  
<sup>7</sup>Tube loaded.  
<sup>8</sup>Housing material UL94V-0 rated.

**Note: All part numbers are RoHS Compliant.**

**Commercial MATE-N-LOK Connectors** (Continued)

**PC Board Surface Mount  
Right-Angle Pin Header**

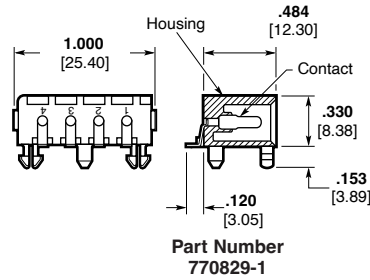
**Material and Finish**

**Housing**—Nylon, black color

**Flammability Rating**—UL94V-2

**Contact**—Phosphor bronze, pre-tin  
Solder tail width .052 [1.32]

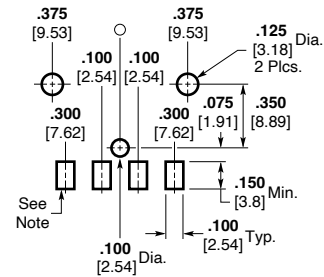
**4 Circuit, In-Line**



**Part Number**  
770829-1

**Notes:**

1. Mating parts include socket housings, a vertical PC Board socket header below and the insulation displacement connectors (IDC).
2. Used by the disk drive industry.



**Note:** .010 [.25] min. thick solder paste, 63/27 tin

**Recommended PC Board Layout**  
.062 [1.57] thick PC Board

**PC Board Vertical  
Socket Headers**

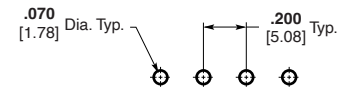
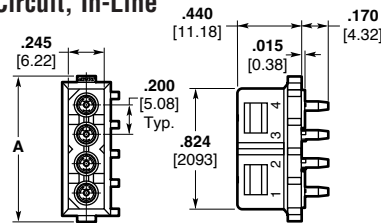
**Material**

**Housing**—Nylon, natural color

**Flammability Rating**—UL94V-2

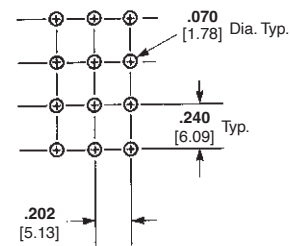
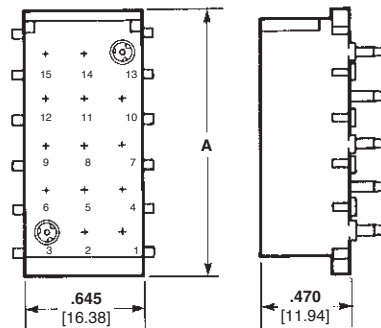
**Contacts**—Phosphor bronze  
Solder tail diameter .062 [1.57]

**4 Circuit, In-Line**



**Recommended PC Board Hole Layout**  
.062 [1.57] thick PC Board

**6, 9, 12 and 15 Circuit,  
Matrix**



**Recommended PC Board Hole Layout**  
.062 [1.57] thick PC Board

Number of Circuits	A Dim.	Finish	Part Numbers		Mates with Pin Housing Part Number
			Standard Tail <sup>5</sup>	Long Tail <sup>6</sup>	
4	1.000 25.40	Pre-tin	770997-1 <sup>3</sup>	—	1-480426-02, <sup>3</sup>
			794285-13, <sup>7</sup>	—	
			794287-13,4, <sup>8</sup>	—	
6	.720 18.29	Pre-tin	350641-1	350576-1	1-480276-0
		Duplex <sup>1</sup>	1586539-2	—	
9	.960 24.39	Pre-tin	350642-1	350577-1	1-480277-0
12	1.200 30.49	Pre-tin	350643-1	350578-1	1-480278-0
15	1.440 36.58	Pre-tin	350644-1	350579-1	1-480324-0

<sup>1</sup>Duplex Finish — Plated with .000030 [.000762] min. gold in mating area, matte tin on solder tail end over .000050 [.00127] min. nickel underplate on entire contact.

<sup>2</sup>Other mating connectors include vertical, right-angle and surface mount PC Board pin headers.

<sup>3</sup>Used by the disk drive industry.

<sup>4</sup>Surface mount compatible.

<sup>5</sup>Use standard tail for .062 [1.57] thick PC Board.

<sup>6</sup>Use long tail for .125 [3.18] thick PC Board.

<sup>7</sup>Low Mating Force

<sup>8</sup>High Temperature

**Note:** All part numbers are RoHS Compliant.

**Related Product Data**

**Product Specifications**

108-1077 Commercial MATE-N-LOK PC Board Headers

**Performance Characteristics**—pages 151-152

**Technical Documents**—pages 151 and 205-206

**Mating Pin Housings**—pages 157-160

**Mating Pin Headers**—pages 161-164

**Mating Socket Housings**—pages 157-160

**Mating Socket Headers**—page 162

**Mating IDC**—page 163

Standard Density

Commercial MATE-N-LOK Connectors  
.200 [5.08] Centerline

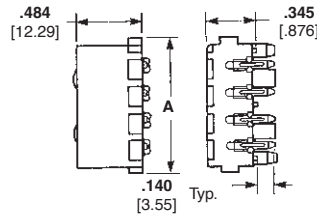
**Commercial MATE-N-LOK Connectors (Continued)**

**PC Board Right-Angle Pin Headers**

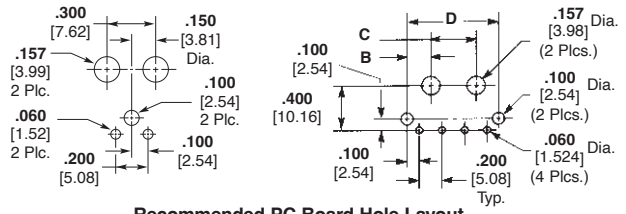
**Material and Finish**

**Contact**—Phosphor bronze, pre-tin  
Solder tail width .052 [1.32]

**2, 3, and 4 Circuit, In-Line**



**2, 3, and 4 Circuit**



**Recommended PC Board Hole Layout**  
.062 [1.57] thick PC Board

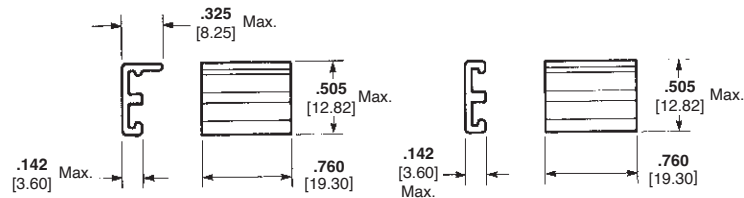
Number of Circuits	Dimensions				Housing Material	Part Numbers	Mates with Socket Housing Part Number
	A	B	C	D			
2	.600 15.24	—	.300 7.62	—	UL94V-2 Nylon Natural Color	794120-1	1-480318-0
3	.800 20.32	.150 3.81	.300 7.62	.600 15.24	UL94V-0 Nylon	643488-1	1-480303-0
4	1.000 25.40	.200 5.08	.400 10.16	.800 20.32	UL94V-2 Nylon, Natural Color	641737-1 <sup>3</sup> 770846-11, <sup>3</sup>	1-480424-02, <sup>3</sup>
					UL94V-0 Nylon	1-641737-1 <sup>3</sup>	770827-12, <sup>3</sup>

<sup>1</sup>Surface Mount Compatible. <sup>2</sup>Other mating connectors include a vertical PC Board socket header and the insulation displacement connectors (IDC). <sup>3</sup>Used by the disk drive industry.

**Dust Covers**

**Material**

**Housing**—Polyester, white color  
**Flammability Rating**—UL94V-2



**For Feed-To Wiring**  
Part Number 770232-1

**For Feed-Through Wiring**  
Part Number 770233-1

**Note:** These parts are used with the insulation displacement connectors below.

**Insulation Displacement Connectors (IDC)**

**Material**

**Housing**—Nylon  
**Contact**—Phosphor bronze

**Related Product Data**

Used by the disk drive industry.

**Product Specifications**

108-1077 Commercial MATE-N-LOK  
PC Board Headers

108-49000 IDC Connectors

**Application Specification**

114-49001 IDC Connectors

**Performance Characteristics**—  
pages 151-152

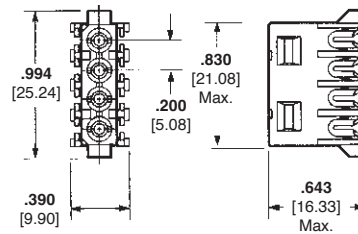
**Technical Documents**—  
pages 151 and 205-206

**Mating Socket Housings**—  
pages 157-160

**Mating Pin Housings**—pages 157-  
160

**Mating Pin Headers**—pages 161-164

**4 Circuit, In-Line**



**Socket Assembly (Plug)**

Wire Size Range AWG [mm <sup>2</sup> ]	Color Code	Finish	Part Number		Mates with Part Numbers
			UL94V-2	UL94V-0	
22 [.3]	Red	Pre-tin	770156-2	794036-3	1-480426-0** 350211-1 350211-2 350424-1 350424-2 641737-1
20 [.5]	Yellow	Pre-tin	770156-4	794036-2	1-641737-1 770827-1 770829-1 770846-1
18 [.8]	Orange	Pre-tin	770156-3	794036-1	
16 [1.2]	Blue	Pre-tin	770156-5*	794036-4	

\*Application Tooling: Arbor Tool 91085-2 uses head 231920-2. \*\*Pin Housing

**Notes:**

1. Insulation diameter .095 [2.41] max.

2. Application Tooling

Power Unit No. 91112-2 (IS 408-7763) uses Head No. 231920-2 (IS 408-9330) and Hand Tool Handle No. 58074-1 (IS 408-6790) uses Terminating Head No. 231894-1 (IS 408-3186)

**Note:** All part numbers are RoHS Compliant.

**Commercial MATE-N-LOK Connectors** (Continued)

**PC Board Right-Angle Pin Header with Fix Belt**

**Material**

**Housing** — Thermoplastic  
**Flammability Rating** — UL94V-2  
**Contacts** — Copper Alloy

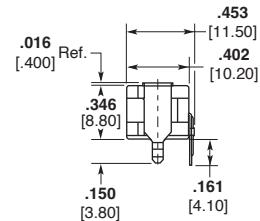
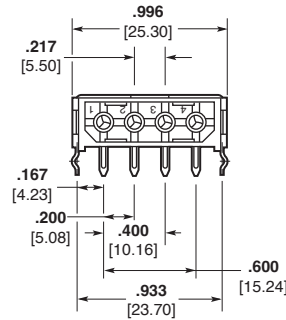
**Related Product Data**

Used by the disk drive industry

**Product Specification**

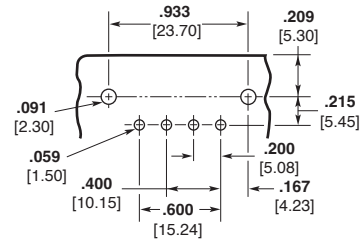
108-5155

**4 Circuit, In-Line**



**Part No. 174552-1**

**Notes:** Mates with socket housing Part No. 1-480424-0. Other mating connectors include a vertical PC Board socket header and the insulation displacement connectors (IDC).



**Recommended PC Board Hole Layout**  
.062 [1.57] thick PC Board

**PC Board Right-Angle Pin Headers with Fix Belt Reverse Polarization**

**Material and Finish**

**Housing** — Nylon  
**Flammability Rating** — UL94V-2  
**Contacts** — Tin plated, Copper alloy

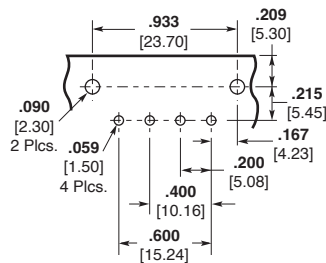
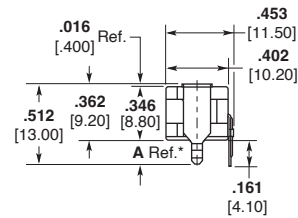
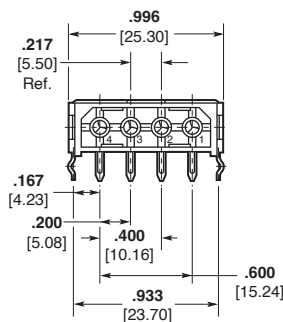
**Related Product Data**

Used by the disk drive industry

**Product Specification**

108-5155

**4 Circuit, In-Line**



**Part No. 174804\***

**Recommended PC Board Hole Layout**  
.062 [1.57] thick PC Board

**Notes:** Mates with socket housing Part No. 1-480424-0. Other mating connectors include a vertical PC Board socket header and the insulation displacement connectors (IDC).

**Note:** All part numbers are RoHS Compliant.

Part No.	A Dim.*	Description
174804-1	.150 3.80	Long Clamp with Kink

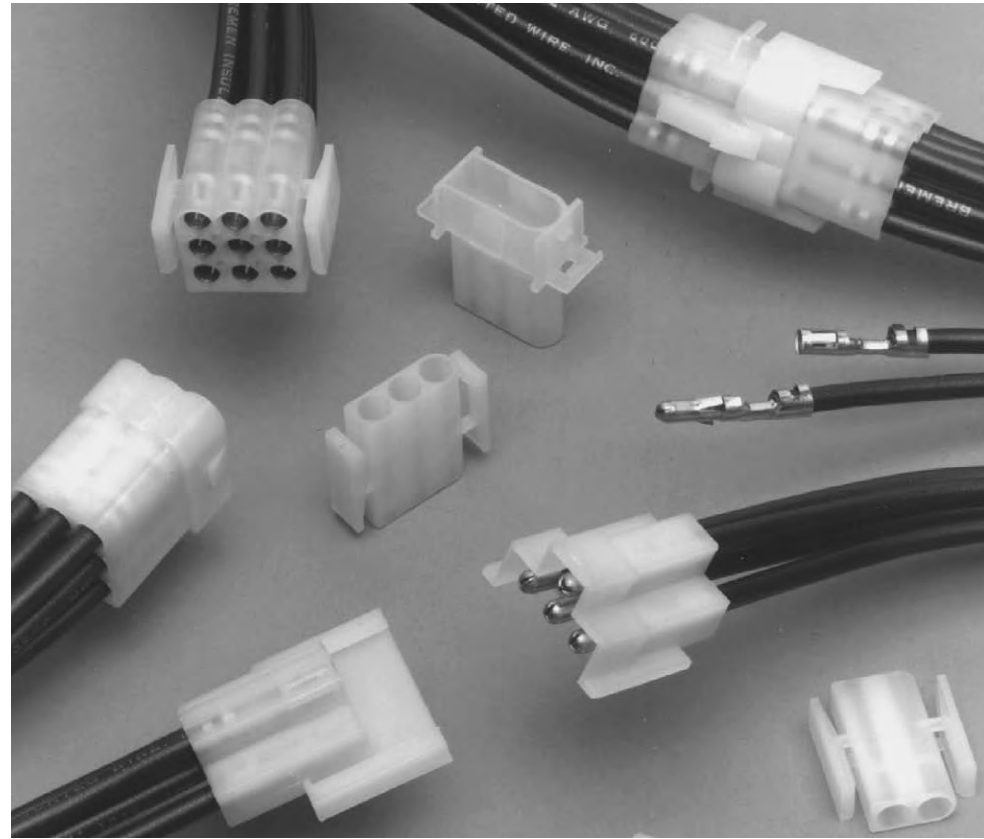
Standard Density

Commercial MATE-N-LOK Connectors  
.200 [5.08] Centerline

## .140 MATE-N-LOK Connectors (Large Insulation), .240 Centerline

### Product Facts

- Available in 2, 3 and 9 circuit configurations for panel mounting; 4 and 9 circuit configurations for free-hanging applications
- Standard natural nylon housings
- Housings fully polarized
- Contacts fully protected in housings
- Contacts accept wire size range 20-10 AWG [.5-5.0 mm<sup>2</sup>] with insulation diameters from .100 [2.54] to .180 [4.57]
- Low insertion/extraction forces
- Dual locking lances provide optimum contact stability
- Extraction tool removes both pins and sockets
- Contacts are on .240 [6.09] centerline spacing
- Not for interrupting current
- Recognized under the Component Program of Underwriters Laboratories Inc., File No. E28476
- Certified by Canadian Standards Association, File No. LR 7189A



**Maximum Current**—Maximum current rating of .140 MATE-N-LOK Connectors is limited by the maximum operating temperature of the housings which is 105°C and the temperature rise of the contacts which is 30°C. There are several variables which have a direct effect on this maximum current-carrying capability for a given connector and must be considered for each application. These variables are:

**Wire Size**—Larger diameter wire will carry more current since it has less internal resistance to current flow and thus generates less heat. Longer wire lengths also enhance current-carrying capabilities since the wire conducts heat away from the connector.

**Connector Size**—In general, the more circuits in a connector, the less current can be carried.

**Ambient Temperature**—The higher the ambient temperature, the less current can be carried in any given connector.

### Technical Documents

**Product Specification**  
108-1032 .140 Diameter  
MATE-N-LOK Connectors

**Application Specification**  
114-1007 .140 Diameter  
MATE-N-LOK Contacts

### Performance Characteristics

The .140 MATE-N-LOK Connector performance characteristics found on this page are based on free-hanging and panel mount connectors, loaded with contacts crimped on stranded wire.

**Dielectric Withstand Voltage**—3.0 KVAC between adjacent circuits

**Insulation Resistance**—1000 megohms minimum initial between adjacent circuits

**Voltage Rating**—600 V AC or DC

**Connector Mating**—4.5 lb. max. per circuit

**Connector Unmating**—8 lb. min. per circuit

**Contact Retention**—30 lb. min.

**Durability**—25 cycles, mating and unmating

**Thermal Shock**—-55°C to +85°C

**Temperature-Humidity Cycling**—25°C to 65°C at 95 RH

Wire Size		Termination Resistance		Contact Crimp Tensile Force	
AWG	mm <sup>2</sup>	Test Current (Amps)	Resistance Milliohms (Max. Init.)	Force (Min.)	
				lbs.	N
20	.5	4.5	3.0	20	89
18	.8	6	2.5	30	133
16	1.2	8	2.5	45	200
14	2.0	10	2.0	50	222
12	3.0	12	1.5	60	267
10	5.0	14	1.5	65	289

**Note:** This is the total resistance between wire crimps of a mated pin and socket.

### Current Rating Verification for 30°C Maximum Temperature Rise 100% Energized

#### Wire-to-Wire

#### .140 MATE-N-LOK Connector Calculated Current Table

Number of Circuits	Wire AWG					
	10	12	14	16	18	20
2	28.00	23.00	18.50	15.00	13.50	10.50
3	25.00	21.00	17.00	13.50	12.00	9.50
9	18.50	15.00	12.00	10.00	9.00	7.00

Values are based on initial Temperature Rise versus Current Testing and are intended to be a guide in the selection of a connector family. All applications should be tested by the end user. The values listed are per circuit for fully loaded housings being 100% energized. **Note:** All combinations were not tested, and this chart contains interpolated and extrapolated values.

#### Minimum Wire Lengths for T-Rise vs. Current Testing

**Note:** If wire lengths used are less than those listed, the current carrying ability of the system will be reduced due to less heat being conducted away from the connector. The customer should fully test all applications.

**.140 MATE-N-LOK Connectors (Large Insulation), .240 Centerline** (Continued)

**Contacts**

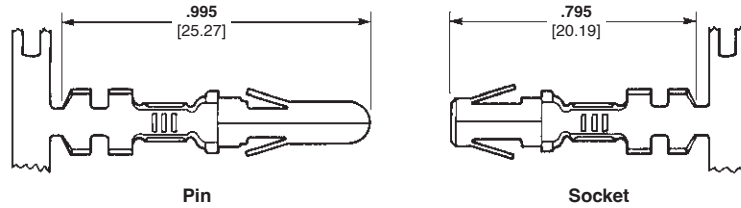
Pin diameter .140 [3.57]  
Stock thickness .014 [.357]

**Related Product Data**

**Product Specification**  
108-1032 .140 Diameter  
MATE-N-LOK Connectors

**Application Specification**  
114-1007 .140 Diameter  
MATE-N-LOK Contacts

**Performance Characteristics**—  
page 159  
**Keying Plug**—none  
**Housings**—pages 166-167  
**Technical Documents**—pages 165  
and 205-206  
**Application Tooling**—pages 207-210



Wire Size Range AWG [mm <sup>2</sup> ]	Ins. Dia. Range	Material & Finish	Contact Part Numbers				HDM Applicator Part No.	Hand Tool Part No.
			Pin		Socket			
			Strip Form	Loose Piece	Strip Form	Loose Piece		
20-14 [.5-2.0]	.100-.180 2.54-4.5	Brass, pre-tin	61627-1	350389-1	61626-1	350388-1	567306-1	90247-1
		Phos. Brz., pre-tin	61627-2	—	61626-2	—	567306-2	
14-10 [2.0-5.0]	.100-.180 2.54-4.5	Brass, pre-tin	350201-1	350391-1	350200-1	350390-1	567309-1	69710-12
		Phos. Brz., pre-tin	350201-2	350391-2	350200-2	350390-2	567309-2	

<sup>1</sup>HDM Applicator part number ending in -1 is used on AMPOMATOR CLS Machine with T or G Terminators, -2 is used on AMP-O-LECTRIC Model K Machine, -3 is used on AMP-O-LECTRIC Model G Machine. See pages 207-210 for further information.

<sup>2</sup>Hand Tool No. **69710-1** uses die set No. **58374-1** for 14-12 AWG and No. **58373-1** for 10 AWG.



**Contact Extraction Tool**  
Part No. 318845-1  
IS 408-4378

**Housings**

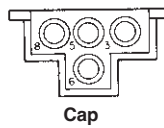
**Free-Hanging**  
.240 [6.09] Centerline spacing

**Material**

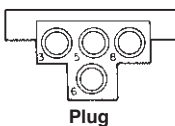
Nylon, natural color

**Flammability Rating**—UL94V-2

**Cavity Identification**  
(Rear View)

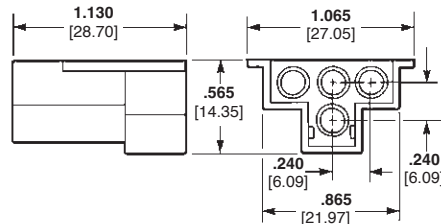


Cap

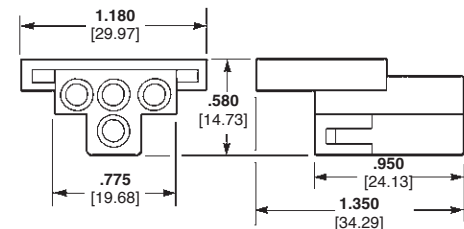


Plug

**4 Circuit**

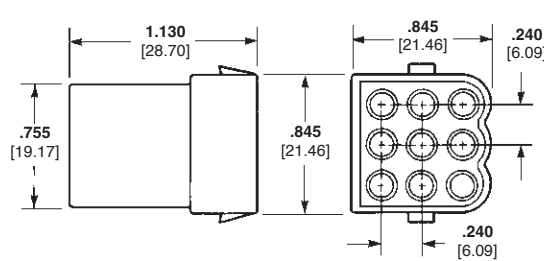


**Pin Housing (Cap)**  
Part No. 1-480512-0  
Part No. 794700-1 (Black Color High Temp.)

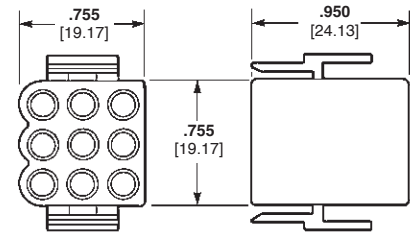


**Socket Housing (Plug)**  
Part No. 1-480510-0

**9 Circuit, Matrix**



**Pin Housing (Cap)**  
Part No. 1-480586-0



**Socket Housing (Plug)**  
Part No. 1-480585-0

**Note:** All part numbers are RoHS Compliant.

.140 MATE-N-LOK Connectors (Large Insulation) .240 [6.10] Centerline Standard Density

**.140 MATE-N-LOK Connectors (Large Insulation), .240 Centerline** (Continued)

**Housings**

**Panel Mount**

.240 [6.09] Centerline spacing

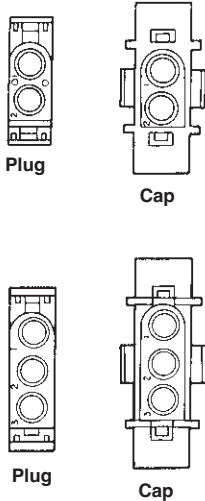
**Material**

**Housing**—Nylon, natural color

**Flammability Rating**—UL94V-2

**Cavity Identification**

(Rear View)



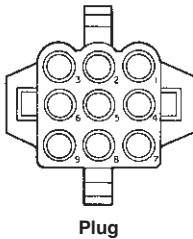
Plug

Cap

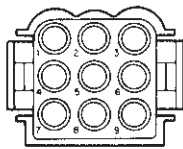


Plug

Cap



Plug



Cap

**Related Product Data**

**Product Specification**

108-1032 .140 Diameter  
MATE-N-LOK Connectors

**Application Specification**

114-1007 .140 Diameter  
MATE-N-LOK Contacts

**Performance Characteristics**—

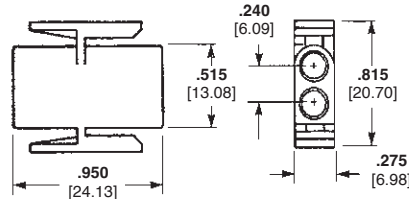
page 165

**Keying Plug**—none

**Contacts**—page 166

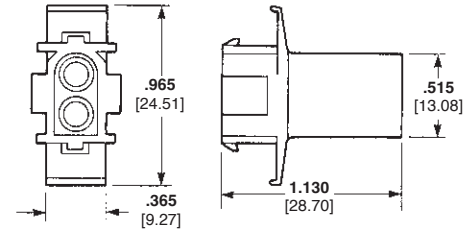
**Technical Documents**—pages 165  
and 205-206

**2 and 3 Circuit, In-Line**



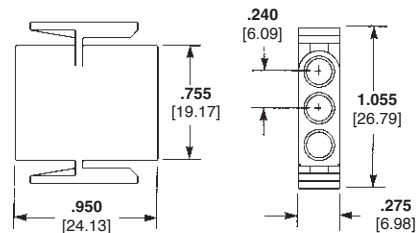
**Socket Housing (Plug)**  
Part No. 1-350344-0

Part No. 794699-1 (Black Color High Temp.)

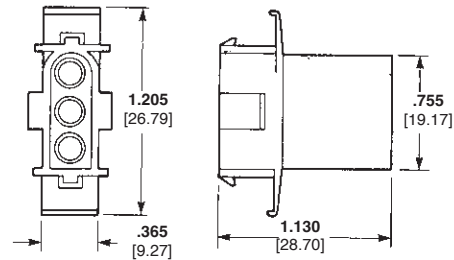


**Pin Housing (Cap)**  
Part No. 1-350345-0

Part No. 1586305-1 (Black Color High Temp.)



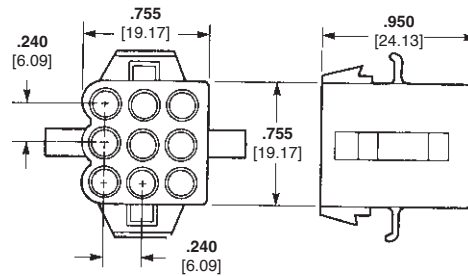
**Socket Housing (Plug)**  
Part No. 1-350346-0



**Pin Housing (Cap)**  
Part No. 1-350347-0

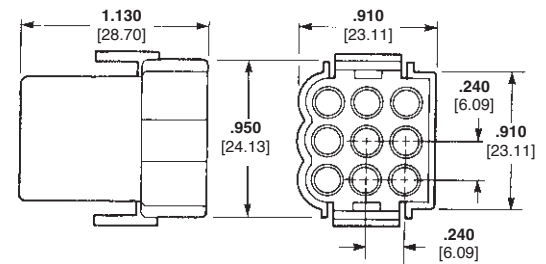
Part No. 794061-1 (Black Color High Temp.)

**9 Circuit, Matrix**



**Socket Housing (Plug)**  
Part No. 1-480672-0

Part No. 1586305-1 (Black Color High Temp.)



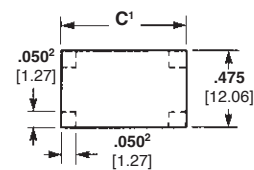
**Pin Housing (Cap)**  
Part No. 1-480673-0

Part No. 794683-1 (Black Color High Temp.)

**Recommended Panel Cutouts**

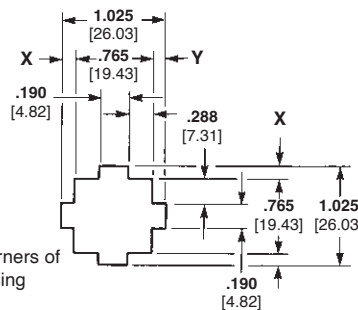
View is from housing entry side

**2 and 3 Circuit**



12 Circuit-.725 [18.42]  
3 Circuit-.965 [24.51]  
2.050 x .050 [1.27-1.27] tabs in corners of  
outlet are optional to reduce housing  
float in panel.

**9 Circuit**



**Notes:**

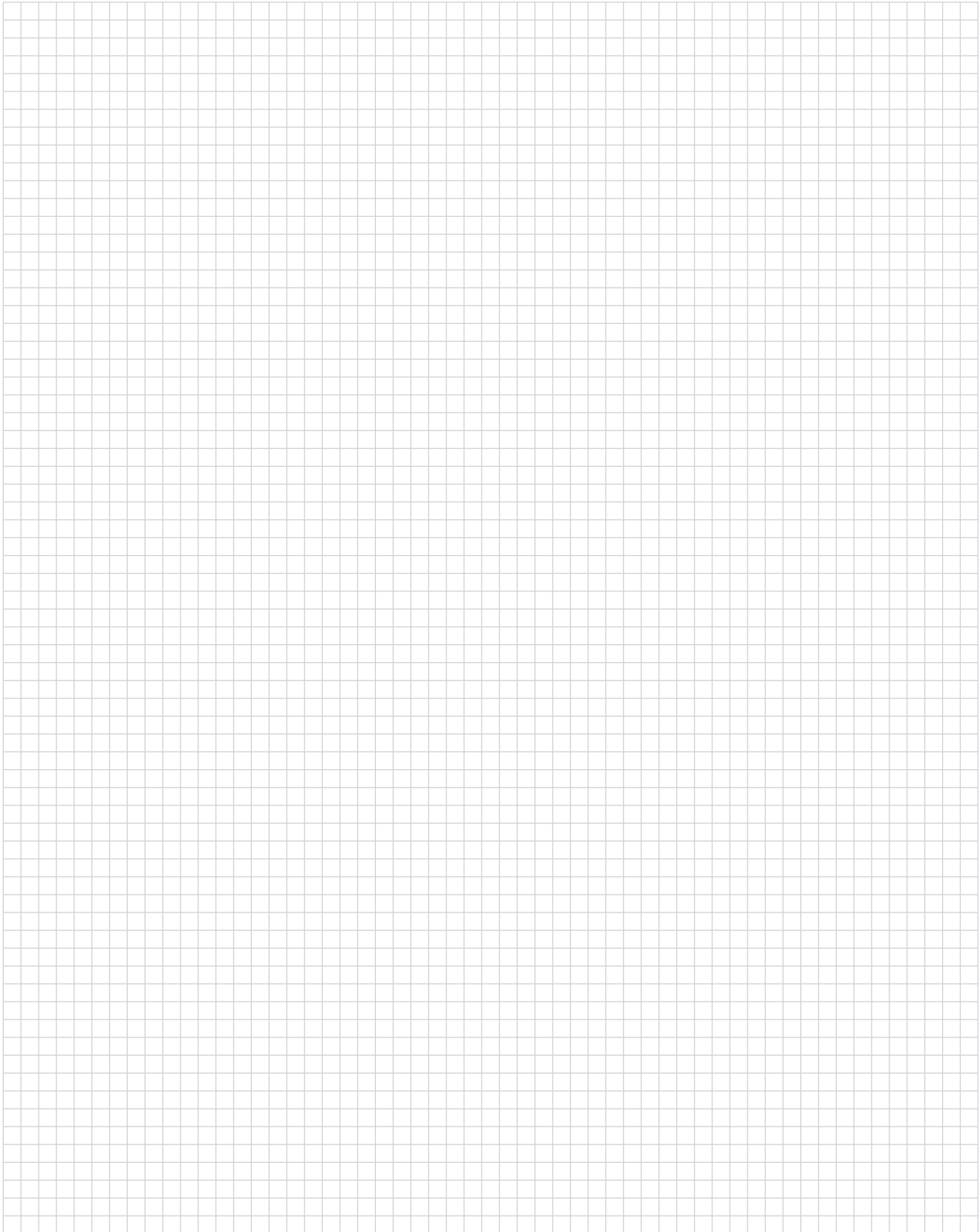
1. Panel thickness .040-.070 [1.02-1.78].
2. "X" and "Y" dimensions must be within .005 [0.127] of each other.
3. Panel should be punched so that the housing enters the panel in the same direction as the punch for ease of assembly.

**Note:** All part numbers are RoHS Compliant.

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## Engineering Notes

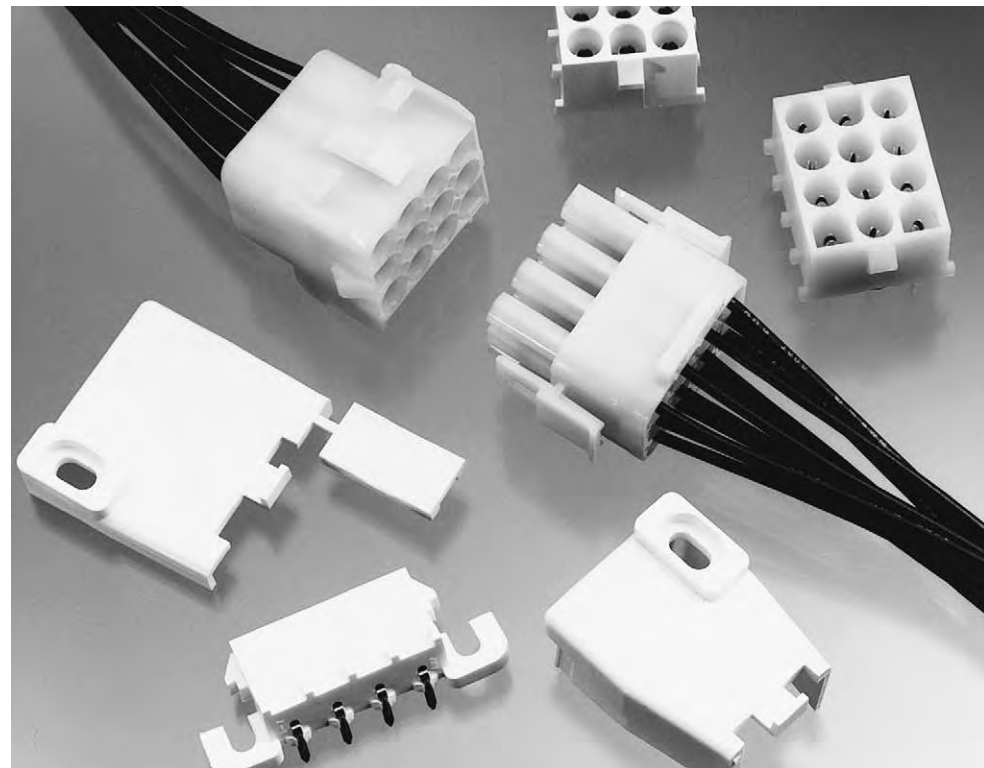
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## Universal MATE-N-LOK Connectors

### Product Facts

- Pins and sockets can be intermixed in the same housing
- Positive polarization
- Rear cavity identification
- Contacts completely enclosed in housings
- Positive locking housings
- Insulation capability to .200 [5.08] diameter
- Removable, crimp snap-in contacts
- Low contact mating force
- Contacts accept 30-10 AWG [.05-5.0 mm<sup>2</sup>] wire sizes
- Contacts available with pre-tin or gold plating
- Dual locking lances provide optimum contact stability
- Panel mount or free-hanging
- Mate with Universal MATE-N-LOK II Housings
- Available in UL 94V-0 flame retardant material. Meets the material requirements of table 25.1 of U.L. Standard 1410 (television receivers and video products)
- Not for interrupting current
- Harness to PC Board capability using pin or socket headers
- Pin and socket headers are available in both vertical and right-angle style
- Solderability—headers meet MIL-STD 202 Method 208
- Contacts are on .250 [6.35] centerline spacing
- Recognized under the Component Program of Underwriters Laboratories Inc., File No. E28476 
- Certified by Canadian Standards Association, File No. LR 7189 
- Passed test by VDE under their Registration Number 3980/Continuous Surveillance 



### Performance Characteristics

The Universal MATE-N-LOK Connector performance characteristics found on pages 169-170 are based on free-hanging and panel mount connectors, loaded with contacts crimped on stranded wire.

**Dielectric Withstanding Voltage**—5.0 KVAC or 5.0 KVDC between adjacent circuits

**Insulation Resistance**—1000 megohms minimum initial between adjacent circuits

**Voltage Rating**—600 V AC or DC

**Contact Insertion Force**—5.0 lb. max. per contact

**Contact Retention**—15 lb. min. per contact

**Durability**—50 cycles, mating and unmating

### Technical Documents

#### Product Specifications

108-1031 Universal MATE-N-LOK Connectors

108-1053 Universal MATE-N-LOK PC Board Headers

#### Application Specification

114-1010 Universal MATE-N-LOK Contacts

#### Instruction Sheet

408-7714 Plug, Cap, Headers, Pin, Socket and Accessories

## Universal MATE-N-LOK Connectors (Continued)

### Performance Characteristics (Continued)

**Maximum Current**—Maximum current rating of Universal MATE-N-LOK connectors is limited by the maximum operating temperature of the housings which is 125°C for 94V-2 housings and 120°C for 94V-0 housings including the temperature rise of the contacts which is a maximum of 30°C. There are several variables which have a direct effect on this maximum current-carrying capability for a given connector and must be considered for each application. These variables are:

**Wire Size**—Larger diameter wire will carry more current since it has less internal resistance to current flow and thus generates less heat. Longer wire lengths also enhance current carrying capabilities since the wire conducts heat away from the connector.

**Connector Size**—In general, the more circuits in a connector, the less current can be carried.

**Ambient Temperature**—The higher the ambient temperature, the less current can be carried in any given connector.

**Printed Wiring Board Conductor Size**—The finished trace conductor width and thickness should be maximized to allow for the greatest current carrying capacity and heat dissipation.

Universal MATE-N-LOK connectors also will withstand the following tests:

**Vibration**—10-55-10 cycles per minute at .06 inch total excursion

**Physical Shock**—18 drops, 50 G sawtooth at 10 milliseconds

**Housing Panel Retention**—75 lb. min.

**Housing Lock Strength**—30 lb. min.

**Thermal Shock**—-55°C to +85°C

**Temperature-Humidity Cycling**—25°C to 65°C at 95 RH

**Corrosion**—48 hr. at 5% salt concentration

### Related Product Data

#### Product Specifications

108-1031 Universal MATE-N-LOK Connectors

108-1053 Universal MATE-N-LOK Headers

### Current Rating Verification for 30°C Maximum Temperature Rise 100% Energized

#### Wire-to-Wire

#### Calculated Current Table

Number of Circuits	Wire Gauge									
	10	12	14	16	18	20	22	24	26	30
2	19.00	18.00	17.00	14.50	13.00	10.00	8.00	6.50	5.50	3.50
3	17.50	16.50	15.50	13.00	12.00	9.00	7.50	6.00	5.00	3.00
4	16.50	15.50	15.00	12.50	11.00	8.50	7.00	5.50	4.50	3.00
5	16.00	15.00	14.00	12.00	10.50	8.00	6.50	5.50	4.50	3.00
6 In-Line	15.50	14.50	13.50	11.50	10.00	8.00	6.50	5.00	4.00	2.50
6 Matrix	15.00	14.00	13.00	11.00	9.50	7.50	6.00	5.00	4.00	2.50
8	14.50	14.00	13.00	10.50	9.50	7.50	6.00	5.00	4.00	2.50
9	13.50	12.50	11.50	9.50	8.50	6.50	5.50	4.50	3.50	2.00
10	14.00	13.00	12.50	10.00	9.00	7.00	5.50	4.50	3.50	2.50
12	12.50	12.00	11.00	9.00	8.00	6.00	5.00	4.00	3.00	2.00
15	12.00	11.50	10.00	8.50	7.50	6.00	4.50	4.00	3.00	2.00

Values are based on initial Temperature Rise versus Current Testing and are intended to be a guide in the selection of a connector family. All applications should be tested by the end user. The values listed are per circuit for fully loaded housings being 100% energized. **Note:** All combinations were not tested, and this chart contains interpolated and extrapolated values.

#### Minimum Wire Lengths for T-Rise vs. Current Testing

AWG	Min. Length (in.)	AWG	Min. Length (in.)
30	2.6	18	9.4
28	3.2	16	11.3
26	4.1	14	13.7
24	5.1	12	16.4
20	7.8	10	19.3

**Note:** If wire lengths used are less than those listed above, the current carrying ability of the system will be reduced due to less heat being conducted away from the connector. The customer should fully test all applications.

#### Wire-to-Board

Due to the vast differences in trace geometry and printed circuit board configurations, we are unable to provide a separate current carrying chart for our printed circuit board header products. However, the above Wire-to-Wire charts may be used as a guideline for headers if the trace width and thickness is equal to the listed wire gauge. For vertical headers, only 95% of the Wire-to-Wire value should be used. For right-angle headers, only 75% of the Wire-to-Wire value should be used. The chart values are only a tool for connector selection and will require the customer to fully test their application.

#### Termination Resistance/Contact Crimp Tensile Force

Wire Size		Termination Resistance		Contact Crimp Tensile Force	
AWG	mm <sup>2</sup>	Test Current (Amps)	Resistance Milliohms (Max. Init.)	Force (Min.) lbs.	N
30	.05	—	—	2	9
28	.08	—	—	3	13
26	.12	—	—	6	27
24	.2	1.5	3.50	8	36
22	.3	3	3.50	14	62
20	.5	4.5	3.00	14	62
18	.8	6	3.00	30	133
16	1.2	8	2.75	45	200
14	2.0	10	2.75	50	222
12	3.0	—	—	60	267
10	5.0	—	—	70	311

**Note:** This is the total resistance between wire crimps of a mated pin and socket.

**Universal MATE-N-LOK Connectors** (Continued)

**Universal MATE-N-LOK Connector Mating Combinations**

Connector Part Number <sup>7</sup>					Mating Connector Part Number								
Number of Circuits	Flammability Rating	Style	Plug Part Number <sup>2</sup>	Cap Part Number <sup>2</sup>	Plating	Vertical Pin <sup>2</sup>			Vertical Socket <sup>2</sup>			Right-Angle <sup>2</sup>	
						Standard Tail	Standard Tail Polarized	Long Tail	Standard Tail	Standard Tail Polarized	Long Tail	Pin	Socket
1		—	1-350867-0	770421-1	—	—	—	—	—	—	—	—	—
			UL94V-0	350865-1	350866-1	—	—	—	—	—	—	—	—
2	In-Line	—	1-480698-0	1-480699-0	Pre-tin	350428-1	641963-1	350582-1	350759-4	643411-1	350986-4	—	—
			794814-1 <sup>3</sup>	794815-1 <sup>3</sup>	Duplex <sup>1</sup>	350428-4	641963-3	350582-4	350759-5	—	—	—	—
2	In-Line	—	350777-1	350778-1	Pre-tin	350786-1	641964-1	350787-1	350824-1	643412-1	350831-1	1-350942-0	643226-1
			—	—	Duplex <sup>1</sup>	350786-3	641964-3	350787-3	350824-4	643412-3	—	—	3-350942-0
3	In-Line <sup>6</sup>	—	1-480700-0	1-480701-0	Pre-tin	350429-1	641965-1	350583-1	350760-4	643413-1	350987-4	—	—
			794901-1 <sup>3</sup>	794900-1 <sup>3</sup>	Duplex <sup>1</sup>	350429-4	—	350583-4	350760-5	—	—	—	—
3	In-Line	—	350766-1	350767-1	Pre-tin	350789-1	641966-1	350790-1	350825-1	643414-1	350832-1	1-350943-0	643228-1
			—	—	Duplex <sup>1</sup>	350789-3	—	350790-3	350825-4	643414-3	350832-4	3-350943-0	3-643228-0
4	In-Line	—	1-480702-0	1-480703-0	Pre-tin	350430-1	641967-1	350584-1	350761-4	643415-1	350988-4	1-350948-0	—
			794899-1 <sup>3</sup>	794707-1 <sup>3</sup>	Duplex <sup>1</sup>	350430-4	—	350584-4	350761-5	—	—	350988-5	—
4	In-Line	—	350779-1	350780-1	Pre-tin	350792-1	641968-1	350793-1	350826-1	643416-1	350833-1	1-350944-0	643230-1
			—	—	Duplex <sup>1</sup>	350792-3	—	350793-3	350826-4	—	—	350833-4	3-350944-0
5	In-Line	—	1-480764-0 <sup>3</sup>	1-480764-0 <sup>3</sup>	Pre-tin	640466-1	643405-1	—	640467-1	—	—	1-350949-0	—
			794863-1 <sup>3</sup>	794863-1 <sup>3</sup>	Duplex <sup>1</sup>	640466-3	—	—	640467-3	—	—	—	—
5	In-Line	—	350809-1	350810-1	Pre-tin	640900-1	643406-1	—	640901-1	—	—	1-350945-0	643232-1
			—	—	Duplex <sup>1</sup>	640900-3	—	—	640901-3	—	—	—	3-350945-0
6	In-Line	—	640585-1	926307-1	Pre-tin	641832-1	643407-1	—	—	—	—	640587-1	—
			—	—	Duplex <sup>1</sup>	641832-3	—	—	—	—	—	—	—
6	In-Line	—	640581-1	926307-3	Pre-tin	641831-1	643408-1	—	770262-1	—	—	640583-1	643234-1
			—	—	Duplex <sup>1</sup>	641831-3	—	—	770262-3	—	—	—	640583-3
6	Matrix <sup>6</sup>	—	1-480704-0	1-480705-0	Pre-tin	350431-1	641969-1	350585-1	350762-4	643423-1	350989-4	—	—
			794535-1 <sup>3</sup>	794536-1 <sup>3</sup>	Duplex <sup>1</sup>	350431-4	—	350585-4	350762-5	—	—	350989-5	—
6	Matrix	—	350715-1	350781-1	Pre-tin	350711-1	641970-1	350732-1	350827-1	643424-1	350834-1	—	—
			—	—	Duplex <sup>1</sup>	350711-4	641970-3	350732-4	350827-4	643424-3	350834-4	—	—
8	In-Line	—	640586-1	926308-1	Pre-tin	641825-1	—	770143-1	—	—	—	—	—
			—	—	Duplex <sup>1</sup>	—	—	—	—	—	—	—	—
8	In-Line	—	640582-1	926308-3	Pre-tin	641828-1	643410-1	—	—	—	—	640584-1	643236-1
			—	—	Duplex <sup>1</sup>	—	643410-3	—	—	—	—	—	640584-3
9	Matrix	—	1-480706-0	1-480707-0	Pre-tin	350432-1	641971-1	350586-1	350763-4	643425-1	350990-4	—	—
			794537-1 <sup>3</sup>	794538-1 <sup>3</sup>	Duplex <sup>1</sup>	350432-4	641971-3	350586-4	350763-5	—	—	350990-5	—
9	Matrix	—	350720-1	350782-1	Pre-tin	350712-1	641972-1	350742-1	350828-1	643426-1	350835-1	—	—
			—	—	Duplex <sup>1</sup>	350712-4	641972-3	350742-4	350828-4	643426-3	350835-4	—	—
10	In-Line	—	926302-1	926309-1	Pre-tin	—	—	—	—	—	—	—	—
			—	—	Duplex <sup>1</sup>	—	—	—	—	—	—	—	—
10	In-Line	—	926302-3	926309-3	Pre-tin	—	—	—	—	—	—	—	—
			—	—	Duplex <sup>1</sup>	—	—	—	—	—	—	—	—
12	Matrix	—	1-480708-0	1-480709-0	Pre-tin	350433-1	641973-1	350587-1	350764-4	—	350991-4	—	—
			794851-1 <sup>3</sup>	794727-1 <sup>3</sup>	Duplex <sup>1</sup>	350433-4	—	350587-4	350764-5	—	—	350991-5	—
12	Matrix	—	350735-1	350783-1	Pre-tin	350713-1	641974-1	350737-1	350829-1	643428-1	350836-1	—	—
			—	—	Duplex <sup>1</sup>	350713-4	641974-3	350737-4	350829-4	—	—	350836-4	—
15	Matrix	—	1-480710-0	1-480711-0	Pre-tin	350434-1	641975-1	350588-1	350765-4	643429-1	350992-4	—	—
			794546-1 <sup>3</sup>	794545-1 <sup>3</sup>	Duplex <sup>1</sup>	350434-4	—	350588-4	350765-5	—	—	—	—
15	Matrix	—	350736-1	350784-1	Pre-tin	350714-1	641976-1	350738-1	350830-1	643430-1	350837-1	—	—
			—	—	Duplex <sup>1</sup>	350714-4	641976-4	350738-4	350830-4	—	—	350837-4	—

<sup>1</sup>Duplex Finish — Plated with .000030 [.000762] min. gold in mating area, matte tin on solder tail end over .000050 [.00127] min. nickel underplate on entire contact.

<sup>2</sup>Universal MATE-N-LOK Plug and Cap housings accept pin or socket contacts. Use the appropriate contacts in the Plug housing as required by the mating component.

<sup>3</sup>Housing material has 125°C temperature rating.

<sup>4</sup>Black in color.

<sup>5</sup>Tool Removable

<sup>6</sup>UV Resistant housing material available.

<sup>7</sup>European glow wire housing material available.

**Note: All part numbers are RoHS Compliant.**

**Universal MATE-N-LOK Connectors** (Continued)

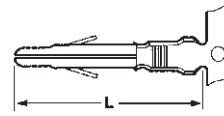
**Contacts**

Solid pin diameter .084 [2.13]  
Stock thickness .012 [.305] unless otherwise noted.  
These contacts can be used in either Universal MATE-N-LOK Plug or Cap housings **only**.

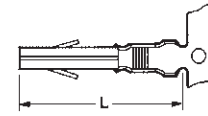
**Related Product Data**

**Product Specification**  
108-1031 Universal MATE-N-LOK Connectors  
**Application Specification**  
114-1010 Universal MATE-N-LOK Contacts

**Performance Characteristics**— pages 169-170  
**Technical Documents**— pages 169 and 205-206  
**Application Tooling**— pages 207-210  
**Housings**— page 174



Solid Pin



Socket

Wire Size Range AWG [mm <sup>2</sup> ]	Ins. Dia. Range	L Dim.		Material & Finish	Contact Part Numbers				HDM Applicator Part No.	Hand Tool Part No.
		Pin	Socket		Pin		Socket			
					Strip Form	Loose Piece	Strip Form	Loose Piece		
30-26 [.05-.12]	.032-.057 .813-1.45	.790 20.06	.760 19.30	Brass, Pre-tin	350924-1	770672-1	350925-1	770673-1	466616-2 <sup>6</sup> 466616-3 <sup>6</sup>	58439-1
				Phos. Brz., Gold <sup>2</sup>	350924-6	770672-6	350925-6	—		
24-18 [.2-.8]	.040-.100 1.02-2.54	.790 20.06	.760 19.30	Brass, Pre-tin	350561-1	350690-1	350851-1 350570-1 <sup>1</sup>	350689-1 <sup>1</sup>	466320-1 <sup>6</sup> 466320-2 <sup>6</sup> 466320-4 <sup>6</sup>	91510-1
				Brass, Gold <sup>2</sup>	350561-2	350690-2	350851-2	640347-2		
				Brass, Select Gold <sup>3</sup>	350561-7	350690-7	350851-7 350570-7 <sup>1</sup>	350689-7 <sup>1</sup>		
				Phos. Brz., Pre-tin	350561-3	350690-3	350570-3 <sup>1</sup>	350689-3 <sup>1</sup>		
20-14 [.5-2.0]	.060-.130 1.52-3.30	.790 20.06	.760 19.30	Phos. Brz., Select Gold <sup>3</sup>	—	—	350570-6 <sup>1</sup>	—	687763-1 <sup>6</sup> 687763-2 <sup>6</sup> 687763-6 <sup>6</sup>	91500-1
				Brass, Pre-tin	350218-1	350547-1	350536-1	350550-1		
				Brass, Gold <sup>2</sup>	350218-2	350547-2	350536-2	350550-2		
				Brass, Select Gold <sup>3</sup>	350218-7	350547-7	350536-7	350550-7		
				Phos. Brz., Pre-tin	350218-3	350547-3	350536-3	350550-3		
20-14 [.5-2.0] or 2@18 [.8]	.130-.200 3.30-5.08	.810 20.57	.780 19.81	Phos. Brz., Select Gold <sup>3</sup>	350218-6	350547-6	350536-6	350550-6	687926-1 <sup>6</sup> 687926-2 <sup>6</sup> 687926-6 <sup>6</sup>	91508-17 91506-17
				Brass, Pre-tin	350538-1	350552-1	350537-1	350551-1		
				Brass, Gold <sup>2</sup>	350538-2	350552-2	350537-2	350551-2		
				Brass, Select Gold <sup>3</sup>	350538-7	350552-7	350537-7	350551-7		
18-14 <sup>4</sup> [.8-2.0]	.130-.200 3.30-5.08	.810 20.57	.780 19.81	Phos. Brz., Pre-tin	350538-3	350552-3	350537-3	350551-3	466588-1 <sup>6</sup> 466588-2 <sup>6</sup> 466588-3 <sup>6</sup>	91508-17 91506-17
				Brass, Pre-tin	350873-1	—	350874-1	—		
				Phos. Brz., Pre-tin	350873-3	350918-3	350874-3	350919-3		
12-10 [3.0-5.0]	.200 max. <sup>5</sup> 5.08	.810 20.57	.780 19.81	Phos. Brz., Pre-tin	350922-3	640309-3	350923-3	640310-3	466597-1 <sup>6</sup> 466597-2 <sup>6</sup>	69710-17
				Phos. Brz., Select Gold <sup>3</sup>	350922-6	640309-6	350923-6	640310-6		

<sup>1</sup>Socket Contact — .010 [.254] stock thickness  
<sup>2</sup>Gold Finish — Plated with .000030 [.000762] min. gold in mating area and inside wire barrel over .000050 [.00127] min. nickel underplate on entire contact.  
<sup>3</sup>Select Gold Finish — Plated with .000030 [.000762] min. gold in mating area over .000050 [.00127] min. nickel underplate on entire contact.  
<sup>4</sup>Recommended for predominant use of 14 AWG wire.  
<sup>5</sup>There is no insulation barrel on this contact. Insulation maximum diameter is limited by the housing.  
<sup>6</sup>HDM Applicator part number ending in -1 is used on AMPOMATOR CLS Machine with T or G Terminators, -2 is used on AMP-O-LECTRIC Model K Machine, -3, -4 & -6 are used on AMP-O-LECTRIC Model G Machine. See pages 207-210 for further information.  
<sup>7</sup>Hand Tool No. **91508-1** is for wire size 20-18 AWG. Hand Tool No. **91506-1** is for wire size 16-14 AWG. Hand Tool No. **69710-1** use die set No. **58380-1** for 12 AWG and No. **58380-2** for 10 AWG.  
**Note:** Phosphor bronze material contacts should be used in high temperature/humidity cycling applications.  
**Note:** All part numbers are RoHS Compliant.



**Contact Retention Test Tool**  
Part No. 1586701-1  
IS 408-10003



**Contact Extraction Tool**  
Part No. 318851-1  
IS 408-4371



**Contact Insertion Tool**  
(For inserting contacts applied to small diameter wire)  
Part No. 91002-1  
IS 408-7347

Standard Density  
Universal MATE-N-LOK Connectors  
.250 [6.35] Centerline

**Universal MATE-N-LOK Connectors** (Continued)

**Contacts**

Split pin diameter .086 [2.18]  
Stock thickness .012 [.305]  
These contacts can be used in either Universal MATE-N-LOK Plug or Cap housings **only**.

**Related Product Data**

**Product Specification**  
108-1031 Universal MATE-N-LOK Connectors

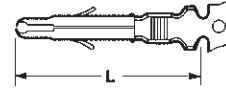
**Application Specification**  
114-1010 Universal MATE-N-LOK Contacts

**Performance Characteristics**—  
pages 169-170

**Technical Documents**—pages 169 and 205-206

**Application Tooling**—pages 207-210  
**Housings**—page 174

**Split Pins**



Wire Size Range AWG [mm <sup>2</sup> ]	Ins. Dia. Range	L Dim.	Material & Finish	Contact Part Number		HDM Applicator Part No.	Hand Tool Part No.
				Strip Form	Loose Piece		
24-18 [.2-.8]	.040-.100 1.02-2.54	.790 20.06	Brass, Pre-tin	350699-1	350706-1	466320-1 <sup>3</sup> 466320-2 <sup>3</sup> 466320-4 <sup>3</sup>	91510-1
			Brass, Gold <sup>1</sup>	350699-2	350706-2		
			Brass, Select Gold <sup>2</sup>	350699-7	350706-7		
20-14 [.5-2.0]	.060-.130 1.52-3.30	.790 20.06	Brass, Pre-tin	350687-1	350705-1	687763-1 <sup>3</sup> 687763-2 <sup>3</sup> 687763-6 <sup>3</sup>	91500-1
			Brass, Gold <sup>1</sup>	350687-2	350705-2		
			Brass, Select Gold <sup>2</sup>	350687-7	350705-7		
20-14 [.5-2.0] or 2@18 [.8]	.130-.200 3.30-5.08	.810 20.57	Brass, Pre-tin	350700-1	350707-1	687926-1 <sup>3</sup> 687926-2 <sup>3</sup> 687926-6 <sup>3</sup>	91508-1 <sup>4</sup> 91506-1 <sup>4</sup>
			Brass, Gold <sup>1</sup>	350700-2	350707-2		
			Brass, Select Gold <sup>2</sup>	350700-7	350707-7		

<sup>1</sup>Gold Finish — Plated with .000030 [.000762] min. gold in mating area and inside wire barrel over .000050 [.00127] min. nickel underplate on entire contact.

<sup>2</sup>Select Gold Finish — Plated with .000030 [.000762] min. gold in mating area over .000050 [.00127] min. nickel underplate on entire contact.

<sup>3</sup>HDM Applicator part number ending in -1, is used on AMPOMATOR CLS Machine with T or G Terminators, -2 is used on AMP-O-LECTRIC Model K Machine, -4 & -6 are used on AMP-O-LECTRIC Model G Machine. See pages 207-210 for further information.

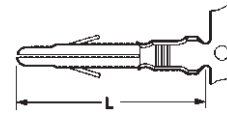
<sup>4</sup>Hand Tool No. **91508-1** for wire size 20-18 AWG. Hand Tool No. **91506-1** for wire size 16-14 AWG.

**Notes:**

1. Split pins recommended for use in housings having 6, 9, 12 and 15 circuits to reduce mating force.
2. Phosphor bronze material contacts are available for use in high temperature/humidity cycling applications, consult Tyco Electronics.

**Grounding Pins**

(.100 [2.54] longer than standard pin)  
(Mate first, break last, not for interrupting current)



Wire Size Range AWG [mm <sup>2</sup> ]	Ins. Dia. Range	L Dim.	Material & Finish	Contact Part Number		HDM Applicator Part No.	Hand Tool Part No.
				Strip Form	Loose Piece		
24-18 [.2-.8]	.060-.130 1.52-3.30	.890 22.60	Brass, Pre-tin	770210-1	—	567216-2 <sup>2</sup> 567216-3 <sup>2</sup>	—
				350654-1	350669-1		
20-14 [.5-2.0]	.060-.130 1.52-3.30	.890 22.60	Brass, Pre-tin	350654-1	350669-1	687763-1 <sup>2</sup> 687763-2 <sup>2</sup> 687763-6 <sup>2</sup>	91500-1
				770234-3	—		
12-10 [3.0-5.0]	.200 max. <sup>1</sup> 5.08	.910 23.11	Phos. Brz., Pre-tin	770234-3	—	466597-1 <sup>2</sup> 466597-2 <sup>2</sup> 466597-3 <sup>2</sup>	—
				—	—		

<sup>1</sup>There is no insulation barrel on this contact. Insulation maximum diameter is limited by the housing.

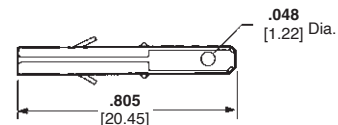
<sup>2</sup>HDM Applicator part number ending in -1 is used on AMPOMATOR CLS Machine with T or G Terminators, -2 is used on AMP-O-LECTRIC Model K Machine, -3 & -6 are used on AMP-O-LECTRIC Model G Machine. See pages 207-210 for further information.

**Programmable Connector Contact**

(Socket with 110 Series Special FASTON Tab)

**Material and Finish**

Brass, pre-tin



**Part Number**  
**350877-1**

**Note:** This contact will accept a 110 Series FASTON Receptacle — Part No. **350871-1** (strip form) allowing simple field wiring or wiring changes.

**Note:** All part numbers are RoHS Compliant.

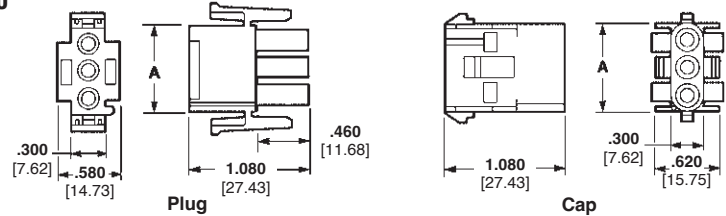
**Universal MATE-N-LOK Connectors** (Continued)

**Housings**

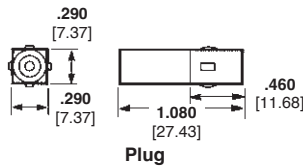
**Free-Hanging or Panel Mount**

.250 [6.35] Centerline spacing

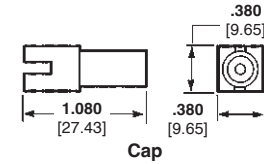
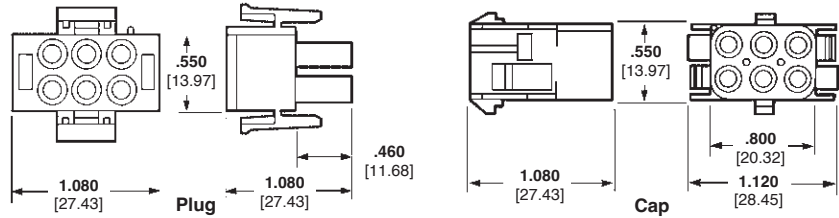
**2, 3, 4, 5, 6, 8 and 10 Circuit, In-Line**



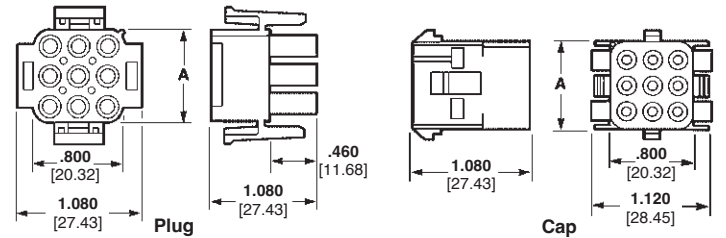
**1 Circuit, Free-Hanging**



**6 Circuit, Matrix**



**9, 12 and 15 Circuit, Matrix**



**Related Product Data**

**Product Specification**

108-1031 Universal MATE-N-LOK Connectors

**Performance Characteristics**—

pages 169-170

**Contacts**—pages 172-173

**Panel Cutout**

**Recommendations**—page 175

**Keying Plug**—page 175

**Strain Reliefs**—pages 175-176

**Technical Documents**—pages 169 and 205-206

**Mating Headers**—pages 182-183 and 185

**Other Mating Connectors**

Universal MATE-N-LOK II Housings—pages 193-194

**Note:** See charts on page 182 to order Plug and Cap Housings in colors.

**Housing Part Numbers**

Number of Circuits	A Dim.	Housing Part Numbers			
		UL94V-2 Nylon, Natural Color <sup>2</sup>		UL94V-0 Nylon <sup>3</sup>	
		Plug	Cap	Plug	Cap
1	—	1-350867-0	770421-1	350865-1	350866-1
2	.550 13.97	1-480698-0 <sup>1</sup>	1-480699-0 <sup>1</sup>	350777-1 <sup>1</sup>	350778-1 <sup>1</sup>
3	.800 20.32	1-480700-0 <sup>1</sup>	1-480701-0 <sup>1</sup>	350766-1 <sup>1</sup>	350767-1 <sup>1</sup>
4	1.050 26.67	1-480702-0 <sup>1</sup>	1-480703-0 <sup>1</sup>	350779-1 <sup>1</sup>	350780-1 <sup>1</sup>
5	1.300 33.02	1-480763-0 <sup>1</sup>	1-480764-0 <sup>1</sup>	350809-1 <sup>1</sup>	350810-1 <sup>1</sup>
6	1.550 39.37	640585-1 <sup>1</sup>	926307-1 <sup>1</sup>	640581-1 <sup>1</sup>	926307-3 <sup>1</sup>
		1-480704-0 794096-1 <sup>4</sup>	1-480705-0	350715-1	350781-1
8	2.050 52.07	640586-1 <sup>1</sup>	926308-1 <sup>1</sup>	640582-1 <sup>1</sup>	926308-3 <sup>1</sup>
9	.800 20.32	1-480706-0	1-480707-0	350720-1	350782-1
10	2.550 64.77	926302-1 <sup>1</sup>	926309-1 <sup>1</sup>	926302-3 <sup>1</sup>	926309-3 <sup>1</sup>
12	1.050 26.67	1-480708-0	1-480709-0	350735-1	350783-1
15	1.300 33.02	1-480710-0	1-480711-0	350736-1	350784-1

<sup>1</sup>In-Line style.

<sup>2</sup>Housing material has 125°C temperature rating.

<sup>3</sup>Housing material has 120°C temperature rating.

<sup>4</sup>Tool Removable.

**Note:** All part numbers are RoHS Compliant.

Standard Density

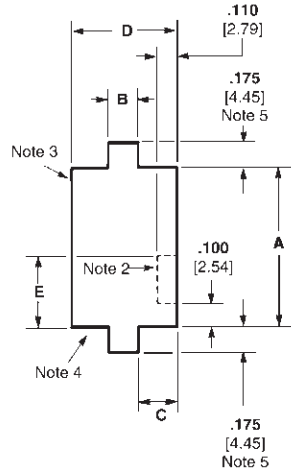
Universal MATE-N-LOK Connectors  
.250 [6.35] Centerline

**Universal MATE-N-LOK Connectors** (Continued)

**Recommended  
Cap Housing  
Panel Cutouts**

View is from cap entry side

Refer to Application Specification  
114-1010



Style	Number of Circuits	Dimensions					
		A	B	C	D	E	
In-Line	2	.565 14.35	.340 8.64	.095 2.41	.530 13.46	.250 6.35	
	3	.815 20.70	.340 8.64	.095 2.41	.530 13.46	.250 6.35	
	4	1.065 27.05	.340 8.64	.095 2.41	.530 13.46	.250 6.35	
	5	1.315 33.40	.340 8.64	.095 2.41	.530 13.46	.250 6.35	
	6	1.567 39.80	.154 3.91	.189 4.80	.531 13.49	.394 10.0	
	8	2.067 52.50	.154 3.91	.189 4.80	.531 13.49	.394 10.0	
	10	2.567 65.20	.154 3.91	.189 4.80	.530 13.46	.394 10.0	
	Matrix	6	.565 14.35	.480 12.19	.275 6.99	1.030 26.16	.250 6.35
		9	.815 20.70	.480 12.19	.275 6.99	1.030 26.16	.250 6.35
		12	1.065 27.05	.480 12.19	.275 6.99	1.030 26.16	.350 8.89
15		1.315 33.40	.480 12.19	.275 6.99	1.030 26.16	.350 8.89	

**Notes:**

1. Recommended panel thickness — .030-.090 [.762-2.286]. Panel must be punched so that housing enters panel in same direction as the punch.
2. Optional — Do not remove this material when keying cap housing to panel.
3. Circuit #1 location when using panel keying with 6, 9, 12 and 15 circuit Matrix housings.
4. Circuit #1 location when using panel keying with 2, 3, 4, 5, 6, 8 and 10 circuit In-Line housings.
5. .175 [4.45] dimension is .125 [3.18] for 6, 8 and 10 circuit In-Line housings.

**Keying Plugs**

IS 408-3320



**Part Numbers**

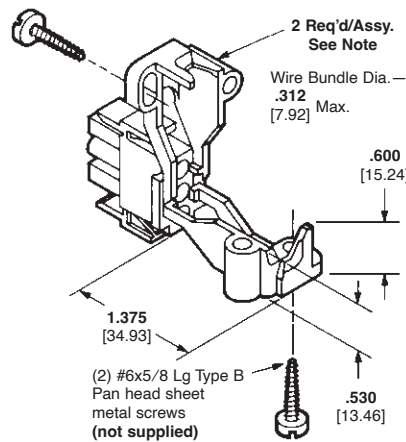
UL94V-2 Nylon material, natural color — 1-640415-1  
UL94V-0 Nylon material — 1-640415-0

**Note:** Keying plug snaps into plug or cap housing

**Plug Housing  
Strain Reliefs**

IS 408-3320

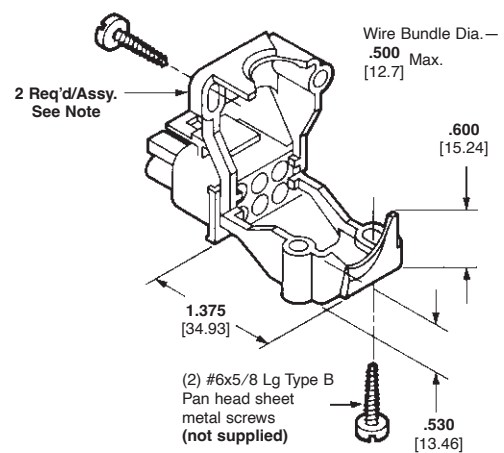
**2, 3, 4, 5, 6 and 8 Circuit, In-Line**



**Part Numbers**

UL94V-2 Nylon material, natural color — 1-350589-0  
UL94V-0 Nylon material — 350811-1

**6, 9, 12 and 15 Circuit, Matrix**



**Part Numbers**

UL94V-2 Nylon material, natural color — 1-350590-0  
UL94V-0 Nylon material — 350812-1

**Note:** Strain relief part number represents one half of a strain relief. Two strain reliefs required per housing.

**Note:** All part numbers are RoHS Compliant.

**Universal MATE-N-LOK Connectors** (Continued)

**Plug or Cap Housing Strain Reliefs**

IS 408-3320

**Related Product Data**

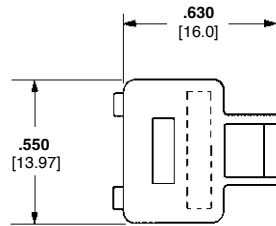
Housings—page 174  
Technical Documents—pages 169 and 205-206

**Cap Housing Adapters**

These adapters are designed to anchor the cap housing strain reliefs to the housings and prevent the strain relief halves from "drawing in" when the screws are being torqued down to clamp the cable.

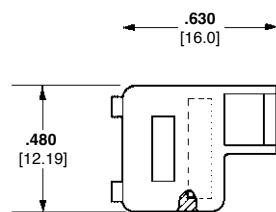
IS 408-3320

**For All Positions Except 2, 6 and 8 Circuit Cap Housings**



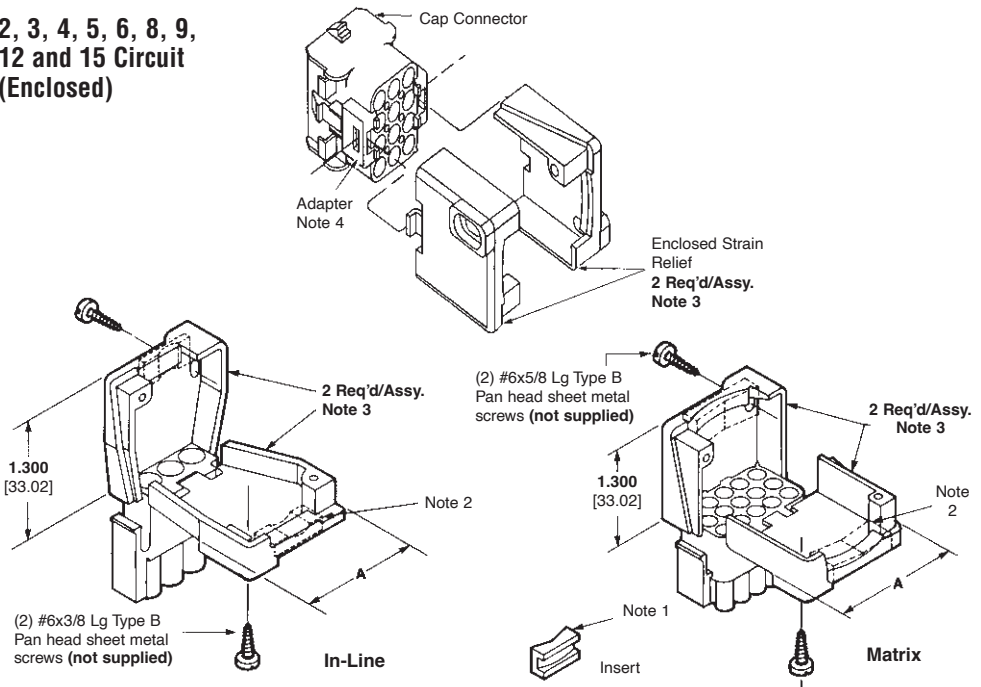
UL94V-2 Nylon material, natural color — 641777-1  
UL94V-0 Nylon material — 641778-1

**For 2 In-Line and 6 Matrix Circuit Cap Housings Only**



UL94V-2 Nylon material, natural color — 643182-1  
UL94V-0 Nylon material — 643182-2

**2, 3, 4, 5, 6, 8, 9, 12 and 15 Circuit (Enclosed)**



Style	Number of Circuits	A Dim.	Insert Supplied	Single Wire Dia. Range	Wire Bundle Dia. Range	Part Numbers	
						UL94V-2 Nylon, Natural Color	UL94V-0 Nylon
In-Line	2	.960 24.38	Yes	.040-.190 1.02-4.83	—	1-640719-0	640713-1
			No	—	.200-.350 5.08-8.89	1-640719-1	640713-2
	3	1.140 28.96	Yes	.040-.190 1.02-4.83	—	1-640720-0	640714-1
			No	—	.200-.350 5.08-8.89	641763-1	641945-1
	4	1.325 33.65	Yes	.040-.190 1.02-4.83	—	641775-1	641776-1
			No	—	.200-.350 5.08-8.89	641775-2	641776-2
	5	1.530 38.86	Yes	.040-.190 1.02-4.83	—	643030-3	643030-1
			No	—	.200-.350 5.08-8.89	643030-2	643030-4
	6 Note 5	1.780 45.21	Yes	.040-.190 1.02-4.83	—	643585-1	643313-1
			No	—	.200-.350 5.08-8.89	643585-2	643313-2
	8 Note 5	2.280 56.08	Yes	.040-.190 1.02-4.83	—	—	643314-1
			No	—	.200-.350 5.08-8.89	—	643314-2
Matrix	6	1.030 26.16	Yes	—	.120-.650 3.05-16.51	1-640721-0	640715-1
	9	1.030 26.16	Yes	—	.120-.650 3.05-16.51	1-640722-0	640716-1
	12	1.280 32.51	Yes	—	.150-.750 3.81-19.05	1-640723-0	640717-1
	15	1.530 38.86	Yes	—	.200-.850 5.08-21.59	1-640724-0	640718-1
			No	—	—	—	—

**Notes:**

1. Cable clamping insert comes attached to strain relief. It can be used to provide additional adjustment for small wire bundles or discarded.
2. Insert to be positioned as shown by dotted lines.
3. Strain relief part number represents one-half of a strain relief. Two strain reliefs required per housing.
4. Must use cap housing adapters when attaching strain reliefs to a cap housing. Two adapters required per housing.
5. Strain reliefs for 6 and 8 circuit In-Line fits plug housings only.

**Note:** All part numbers are RoHS Compliant.

Standard Density

Universal MATE-N-LOK Connectors  
.250 [6.35] Centerline

## Universal MATE-N-LOK Flanged Cap Housings with Twist and Lock Feature

### Product Facts

- Available in a 6, 9, and 12 circuit design
- Designed for household appliances where a bulkhead connector system is needed in conjunction with foam-in insulation
- Mates with standard Universal MATE-N-LOK plug housings (page 174)
- Accepts Universal MATE-N-LOK pin and socket contacts (page 167)
- Designed to utilize the Splash Proof/Sealed Universal MATE-N-LOK seals for additional sealing protection (pages 174-175)



### Material and Finish

**Housing**—Nylon, UL 94V-0 or UL 94V-2 rated

**Contacts**—Phosphor Bronze or Brass

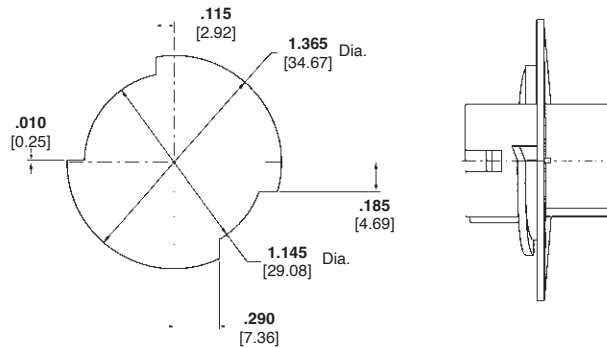
**Plating**—Pre-tin or Gold

### Related Product Data

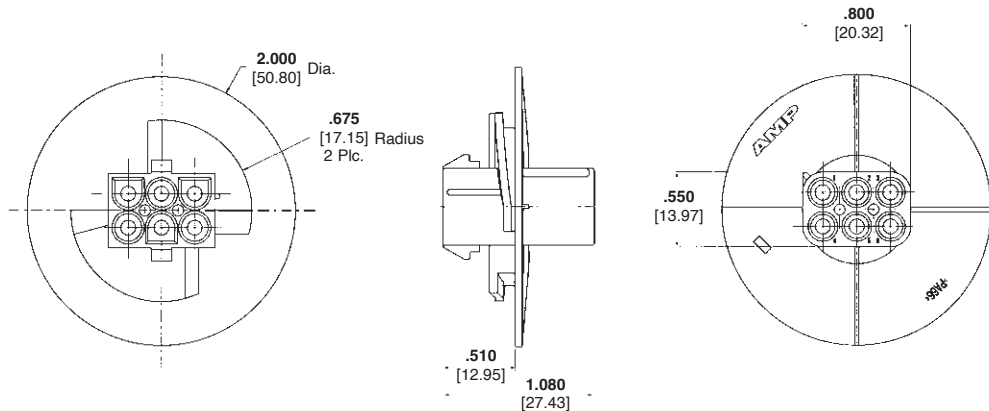
**Contacts**—pages 172-173

**Plug Housings**—page 174

**Seals**—page 180



Recommended Panel Cutout  
(for 6 and 9 Pos. Housings)



### Notes:

1. Recommended Panel Thickness: 0.76-2.29 [.030-.090]
2. Panel must be punched so that the housing enters the panel in the same direction as the punch.
3. Asymmetrical panel cutout provides polarization for Pin 1 location.

Number of Circuits	Cap Housing Part Numbers	
	UL 94V-0	UL 94V-2
6	794760-1	794714-1
9	794761-1	794715-1
12	794762-1	794716-1

**Note:** All part numbers are RoHS Compliant.

## Universal MATE-N-LOK Sealed Bulkhead Connectors

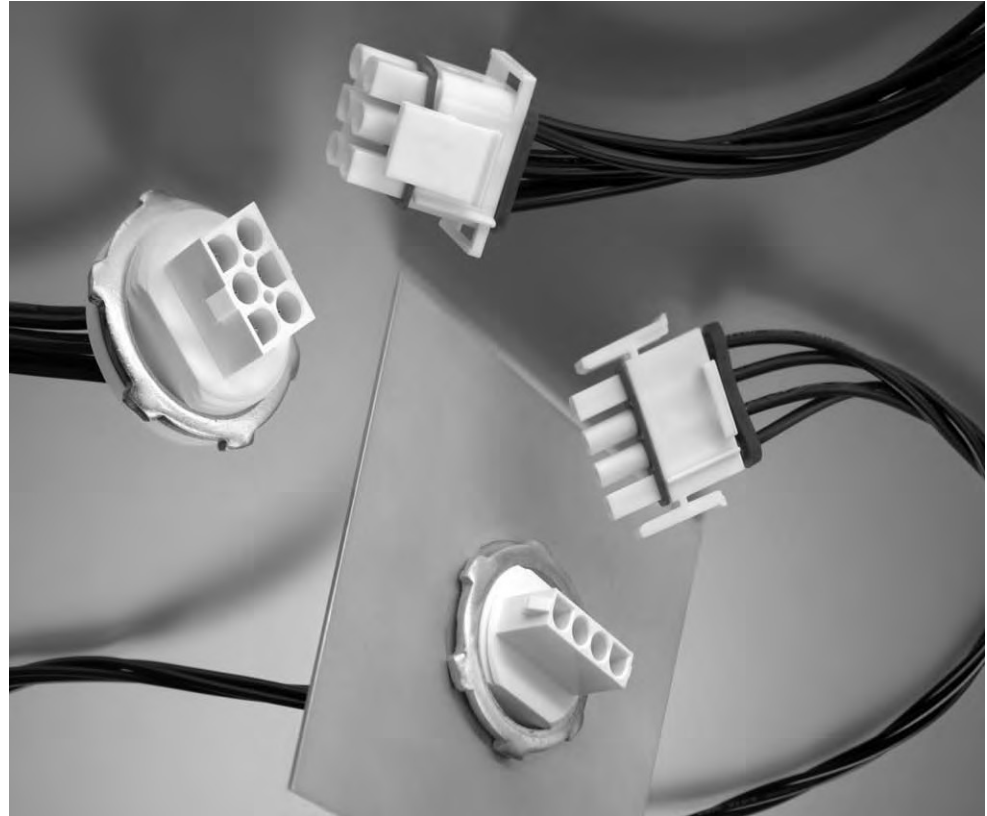
### Product Facts

- Bulkhead mount Universal MATE-N-LOK connector that facilitates sealed panel mounting and works with existing Universal MATE-N-LOK seals to provide a fully-sealed interconnection system
- Available in 4, 6, 9 and 12 positions
- Sealed, flange mount design
- Mates to standard Universal MATE-N-LOK plug housings
- Accepts standard Universal MATE-N-LOK contacts
- Works with standard Universal MATE-N-LOK connector interface and wire seals
- Anti-rotation feature aids installation
- Rear mount flange design enables use in wire harnesses
- Pins and sockets can be intermixed in the same housing
- UL Recognized, File No. E28476
- CSA Certified, File No. 1030930



### Applications

- Vending Machines
- Industrial Machinery
- Lighting
- HVAC Equipment



### Performance Characteristics

**Dielectric Withstanding Voltage**—5.0 KVAC or 5.0 KVDC between adjacent circuits

**Insulation Resistance**—1000 megohms minimum initial between adjacent circuits

**Voltage Rating**—600 V AC or DC

**Durability**—50 cycles, mating and unmating

### Technical Documents

**Product Specification**  
108-1031 Universal MATE-N-LOK Connectors

**Application Specification**  
114-1010 Universal MATE-N-LOK Contacts

**Instruction Sheet**  
408-10017 Universal MATE-N-LOK Bulkhead Connectors

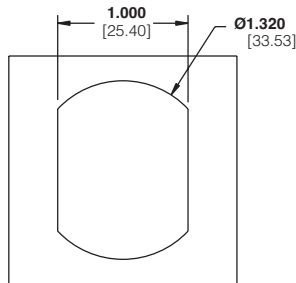
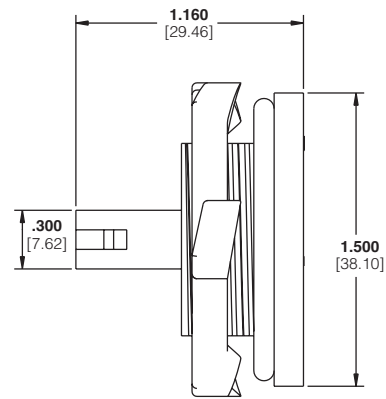
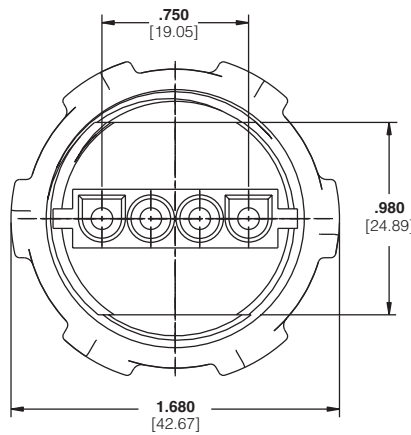
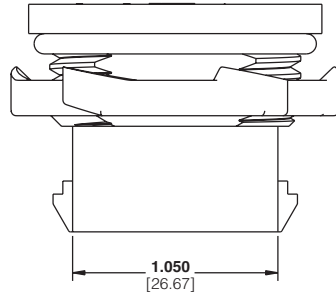
**Universal MATE-N-LOK Sealed Bulkhead Connectors** (Continued)

**Connector Housings**

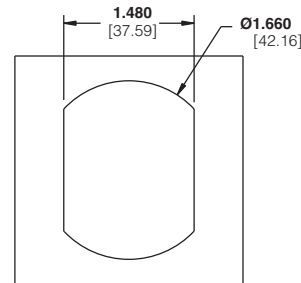
**4 Position Connector Housing**  
(shown)

**Material and Finish**

- Housing**—Nylon, UL 94V-0 rated
- Contacts**—Brass with pre-tin or gold plating
- O-ring Seal**—Neoprene
- Locking Nut**—Steel, zinc plated



Recommended  
Panel Cut-Out for 4, 6 & 9 Position Product Only



Recommended  
Panel Cut-Out for 12 Position Product Only

No. of Pos.	Style	Housing Part Number
4	In Line	1604256-1
6	Matrix	1604210-1
9	Matrix	1604254-1
12	Matrix	1604941-1

**Note:** All part numbers are RoHS Compliant.

Standard Density

Universal MATE-N-LOK Sealed Bulkhead Connectors  
.250 [6.35] Centerline

## Universal MATE-N-LOK Sealed Connectors

### Splash Proof Seals

#### Product Facts

- Economical splash proof sealed connector system
- No design changes to existing Universal MATE-N-LOK product
- Existing applications utilizing Universal MATE-N-LOK connectors can be upgraded to a splash proof system
- Utilizes two wire seals and one interface seal
- Wire range is 20-14 AWG [.5-2.0] with insulation diameter range .060-.130 [1.52-3.30]
- .110-.130 [2.79-3.30] insulation diameter passed IP56 sealing level (swirling dust and splash proof)
- .060-.110 [1.52-2.79] insulation diameter passed IP56 sealing level (swirling dust and splash proof)
- Universal MATE-N-LOK II keying plug can be used to seal unused circuits
- Primary application is for wire-to-wire; wire-to-board application must use a closed bottom header

#### Material

Silicone rubber, blue color

#### Technical Documents

##### Product Specification

108-1031 Splash Proof Seal, Universal MATE-N-LOK Connectors

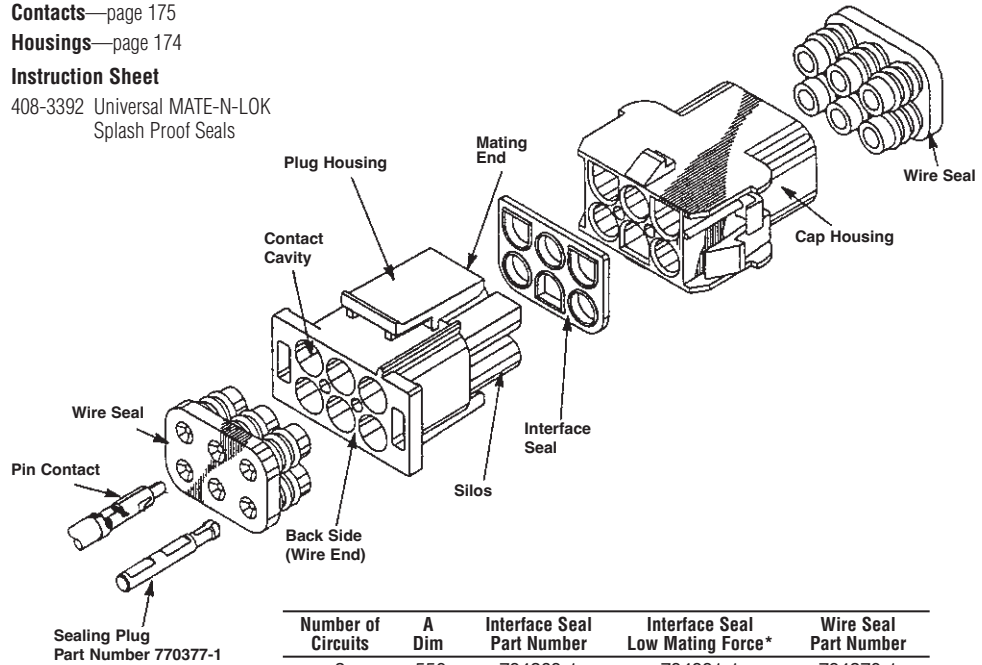
Contacts—page 175

Housings—page 174

##### Instruction Sheet

408-3392 Universal MATE-N-LOK Splash Proof Seals

**Note:** For proper use of this product, customer should make sure that Instruction Sheet 408-3392 is available for review.



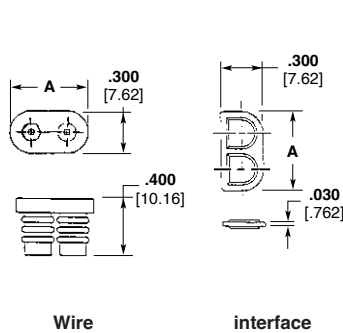
Number of Circuits	A Dim	Interface Seal Part Number	Interface Seal Low Mating Force*	Wire Seal Part Number
2	.550	794269-1	794991-1	794270-1
3	.800	794271-1	794992-1	794272-1
4	1.050	794273-1	794785-1	794274-1
6	—	794275-1	794993-1	794276-1
9	.800	794277-1	794994-1	794278-1
12	1.050	794279-1	—	794280-1
15	1.300	794281-1	—	794282-1

**Note:** One interface seal and two wire seals required per mated assembly.  
\*Low mating force interface seals do not meet any IP ratings.

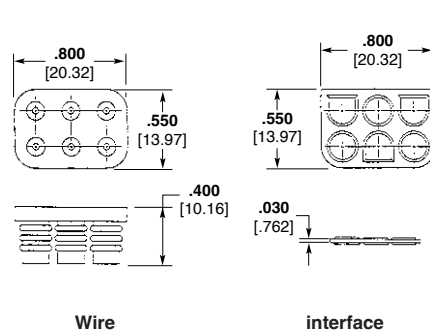
**Note:** All part numbers are RoHS Compliant.

Standard Density

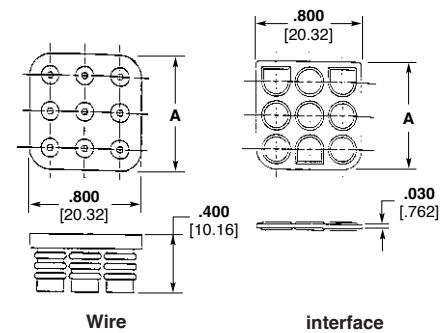
#### 2, 3, 4 Circuit, In-Line



#### 6 Circuit, Matrix



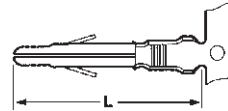
#### 9, 12, and 15 Circuit, Matrix



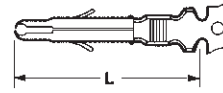
**Universal MATE-N-LOK Sealed Connectors** (Continued)

**Contacts (used with Splash Proof Seals)**

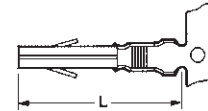
Solid pin diameter .084 [2.13]  
Split pin diameter .086 [2.18]  
Stock thickness .012 [.305] unless otherwise noted.  
These contacts can be used in either Universal MATE-N-LOK Plug or Cap housings **only**.



Solid Pin



Split Pin



Socket

**Related Product Data**

**Product Specification**

108-1031 Universal MATE-N-LOK Connectors

**Application Specification**

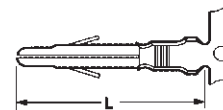
114-1010 Universal MATE-N-LOK Contacts

**Performance Characteristics**— pages 169-170

**Technical Documents**— pages 169 and 205-206

**Application Tooling**— pages 207-210

**Housings**— page 174



**Grounding Pin**

(100 [2.54] longer than standard pin)  
(Mate first, break last, not for interrupting current)

Wire Size Range AWG [mm <sup>2</sup> ]	Ins. Dia. Range	L Dim.		Material & Finish	Style	Contact Part Numbers				HDM Applicator Part No.	Hand Tool Part No.
		Pin	Socket			Pin		Socket			
						Strip Form	Loose Piece	Strip Form	Loose Piece		
20-14 [.5-2.0]	.060-.130 [1.52-3.30]	.790 20.06	.760 19.30	Brass, Pre-tin	Solid	350218-1	350547-1	350536-1	350550-1	687763-1 <sup>3</sup> 687763-2 <sup>3</sup> 687763-6 <sup>3</sup>	91500-1
				Brass, Gold <sup>1</sup>		350218-2	350547-2	350536-2	350550-2		
				Brass, Select Gold <sup>2</sup>		350218-7	350547-7	350536-7	350550-7		
				Phos. Brz., Pre-tin		350218-3	350547-3	350536-3	350550-3		
		Phos. Brz., Select Gold <sup>2</sup>	350218-6	350547-6	350536-6	350550-6					
		Brass, Pre-tin	350687-1	350705-1	—	—					
		Brass, Gold <sup>1</sup>	350687-2	350705-2	—	—					
		Brass, Select Gold <sup>2</sup>	350687-7	350705-7	—	—					
.890 22.60	—	—	—	Brass, Pre-Tin	Grounding	350654-1	350669-1	—	—	—	—

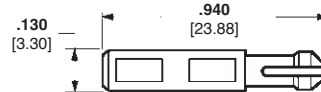
<sup>1</sup>Gold Finish — Plated with .000030 [.000762] min. gold in mating area and inside wire barrel over .000050 [.00127] min. nickel underplate on entire contact.  
<sup>2</sup>Select Gold Finish — Plated with .000030 [.000762] min. gold in mating area over .000050 [.00127] min. nickel underplate on entire contact.  
<sup>3</sup>HDM Applicator part number ending in -1, is used on AMPOMATOR CLS Machine with T or G Terminators, -2 is used on AMP-O-LECTRIC Model K Machine, -4 & -6 are used on AMP-O-LECTRIC Model G Machine. See pages 207-210 for further information.

**Notes:**

- Split pins recommended for use in housings having 6, 9, 12 and 15 circuits to reduce mating force.
- Phosphor bronze material contacts are available for use in high temperature/humidity cycling applications, consult Tyco Electronics.
- 18-24 AWG contacts (page 166) can be used with splash proof seals if insulation diameter range is .060-.100 [1.52-2.54].

**Universal MATE-N-LOK II Keying Plug/Splash Proof Sealing Plug**

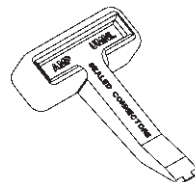
IS 408-3392



**Part Number**  
UL94V-0 Nylon material — 770377-1

**Related Product Data**

**Housings**— page 174  
**Technical Documents**— pages 169 and 205-206



**Seal Latch Tool**  
Part No. 794381-1  
IS 408-3392



**Contact Extraction Tool**  
Part No. 318851-1  
IS 408-4371



**Contact Insertion Tool (For inserting contacts applied to small diameter wire)**  
Part No. 91002-1  
IS 408-7347

**Note:** All part numbers are RoHS Compliant.

## Universal MATE-N-LOK Connectors

### PC Board Vertical Pin Headers

.250 [6.35] Centerline spacing

#### Material

##### Housing —

UL94V-2 Nylon, natural color  
UL94V-0 Nylon

##### Contacts — Phosphor bronze

Solder tail diameter .062 [1.57]

#### Related Product Data

##### Product Specification

108-1053 Universal MATE-N-LOK  
PC Board Headers

##### Performance Characteristics —

pages 169-170

##### Recommended PC Board Hole Layout — page 184

Technical Documents — pages 169  
and 205-206

#### Mating Connectors

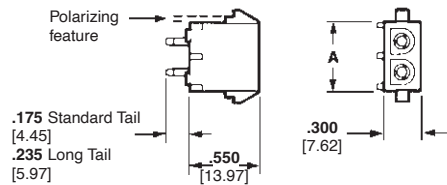
##### Universal MATE-N-LOK

Plug Housings — page 174

##### Universal MATE-N-LOK II

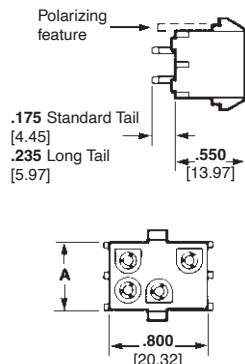
Plug Housings — pages 193-194

### 2, 3, 4, 5, 6 and 8 Circuit, In-Line



Number of Circuits	A Dim.	Flammability Rating	Pin Finish	Pin Header Part Numbers			Mates with Plug Housing Part Number (Using Socket Contacts)	
				Standard Tail <sup>2</sup>	Standard Tail Polarized <sup>2</sup>	Long Tail <sup>3</sup>	Universal MATE-N-LOK	Universal MATE-N-LOK II
2	.550 13.97	UL94V-2	Pre-tin	350428-1	641963-1	350582-1	1-480698-0	—
			Duplex <sup>1</sup>	350428-4	641963-3	350582-4		
		UL94V-0	Pre-tin	350786-1	641964-1	350787-1	350777-1	770017-1
			Duplex <sup>1</sup>	350786-3	641964-3	350787-3		
3	.800 20.32	UL94V-2	Pre-tin	350429-1	641965-1	350583-1	1-480700-0	—
			Duplex <sup>1</sup>	350429-4	—	350583-4		
		UL94V-0	Pre-tin	350789-1	641966-1	350790-1	350766-1	770018-1
			Duplex <sup>1</sup>	350789-3	—	350790-3		
4	1.050 26.67	UL94V-2	Pre-tin	350430-1	641967-1	350584-1	1-480702-0	—
			Duplex <sup>1</sup>	350430-4	—	350584-4		
		UL94V-0	Pre-tin	350792-1	641968-1	350793-1	350779-1	770019-1
			Duplex <sup>1</sup>	350792-3	—	350793-3		
5	1.300 33.02	UL94V-2	Pre-tin	640466-1	643405-1	—	1-480763-0	—
			Duplex <sup>1</sup>	640466-3	—	—		
		UL94V-0	Pre-tin	640900-1	643406-1	—	350809-1	770016-1
			Duplex <sup>1</sup>	640900-3	—	—		
6	1.550 39.37	UL94V-2	Pre-tin	641832-1	643407-1	—	640585-1	—
		UL94V-0	Pre-tin	641831-1	643408-1	—	640581-1	—
8	2.050 52.07	UL94V-2	Pre-tin	641825-1	—	770143-1	640586-1	—
			UL94V-0	Pre-tin	641828-1	643410-1	770272-1	640582-1
		UL94V-0	Duplex <sup>1</sup>	—	643410-3	770272-3	—	—

### 6, 9, 12 and 15 Circuit, Matrix



Number of Circuits	A Dim.	Flammability Rating	Pin Finish	Pin Header Part Numbers			Mates with Plug Housing Part Number (Using Socket Contacts)	
				Standard Tail <sup>2</sup>	Standard Tail Polarized <sup>2</sup>	Long Tail <sup>3</sup>	Universal MATE-N-LOK	Universal MATE-N-LOK II
6	.550 13.97	UL94V-2	Pre-tin	350431-1	641969-1	350585-1	1-480704-0	—
			Duplex <sup>1</sup>	350431-4	—	350585-4		
		UL94V-0	Pre-tin	350711-1	641970-1	350732-1	350715-1	770020-1
			Duplex <sup>1</sup>	350711-4	641970-3	350732-4		
9	.800 20.32	UL94V-2	Pre-tin	350432-1	641971-1	350586-1	1-480706-0	—
			Duplex <sup>1</sup>	350432-4	641971-3	350586-4		
		UL94V-0	Pre-tin	350712-1	641972-1	350742-1	350720-1	770021-1
			Duplex <sup>1</sup>	350712-4	641972-3	350742-4		
12	1.050 26.67	UL94V-2	Pre-tin	350433-1	641973-1	350587-1	1-480708-0	—
			Duplex <sup>1</sup>	350433-4	—	350587-4		
		UL94V-0	Pre-tin	350713-1	641974-1	350737-1	350735-1	770022-1
			Duplex <sup>1</sup>	350713-4	641974-3	350737-4		
15	1.300 33.02	UL94V-2	Pre-tin	350434-1	641975-1	350588-1	1-480710-0	—
			Duplex <sup>1</sup>	350434-4	—	350588-4		
		UL94V-0	Pre-tin	350714-1	641976-1	350738-1	350736-1	770023-1
			Duplex <sup>1</sup>	350714-4	641976-4	350738-4		

**Note:** Header Housings on pages 182-185 are available in **colors** listed on page 188. Call Technical Support for exact Part Numbers.

<sup>1</sup>Duplex Finish — Plated with .000030 [.000762] min. gold in mating area, matte tin on solder tail end over .000050 [.00127] min. nickel underplate on entire contact.  
<sup>2</sup>Use Standard Tail for .062 [1.57] thick PC Board. <sup>3</sup>Use Long Tail for .125 [3.18] thick PC Board.  
<sup>4</sup>Black in color. <sup>5</sup>No drain holes, used w/ seals, page 180. **Note: All part numbers are RoHS Compliant.**

**Universal MATE-N-LOK Connectors** (Continued)

**PC Board Vertical Socket Headers**

.250 [6.35] Centerline spacing

**Material**

**Housing**—

UL94V-2 Nylon, natural color  
UL94V-0 Nylon

**Contacts**—Phosphor bronze

Solder tail diameter .062 [1.57]

**Related Product Data**

**Product Specification**

108-1053 Universal MATE-N-LOK  
PC Board Headers

**Performance Characteristics**—  
pages 169-170

**Recommended PC Board Hole Layout**—page 184

**Technical Documents**—pages 169  
and 205-206

**Mating Connectors**

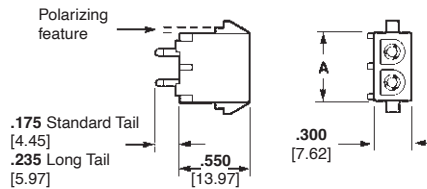
**Universal MATE-N-LOK**

Plug Housings—page 174

**Universal MATE-N-LOK II**

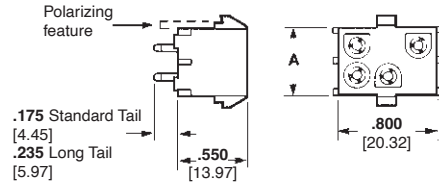
Plug Housings—pages 193-194

**2, 3, 4, 5, and 6  
Circuit, In-Line**



Number of Circuits	A Dim.	Flammability Rating	Socket Finish	Socket Header Part Numbers			Mates with Plug Housing Part Number (Using Pin Contacts)	
				Standard Tail <sup>2</sup>	Standard Tail Polarized <sup>2</sup>	Long Tail <sup>3</sup>	Universal MATE-N-LOK	Universal MATE-N-LOK II
2	.550 13.97	UL94V-2	Pre-tin	350759-4	643411-1	350986-4	1-480698-0	—
			Duplex <sup>1</sup>	350759-5	—	—		
		UL94V-0	Pre-tin	350824-1	643412-1	350831-1	350777-1	770017-1
			Duplex <sup>1</sup>	350824-4	643412-3	—		
3	.800 20.32	UL94V-2	Pre-tin	350760-4	643413-1	350987-4	1-480700-0	—
			Duplex <sup>1</sup>	350760-5	—	—		
		UL94V-0	Pre-tin	350825-1	643414-1	350832-1	350766-1	770018-1
			Duplex <sup>1</sup>	350825-4	643414-3	350832-4		
4	1.050 26.67	UL94V-2	Pre-tin	350761-4	643415-1	350988-4	1-480702-0	—
			Duplex <sup>1</sup>	350761-5	—	350988-5		
		UL94V-0	Pre-tin	350826-1	643416-1	350833-1	350779-1	770019-1
			Duplex <sup>1</sup>	350826-4	—	350833-4		
5	1.300 33.02	UL94V-2	Pre-tin	640467-1	—	—	1-480763-0	—
			Duplex <sup>1</sup>	640467-3	—	—		
		UL94V-0	Pre-tin	640901-1	—	—	350809-1	770016-1
			Duplex <sup>1</sup>	640901-3	—	—		
6	1.550 39.37	UL94V-0	Duplex <sup>1</sup>	770262-3	—	—	640581-1	—

**6, 9, 12 and 15  
Circuit, Matrix**



Number of Circuits	A Dim.	Flammability Rating	Socket Finish	Socket Header Part Numbers			Mates with Plug Housing Part Number (Using Pin Contacts)	
				Standard Tail <sup>2</sup>	Standard Tail Polarized <sup>2</sup>	Long Tail <sup>3</sup>	Universal MATE-N-LOK	Universal MATE-N-LOK II
6	.550 13.97	UL94V-2	Pre-tin	350762-4	643423-1	350989-4	1-480704-0	—
			Duplex <sup>1</sup>	350762-5	—	350989-5		
		UL94V-0	Pre-tin	350827-1	643424-1	350834-1	350715-1	770020-1
			Duplex <sup>1</sup>	350827-4	643424-3	350834-4		
9	.800 20.32	UL94V-2	Pre-tin	350763-4	643425-1	350990-4	1-480706-0	—
			Duplex <sup>1</sup>	350763-5	—	350990-5		
		UL94V-0	Pre-tin	350828-1	643426-1	350835-1	350720-1	770021-1
			Duplex <sup>1</sup>	350828-4	643426-3	350835-4		
12	1.050 26.67	UL94V-2	Pre-tin	350764-4	—	350991-4	1-480708-0	—
			Duplex <sup>1</sup>	350764-5	—	350991-5		
		UL94V-0	Pre-tin	350829-1	643428-1	350836-1	350735-1	770022-1
			Duplex <sup>1</sup>	350829-4	—	350836-4		
15	1.300 33.02	UL94V-2	Pre-tin	350765-4	643429-1	350992-4	1-480710-0	—
			Duplex <sup>1</sup>	350765-5	—	—		
		UL94V-0	Pre-tin	350830-1	643430-1	350837-1	350736-1	770023-1
			Duplex <sup>1</sup>	350830-4	—	350837-4		

**Note:** Header Housings on pages 182-185 are available in **colors** listed on page 188. Call Technical Support for exact Part Numbers.

<sup>1</sup>Duplex Finish — Plated with .000030 [.000762] min. gold in mating area, matte tin on solder tail end over .000050 [.00127] min. nickel underplate on entire contact.

<sup>2</sup>Use Standard Tail for .062 [1.57] thick PC Board.

<sup>3</sup>Use Long Tail for .125 [3.18] thick PC Board.

**Note:** All part numbers are RoHS Compliant.

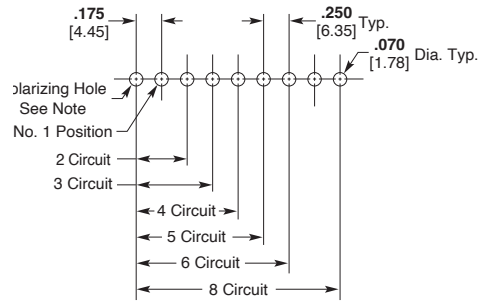
**Universal MATE-N-LOK Connectors (Continued)**

**Recommended  
PC Board  
Hole Layouts  
for Pin and Socket  
Vertical Headers**

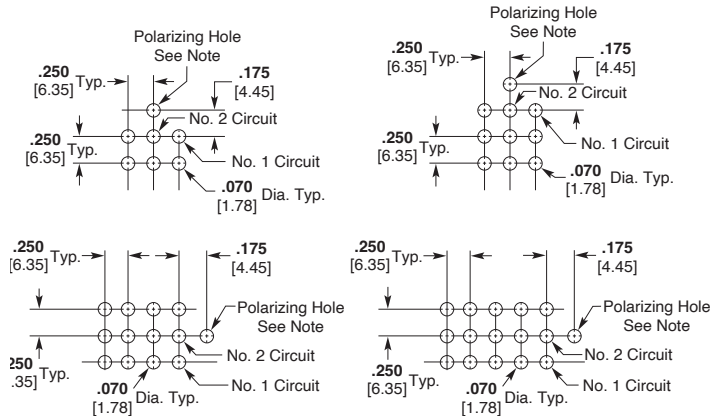
**Related Product Data**

Vertical Headers—pages 182-183

**2, 3, 4, 5, 6 and 8  
Circuit, In-Line**



**6, 9, 12 and 15  
Circuit, Matrix**



**Note:** Polarizing hole .070 [1.78] Dia. required for polarized headers only.

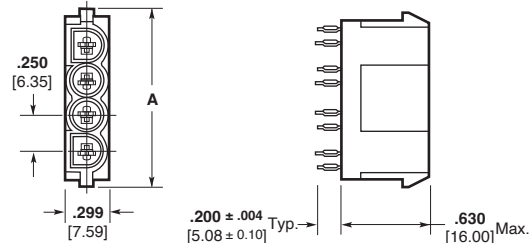
**PC Board Vertical  
Pin Headers with  
ACTION PIN Contacts**

**Material and Finish**

Housing—PBT, black

Flammability Rating—UL94V-0

Contacts—Copper alloy, plated with tin over nickel on entire contact



**Related Product Data**

Performance Characteristics—pages 169-170

Technical Documents—pages 169 and 205-206

**Product Specification**

108-5222 ACTION PIN Universal MATE-N-LOK Header Assembly

Number of Circuits	A Dim.	Part Number	Mates with Plug Housing Part Number (Using Socket Contacts)	
			Universal MATE-N-LOK	Universal MATE-N-LOK II
2	.750 19.05	173924-1	1-480698-0 350777-1	770017-1
3	1.000 25.40	173925-1	1-480700-0 350766-1	770018-1
4	1.250 31.75	173926-1	1-480702-0 350779-1	770019-1

**Note:** Install in PC Board with arbor tool.

**Note:** All part numbers are RoHS Compliant.

**Mating Connectors**

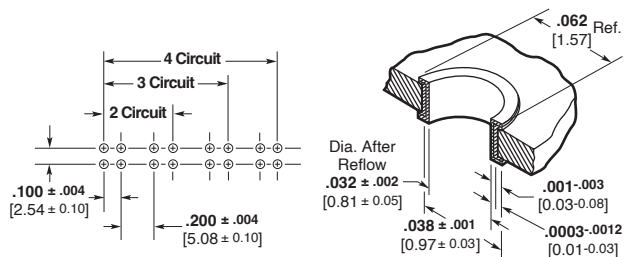
**Universal MATE-N-LOK**

Plug Housings—page 174

**Universal MATE-N-LOK II**

Plug Housings—pages 193-194

**Note:** Header Housings on pages 182-185 are available in colors listed on page 188. Call Technical Support for exact Part Numbers.



Recommended PC Board Hole Layout

PC Board Hole Dimensions

**Universal MATE-N-LOK Connectors** (Continued)

**PC Board Right-Angle Pin and Socket Headers**

.250 [6.35] Centerline spacing

**Material**

**Housing** — Nylon

**Contacts** — Phosphor bronze  
Solder tail width .052 [1.32]

**Related Product Data**

**Product Specification**

108-1053 Universal MATE-N-LOK  
PC Board Headers

**Performance Characteristics** —

pages 169-170

**Technical Documents** — pages 169  
and 205-206

**Mating Connectors**

**Universal MATE-N-LOK**

Plug Housings — page 174

**Universal MATE-N-LOK II**

Plug Housings — pages 193-194

**Note:** Header Housings on pages 182-185 are available in **colors** listed on page 188. Call Technical Support for exact Part Numbers.

**Test Connectors (with spring loaded contacts)**

**Material**

**Housing** — Nylon

**Flammability Rating** — UL94V-0

**Related Product Data**

**Mating Connectors** — Housings and headers having the same number of circuits. The housings can have pin or socket contacts, or a combination of both.

**Mating Housings** — page 174

**Mating Headers** — pages 182-185

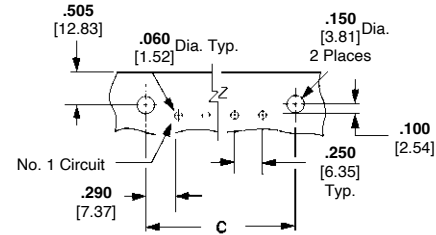
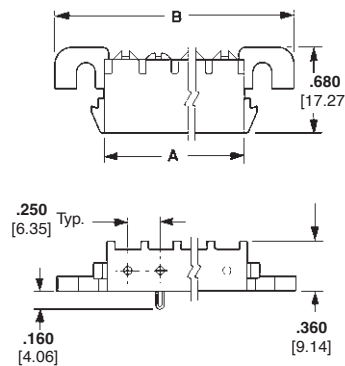
**Other Mating Connectors**

Universal MATE-N-LOK II Housings — pages 193-194

**Notes:**

1. Test probes have 5 amp maximum current rating, 1,000,000 cycles.
2. Test Connector housings are of the same configuration as standard housings. Refer to page 23 for dimensional specifications.

**2, 3, 4, 5, 6 and 8 Circuit, In-Line**



Use 6-32 UNC Pan Head Screw  
3/8 [9.53] long for mounting  
(Not Supplied)

**Recommended PC Board Hole Layout**  
.062 [1.57] Board Thickness

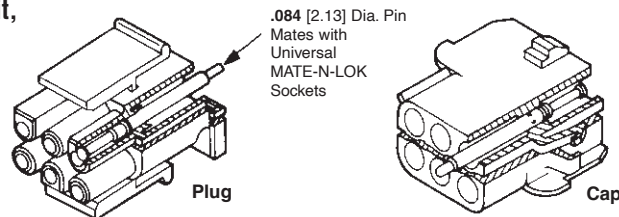
No. of Circuits	Dimensions			Contact Finish	Right-Angle Header Part Numbers						
	A	B	C		UL94V-2			UL94V-0			
					Pin	Socket	Mates with	Pin	Socket	Mates with	
2	.550 13.97	1.245 31.62	.830 21.08	Pre-tin	—	—	—	1-350942-0	643226-1	350777-1	770017-1
				Duplex <sup>1</sup>	—	—	—	3-350942-0	—		
3	.800 20.32	1.495 37.97	1.080 27.43	Pre-tin	—	—	—	1-350943-0	643228-1	350766-1	770018-1
				Duplex <sup>1</sup>	—	—	—	3-350943-0	3-643228-0		
4	1.050 26.67	1.745 44.32	1.330 33.78	Pre-tin	1-350948-0	—	—	1-350944-0	643230-1	350779-1	770019-1
				Duplex <sup>1</sup>	—	—	1-480702-0	3-350944-0	3-643230-0		
5	1.300 33.02	1.995 50.67	1.580 40.13	Pre-tin	1-350949-0	—	—	1-350945-0	643232-1	350809-1	770016-1
				Duplex <sup>1</sup>	—	—	1-480763-0	3-350945-0	3-643232-0		
6	1.550 39.37	2.245 57.02	1.830 46.48	Pre-tin	640587-1	—	—	640583-1	643234-1	640581-1	—
				Duplex <sup>1</sup>	—	643235-1	640585-1	640583-3	3-643234-0		
8	2.050 52.07	2.745 69.72	2.330 59.18	Pre-tin	—	—	—	640584-1	643236-1	640582-1	—
				Duplex <sup>1</sup>	—	643237-1	640586-1	640584-3	3-643236-0		

<sup>1</sup>Duplex Finish — Plated with .000030 [.000762] min. gold in mating area, matte tin on solder tail end over .000050 [.00127] min. nickel underplate on entire contact. <sup>2</sup>Black in color.

**2, 3, 4 and 5 Circuit, In-Line**



**6, 9, 12 and 15 Circuit, Matrix**





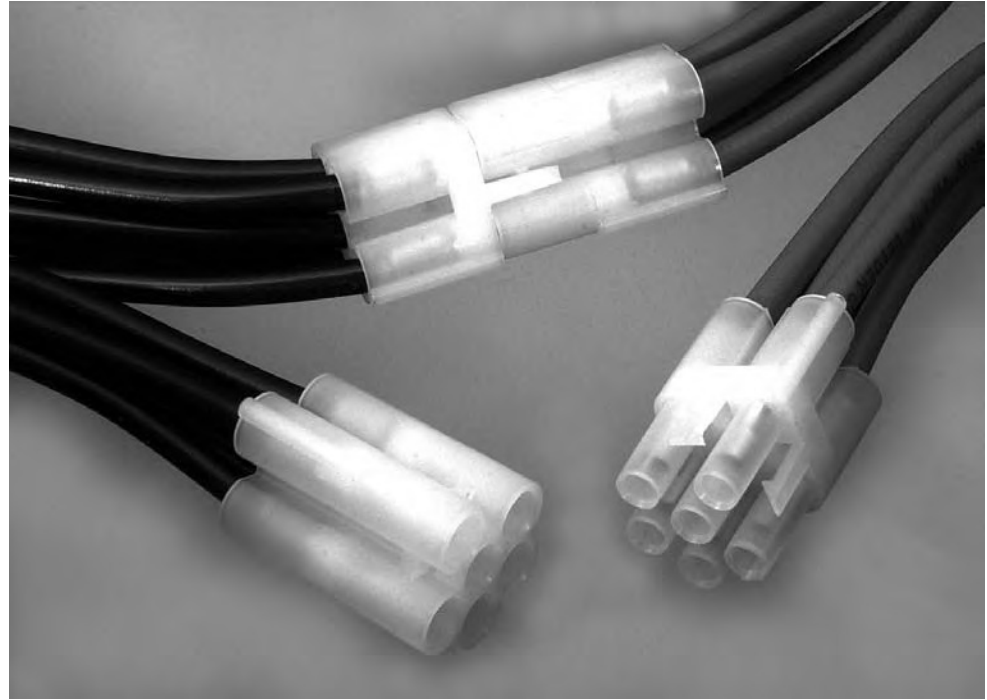
Number of Circuits	Part Numbers	
	Plug	Cap
2	350848-2	350849-2
3	350848-3	350849-3
4	350848-4	350849-4
5	350848-5	350849-5
6	350848-6	350849-6
9	350848-9	350849-9
12	1-350848-2	1-350849-2
15	1-350848-5	1-350849-5

**Note:** All part numbers are RoHS Compliant.

## Universal MATE-N-LOK Circular Connectors

### Product Facts

- Unique product designed to accommodate the specific needs of the lighting industry
- Circular design allows the connector to pass through 7/8 inch knock-out holes in electrical fixtures and boxes
- 6-position accommodates most major electrical industry requirements
- Universal MATE-N-LOK connector centerline spacing maintains UL and CSA approvals
- Uses standard Universal MATE-N-LOK contacts and application tooling
- Positive polarized housing helps prevent incorrect mating
- UL Recognized, File No. E28476 
- CSA Certified, File No. LR7189 



### Applications

- Primary applications are in the Lighting, Vending, and Appliance industries
- Applications where use of a completed harness that will pass through a 7/8 inch knock-out is required
- Provides the capability to quickly disconnect individual fixtures from sensitive environmental areas and perform maintenance at other sites
- Not for interrupting current

### Performance Characteristics

- Voltage**—600 V AC or DC
- Current**—20 amps maximum per UL-1977 (6 position, fully energized)
- Dielectric Withstanding Voltage**—5 KVAC or KVDC
- Insulation Resistance**—1000 M $\Omega$  max. between adjacent circuits
- Durability**—50 cycles mating and unmating
- Contact Retention**—15 lb. minimum per contact

### Technical Documents

- Product Specification**  
108-2069 Universal MATE-N-LOK Circular Connector
- Application Specification**  
114-1010 Universal MATE-N-LOK Connectors

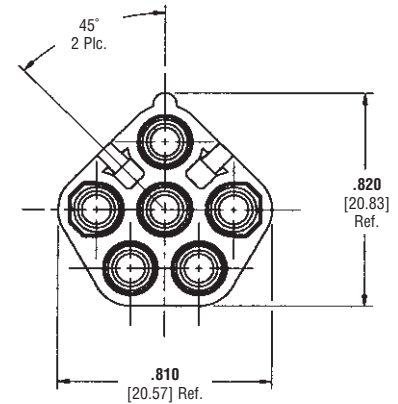
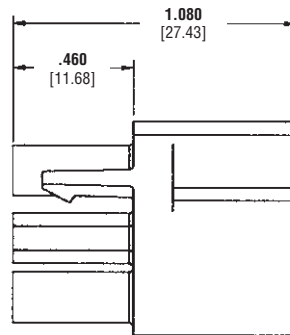
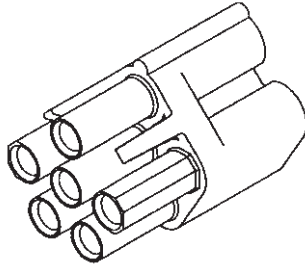
Standard Density

Universal MATE-N-LOK Circular Connectors  
.250 [6.35] Centerline

**Universal MATE-N-LOK Circular Connectors** (Continued)

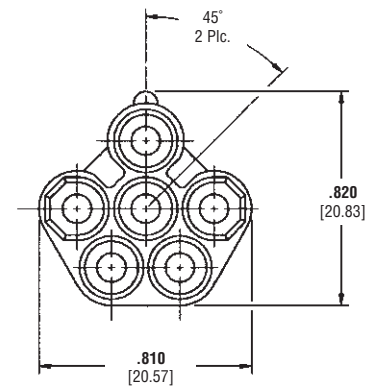
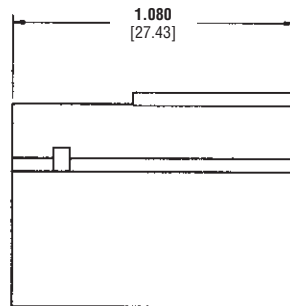
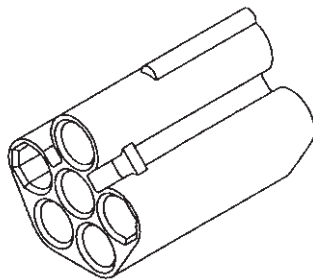
**Plug**

Part No. 794911-1



**Cap**

Part No. 794912-1



**Material and Finish**

**Housings**—Nylon, UL 94V-2 rated

**Related Product Data**

**Contacts**—pages 172-173

**Note:** All part numbers are RoHS Compliant.

## Universal MATE-N-LOK Connectors — Available in Colors

**Note:** See corresponding Universal MATE-N-LOK Plug and Cap Housing Base Part Numbers on page 175.

Header Housings on pages 182-185 are also available in **colors**. Call Technical Support for exact Part Numbers.

Base Part Number	No. of Circuits	Housing	Material
480698	2	Plug	V-2
480699	2	Cap	V-2
480700	3	Plug	V-2
480701	3	Cap	V-2
480702	4	Plug	V-2
480703	4	Cap	V-2
480763*	5	Plug*	V-2
480764*	5	Cap*	V-2
480704	6	Plug	V-2
480705	6	Cap	V-2
480706	9	Plug	V-2
480707	9	Cap	V-2
480708	12	Plug	V-2
480709	12	Cap	V-2
480710	15	Plug	V-2
480711	15	Cap	V-2
350777	2	Plug	V-0
350778	2	Cap	V-0
350766	3	Plug	V-0
350767	3	Cap	V-0
350799	4	Plug	V-0
350780	4	Cap	V-0
350809	5	Plug	V-0
350810	5	Cap	V-0
350715	6	Plug	V-0
350781	6	Cap	V-0
350720	9	Plug	V-0
350782	9	Cap	V-0
350735	12	Plug	V-0
350783	12	Cap	V-0
350736	15	Plug	V-0
350784	15	Cap	V-0

Dash Number	Color
1-xxxxxx-0	Natural
1-xxxxxx-1	Brown
1-xxxxxx-2	Red
1-xxxxxx-3	Orange
1-xxxxxx-4	Yellow
1-xxxxxx-5	Green
1-xxxxxx-6	Blue
1-xxxxxx-8	Gray
1-xxxxxx-9	Black

**\* Special for Base Part Numbers 480763 and 480764**




Dash Number	Color
xxxxxx-1	Natural
1-xxxxxx-1	Brown
1-xxxxxx-2	Red
1-xxxxxx-3	Orange
1-xxxxxx-4	Yellow
1-xxxxxx-5	Green
1-xxxxxx-6	Blue
1-xxxxxx-8	Gray
1-xxxxxx-9	Black

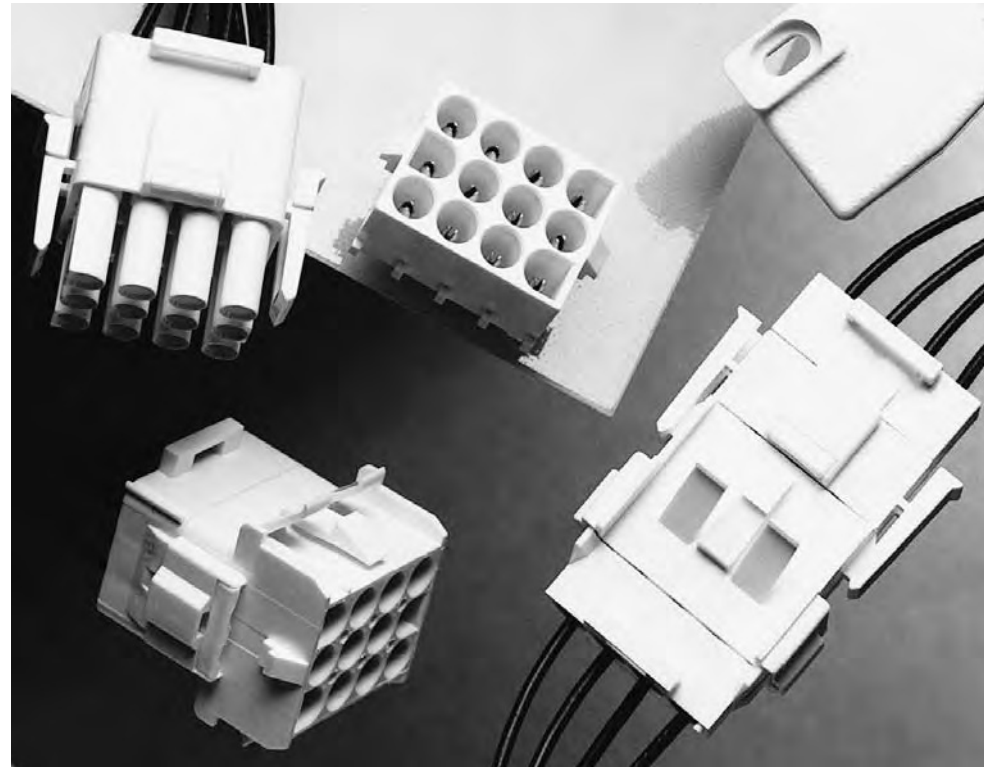
Standard Density

Universal MATE-N-LOK Connectors — Available in Colors  
.250 [6.35] Centerline

## Universal MATE-N-LOK II Connectors

### Product Facts

- High reliability
- For use where repair or replacement would be difficult
- Pins and sockets can be intermixed in the same housing
- Available in 2 through 15 circuit sizes for free-hanging or panel mount wire-to-wire connection
- Mate with standard Universal MATE-N-LOK Housings and PC Board Headers
- Uses standard Universal MATE-N-LOK panel cutouts and strain reliefs
- Polarized housings available in UL94V-0 flammability rated material
- Enclosed contacts for shock protection
- F-Crimp terminals accept 30-10 AWG [.05-5.0 mm<sup>2</sup>] wire sizes
- Contacts available in strip and loose form
- Lanceless contacts for tangle-free handling
- Insulation capability to .200 [5.08] diameter
- Connector design provides for complete contact insertion
- Three-point stabilization precisely controls contact alignment, minimizing stubbing
- Tin or duplex gold plated contacts
- Contacts are on .250 [6.35] centerline spacing
- Not for interrupting current
- Recognized under the Component Program of Underwriters Laboratories Inc., File No. E28476 
- Certified by Canadian Standards Association, File No. LR 7189 
- Passed test by VDE under their Registration Number 3980/Continuous Surveillance 



### Performance Characteristics

The Universal MATE-N-LOK II Connector performance characteristics found on pages 189-190 are based on free-hanging and panel mount connectors, loaded with contacts crimped on stranded wire.

**Dielectric Withstanding Voltage**—5.0 KV AC or DC between adjacent circuits initially

**Insulation Resistance**—1000 megohms minimum between adjacent circuits

**Voltage Rating**—600 V AC or DC

**Connector Mating**—Split Pin—1.5 lb. max. per circuit

**Connector Unmating**—Split Pin—.5 lb. min. per circuit

**Contact Insertion Force**—3.0 lb. max. per contact unassembled

**Contact Retention**—35 lb. min. per contact

**Durability**—50 cycles, mating and unmating

### Technical Documents

#### Product Specification

108-1090 Universal MATE-N-LOK II Connectors

#### Application Specification

114-1043 Universal MATE-N-LOK II Connectors

#### Instruction Sheet

408-3200 Housing, Contacts and Accessories

**Universal MATE-N-LOK II Connectors** (Continued)

**Performance Characteristics** (Continued)

**Maximum Current**—Maximum current rating of Universal MATE-N-LOK II connectors is limited by the maximum operating temperature of the housings which is 120°C including the temperature rise of the contacts which is a maximum of 30°C. There are several variables which have a direct effect on this maximum current-carrying capability for a given connector and must be considered for each application. These variables are:

**Wire Size**—Larger diameter wire will carry more current since it has less internal resistance to current flow and thus generates less heat. Longer wire lengths also enhance current carrying capabilities since the wire conducts heat away from the connector.

**Connector Size**—In general, the more circuits in a connector, the less current can be carried.

**Ambient Temperature**—The higher the ambient temperature, the less current can be carried in any given connector.

Universal MATE-N-LOK II connectors also will withstand the following tests:

**Vibration**—10-55-10 cycles per minute at .06 inch total excursion

**Physical Shock**—18 drops, 50 g sawtooth at 10 milliseconds

**Housing Panel Retention**—75 lb. min.

**Housing Lock Strength**—35 lb. min.

**Thermal Shock**—-55°C to +85°C

**Temperature-Humidity Cycling**—25°C to 65°C at 95 RH

**Corrosion**—48 hr. at 5% salt concentration

**Current Rating Verification for 30°C Maximum Temperature Rise 100% Energized**

**Wire-to-Wire**

**Calculated Current Table**

Number of Circuits	Wire Gauge									
	10	12	14	16	18	20	22	24	26	30
2	19.00	18.00	17.00	14.50	13.00	10.00	8.00	6.50	5.50	3.50
3	17.50	16.50	15.50	13.00	12.00	9.00	7.50	6.00	5.00	3.00
4	16.50	15.50	15.00	12.50	11.00	8.50	7.00	5.50	4.50	3.00
5	16.00	15.00	14.00	12.00	10.50	8.00	6.50	5.50	4.50	3.00
6 Matrix	15.00	14.00	13.00	11.00	9.50	7.50	6.00	5.00	4.00	2.50
8	14.50	14.00	13.00	10.50	9.50	7.50	6.00	5.00	4.00	2.50
9	13.50	12.50	11.50	9.50	8.50	6.50	5.50	4.50	3.50	2.00
10	14.00	13.00	12.50	10.00	9.00	7.00	5.50	4.50	3.50	2.50
12	12.50	12.00	11.00	9.00	8.00	6.00	5.00	4.00	3.00	2.00
15	12.00	11.50	10.00	8.50	7.50	6.00	4.50	4.00	3.00	2.00

Values are based on initial Temperature Rise versus Current Testing and are intended to be a guide in the selection of a connector family. All applications should be tested by the end user. The values listed are per circuit for fully loaded housings being 100% energized. **Note:** All combinations were not tested, and this chart contains interpolated and extrapolated values.

**Minimum Wire Lengths for T-Rise vs. Current Testing**

AWG	Min. Length (in.)	AWG	Min. Length (in.)
30	2.6	18	9.4
28	3.2	16	11.3
26	4.1	14	13.7
24	5.1	12	16.4
20	7.8	10	19.3

**Note:** If wire lengths used are less than those listed above, the current carrying ability of the system will be reduced due to less heat being conducted away from the connector. The customer should fully test all applications.

**Wire-to-Board**

Due to the vast differences in trace geometry and printed circuit board configurations, we are unable to provide a separate current carrying chart for our printed circuit board header products. However, the above Wire-to-Wire charts may be used as a guideline for headers if the trace width and thickness is equal to the listed wire gauge. For vertical headers, only 95% of the Wire-to-Wire value should be used. For right-angle headers, only 75% of the Wire-to-Wire value should be used. The chart values are only a tool for connector selection and will require the customer to fully test their application.

**Termination Resistance/Contact Crimp Tensile Force**

Wire Size		Termination Resistance		Contact Crimp Tensile Force	
AWG	mm <sup>2</sup>	Test Current (Amps)	Resistance Milliohms (Max. Init.)	Force (Min.)	
				lbs.	N
30	.05	—	—	1.5	7
28	.08	—	—	3	13
26	.12	—	—	5	22
24	.2	1.5	3.50	7	31
22	.3	3	3.50	12	53
20	.5	4.5	3.00	17	66
18	.8	6	3.00	30	133
16	1.2	8	2.75	45	200
14	2.0	10	2.75	50	222
12	3.0	—	—	60	267
10	5.0	—	—	70	311

**Note:** This is the total resistance between wire crimps of a mated pin and socket.

**Related Product Data**

**Product Specification**

108-1090 Universal MATE-N-LOK II Connectors

Standard Density

Universal MATE-N-LOK II Connectors  
.250 [6.35] Centerline

**Universal MATE-N-LOK II Connectors** (Continued)

**Universal MATE-N-LOK II Connector Mating Combinations**

Connector Part Number				Mating Connector Part Number									
Number of Circuits	Flammability Rating	Style	Plug Kit Part Number <sup>2</sup>	Cap Kit Part Number <sup>2</sup>	PC Board Headers								
					Plating	Vertical Pin <sup>2</sup>			Vertical Socket <sup>2</sup>			Right-Angle <sup>2</sup>	
						Standard Tail	Standard Tail Polarized	Long Tail	Standard Tail	Standard Tail Polarized	Long Tail	Pin	Socket
2	UL94V-0	In-Line	770017-1	770024-1	Pre-tin	350786-1	641964-1	350787-1	350824-1	643412-1	350831-1	1-350942-0	643226-1
					Duplex <sup>1</sup>	350786-3	641964-3	350787-3	350824-4	643412-3	—	3-350942-0	—
3	UL94V-0	In-Line	770018-1	770025-1	Pre-tin	350789-1	641966-1	350790-1	350825-1	643414-1	350832-1	1-350943-0	643228-1
					Duplex <sup>1</sup>	350789-3	—	350790-3	350825-4	643414-3	350832-4	3-350943-0	3-643228-0
4	UL94V-0	In-Line	770019-1	770026-1	Pre-tin	350792-1	641968-1	350793-1	350826-1	643416-1	350833-1	1-350944-0	643230-1
					Duplex <sup>1</sup>	350792-3	—	350793-3	350826-4	—	350833-4	3-350944-0	3-643230-0
5	UL94V-0	In-Line	770016-1	—	Pre-tin	640900-1	643406-1	—	640901-1	—	—	1-350945-0	643232-1
					Duplex <sup>1</sup>	640900-3	—	—	640901-3	—	—	3-350945-0	3-643232-0
6	UL94V-0	Matrix	770020-1	770027-1	Pre-tin	350711-1	641970-1	350732-1	350827-1	643424-1	350834-1	—	—
					Duplex <sup>1</sup>	350711-4	641970-3	350732-4	350827-4	643424-3	350834-4	—	—
9	UL94V-0	Matrix	770021-1	770028-1	Pre-tin	350712-1	641972-1	350742-1	350828-1	643426-1	350835-1	—	—
					Duplex <sup>1</sup>	350712-4	641972-3	350742-4	350828-4	643426-3	350835-4	—	—
12	UL94V-0	Matrix	770022-1	770029-1	Pre-tin	350713-1	641974-1	350737-1	350829-1	643428-1	350836-1	—	—
					Duplex <sup>1</sup>	350713-4	641974-3	350737-4	350829-4	—	350836-4	—	—
15	UL94V-0	Matrix	770023-1	770030-1	Pre-tin	350714-1	641976-1	350738-1	350830-1	643430-1	350837-1	—	—
					Duplex <sup>1</sup>	350714-4	641976-4	350738-4	350830-4	—	350837-4	—	—

<sup>1</sup>Duplex Finish — Plated with .000030 [.000762] min. gold in mating area, matte tin on solder tail end over .000050 [.00127] min. nickel underplate on entire contact.

<sup>2</sup>Universal MATE-N-LOK II Plug and Cap housings accept pin or socket contacts. Use the appropriate contacts in the Plug housing as required by the mating component.

**Note:** All part numbers are RoHS Compliant.

Standard Density

Universal MATE-N-LOK II Connectors  
.250 [6.35] Centerline

**Universal MATE-N-LOK II Connectors** (Continued)

**Contacts**

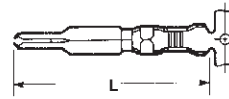
Split pin diameter .086 [2.18]  
Stock thickness .012 [.305]  
These contacts can be used in either Universal MATE-N-LOK II Plug or Cap housings.

**Related Product Data**

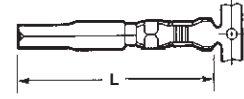
**Product Specification**  
108-1090 Universal MATE-N-LOK II Connectors

**Application Specification**  
114-1043 Universal MATE-N-LOK II Contacts

**Performance Characteristics**—pages 189-190  
**Housings**—pages 193-194  
**Technical Documents**—pages 189 and 205-206  
**Application Tooling**—pages 207-210



Pin



Socket

Wire Size Range AWG [mm <sup>2</sup> ]	Ins. Dia. Range	L Dim.		Material & Finish	Contact Part Numbers				HDM Applicator Part No.	Hand Tool Part No.
		Pin	Socket		Pin		Socket			
					Strip Form	Loose Piece	Strip Form	Loose Piece		
30-26 [.05-.12]	.032-.057 .813-1.45	1.005 25.53	.980 24.90	Phos. Brz. Gold <sup>1</sup>	770011-6	770512-6	770012-6	770416-6	567252-1 <sup>6</sup> 567252-4 <sup>6</sup>	58439-1
24-18 [.2-.8]	.040-.100 1.02-2.54	1.005 25.53	.980 24.90	Brass. Pre-tin	770009-1	770252-1	—	—	567214-1 <sup>6</sup> 567214-2 <sup>6</sup> 567214-4 <sup>6</sup>	91510-1
				Brass. Duplex <sup>2</sup>	1-770009-0	1-770252-0	—	—		
				Phos. Brz. Pre-tin	—	—	770010-3	770253-3		
				Phos. Brz. Duplex <sup>2</sup>	—	—	1-770010-0	1-770253-0		
20-14 [.5-2.0]	.060-.130 1.52-3.30	1.005 25.53	.980 24.90	Brass. Pre-tin	770007-1	770250-1	—	—	567213-1 <sup>6</sup> 567213-2 <sup>6</sup> 567213-4 <sup>6</sup>	91500-1
				Brass. Duplex <sup>2</sup>	1-770007-0	1-770250-0	—	—		
				Phos. Brz. Pre-tin	—	—	770008-3	770251-3		
				Phos. Brz. Duplex <sup>2</sup>	—	—	1-770008-0	1-770251-0		
20-14 [.5-2.0]	.130-.200 3.30-5.08	.995 25.27	.970 24.63	Brass. Pre-tin	770005-1	770248-1	—	—	567212-1 <sup>6</sup> 567212-2 <sup>6</sup> 567212-4 <sup>6</sup>	91508-1 <sup>4</sup> 91506-1 <sup>4</sup>
				Brass. Duplex <sup>2</sup>	1-770005-0	1-770248-0	—	—		
				Phos. Brz. Pre-tin	770005-3	—	770006-3	770249-3		
				Phos. Brz. Duplex <sup>2</sup>	1-770005-1	—	1-770006-0	1-770249-0		
12-10 [3.0-5.0]	.200 max. <sup>3</sup> 5.08	1.005 25.53	.980 24.90	Phos. Brz. Pre-tin	770003-3	770246-3	770004-3	770247-3	567211-1 <sup>6</sup> 567211-2 <sup>6</sup> 567211-4 <sup>6</sup>	69710-1 <sup>5</sup>
				Phos. Brz. Duplex <sup>2</sup>	1-770003-0	1-770246-0	1-770004-0	1-770247-0		

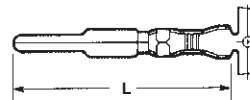
<sup>1</sup>Gold Finish — Plated with .000030 [.000762] min. gold in mating area and inside wire barrel over .000050 [.00127] min. nickel underplate on entire contact.  
<sup>2</sup>Duplex Finish — Plated with .000030 [.000762] min. gold in mating area and .000050 [.00127] min. tin in crimp area over .000050 [.00127] min. nickel underplate on entire contact.  
<sup>3</sup>There is no insulation barrel on this contact. Insulation maximum diameter is limited by the housing. Use of strain relief is recommended with these contacts.  
<sup>4</sup>Use Hand Tool No. 91508-1 for 20–18 AWG and No. 91506-1 for 16–14 AWG.  
<sup>5</sup>Hand Tool No. 69710-1 uses die set No. 58380-1 for 12 AWG and No. 58380-2 for 10 AWG.  
<sup>6</sup>HDM Applicator part number ending in -1 is used on AMPOMATOR CLS Machine with T or G Terminators, -2 is used on AMP-O-LECTRIC Model K Machine, -4 is used on AMP-O-LECTRIC Model G Machine. See pages 207-210 for further information.

**Grounding Pin**

(Mate first, break last, not for interrupting current)

Solid pin diameter .084 [2.13]  
.100 [2.54] longer than standard pin  
Stock thickness .012 [.304]

These contacts can be used in either Universal MATE-N-LOK II Plug or Cap housings only.



Wire Size Range AWG [mm <sup>2</sup> ]	Ins. Dia. Range	L Dim.	Material & Finish	Contact Part Numbers		HDM Applicator Part No.	Hand Tool Part No.
				Strip Form	Loose Piece		
20-14 [.5-2.0]	.060-.130 1.52-3.30	1.105 25.53	Brass. Pre-tin	770193-1	770254-1	567213-1 <sup>3</sup> 567213-2 <sup>3</sup> 567213-4 <sup>3</sup>	91500-1
			Brass. Duplex <sup>1</sup>	1-770193-0	1-770254-0		
20-14 [.5-2.0]	.130-.200 3.30-5.08	1.085 27.56	Brass. Pre-tin	770194-1	770255-1	567212-1 <sup>3</sup> 567212-2 <sup>3</sup> 567212-4 <sup>3</sup>	91508-1 <sup>2</sup> 91506-1 <sup>2</sup>
			Brass. Duplex <sup>1</sup>	1-770194-0	1-770255-0		

<sup>1</sup>Duplex Finish — Plated with .000030 [.000762] min. gold in mating area and .000050 [.00127] min. tin in crimp area over .000050 [.00127] min. nickel underplate on entire contact.  
<sup>2</sup>Use Hand Tool No. 91508-1 for 20–18 AWG and No. 91506-1 for 16–14 AWG.  
<sup>3</sup>HDM Applicator part number ending in -1 is used on AMPOMATOR CLS Machine with T or G Terminators, -2 is used on AMP-O-LECTRIC Model K Machine, -4 is used on AMP-O-LECTRIC Model G Machine. See pages 207-210 for further information.



**Latch Disengaging Tool**  
Part No. 58382-1  
IS 408-9436



**Contact Extraction Tool**  
(For extracting contacts crimped on 24 AWG or smaller wire)  
Part No. 318851-1  
IS 408-4371



**Contact Insertion Tool**  
(For inserting contacts applied to small diameter wire)  
Part No. 91002-1  
IS 408-7347

**Note:** All part numbers are RoHS Compliant.

**Universal MATE-N-LOK II Connectors** (Continued)

**Housing Kits**  
**Free-Hanging or Panel Mount**

.250 [6.35] Centerline spacing

**Material** — Nylon

**Flammability Rating** — UL 94V-0

**Related Product Data**

**Product Specification**

108-1090 Universal MATE-N-LOK II Connectors

**Performance Characteristics** — pages 189-190

**Contacts** — page 192

**Panel Cutout Recommendations** — page 195

**Keying Plug** — page 196

**Strain Reliefs** — page 196

**Kit Components** — page 195

**Technical Documents** — pages 189 and 205-206

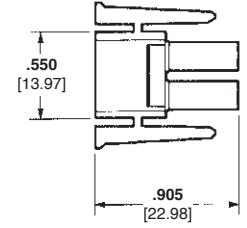
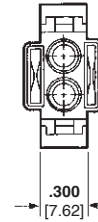
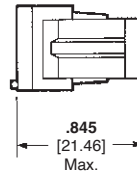
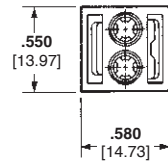
**Other Mating Connectors**

Universal MATE-N-LOK Housings — page 175

Universal MATE-N-LOK Headers — pages 182-183 and 185

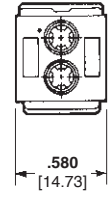
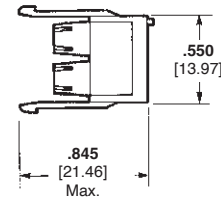
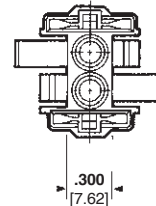
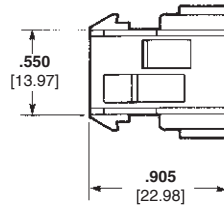
Universal MATE-N-LOK Test Connectors — page 185

**2 Circuit, In-line**



Plug Rear

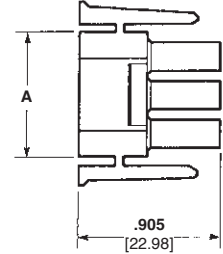
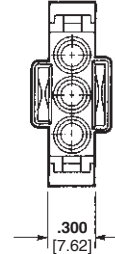
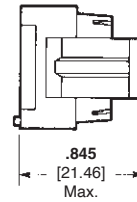
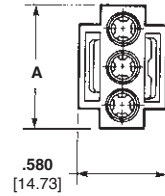
Plug Front



Cap Front

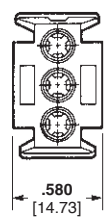
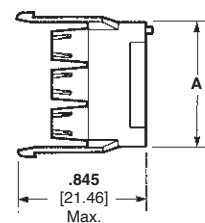
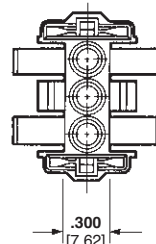
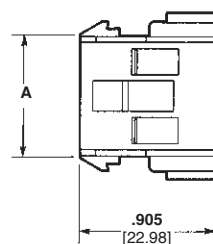
Cap Rear

**3, 4 and 5 Circuit, In-Line**



Plug Rear

Plug Front



Cap Front

Cap Rear

Number of Circuits	A Dim.	Kit Part Numbers (Includes Front and Rear)	
		Plug	Cap
2	—	770017-1	770024-1
3	.800 20.32	770018-1	770025-1
4	1.050 26.67	770019-1	770026-1
5	1.300 33.02	770016-14	—

**Notes:**

1. Kits consist of a front and rear component.
2. Kit components can be purchased separately. Page 195.
3. Packaging: Bulk — 250 each component per poly bag/box.
4. Mates with standard Universal MATE-N-LOK cap housing P/N 350810-1 and 640900-X or 640901-X Vertical headers.

**Note:** All part numbers are RoHS Compliant.

**Universal MATE-N-LOK II Connectors** (Continued)

**Housing Kits**

**Free-Hanging or Panel Mount**

.250 [6.35] Centerline spacing

**Material** — Nylon

**Flammability Rating** — UL 94V-0

**Related Product Data**

**Product Specification**

108-1090 Universal MATE-N-LOK II Connectors

**Performance Characteristics** — pages 189-190

**Contacts** — page 192

**Panel Cutout Recommendations** — page 195

**Keying Plug** — page 196

**Strain Reliefs** — page 196

**Kit Components** — page 195

**Technical Documents** — pages 189 and 205-206

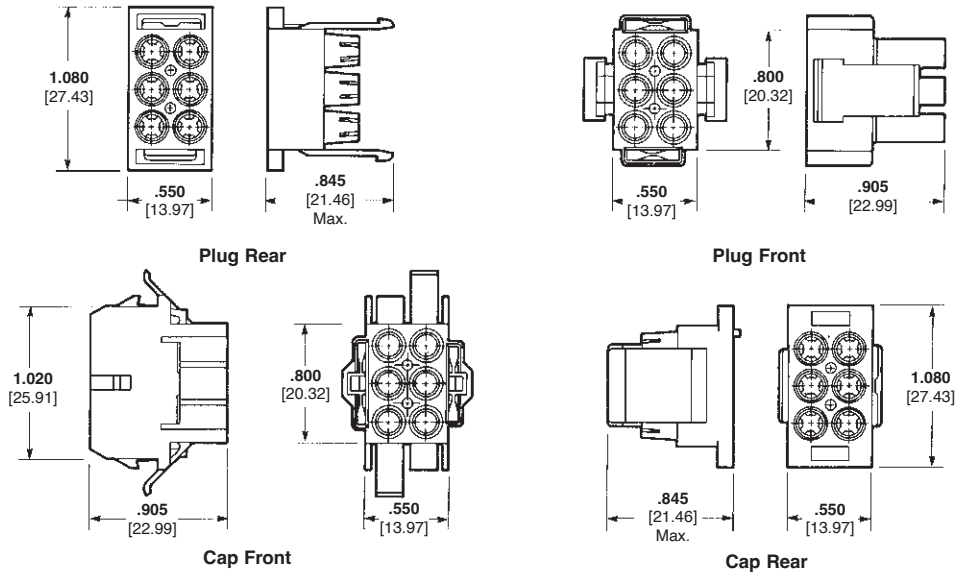
**Other Mating Connectors**

Universal MATE-N-LOK Housings — page 176

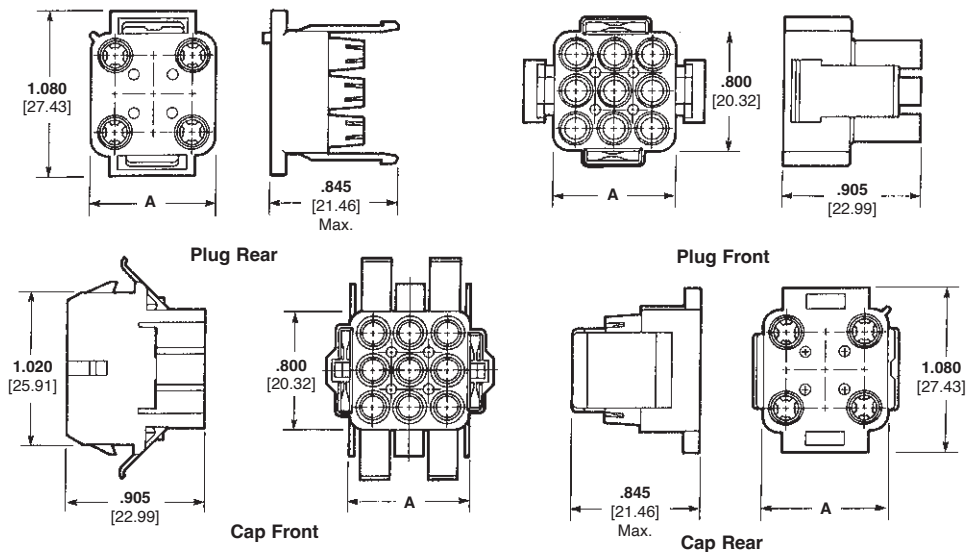
Universal MATE-N-LOK Headers — pages 182-183 and 185

Universal MATE-N-LOK Test Connectors — page 185

**6 Circuit, Matrix**



**9, 12 and 15 Circuit, Matrix**



Number of Circuits	A Dim.	Kit Part Numbers (Includes Front and Rear)	
		Plug	Cap
6	—	770020-1	770027-1
9	.800 20.32	770021-1	770028-1
12	1.050 26.67	770022-1	770029-1
15	1.300 33.02	770023-1	770030-1

**Notes:**

1. Kits consist of a front and rear component.
2. Kit components can be purchased separately. Page 195.
3. Packaging: Bulk — 250 each component per poly bag/box.

**Note:** All part numbers are RoHS Compliant.

Standard Density

Universal MATE-N-LOK II Connectors  
.250 [6.35] Centerline

**Universal MATE-N-LOK II Connectors** (Continued)

**Housing Components**  
**Free-Hanging or Panel Mount**

.250 [6.35] Centerline spacing

**Material** — Nylon  
**Flammability Rating** — UL 94V-0

**Related Product Data**

**Product Specification**  
108-1090 Universal MATE-N-LOK II Connectors

**Performance Characteristics** — pages 189-190

**Contacts** — page 192

**Illustrations and Dimensions** — pages 193-194

**Panel Cutout Recommendations** — page 195

**Keying Plug** — page 196

**Strain Reliefs** — page 196

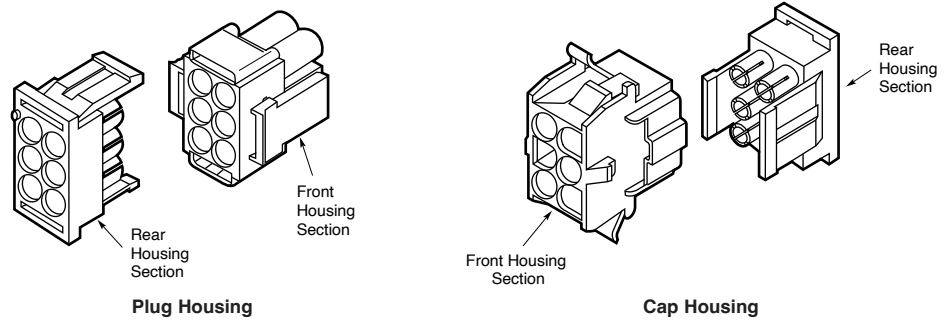
**Technical Documents** — pages 189 and 205-206

**Other Mating Connectors**

Universal MATE-N-LOK Connectors — page 176

Universal MATE-N-LOK Headers — pages 182-183 and 185

Universal MATE-N-LOK Test Connectors — page 185



Number of Circuits	Kit Component Part Numbers					
	Plug			Cap		
	Kit	Front	Rear	Kit	Front	Rear
2	770017-1	770031-1	770032-1	770024-1	770045-1	770046-1
3	770018-1	770033-1	770034-1	770025-1	770047-1	770048-1
4	770019-1	770035-1	770036-1	770026-1	770049-1	770050-1
5	770016-1	770319-1	770320-1	—	—	—
6	770020-1	770037-1	770038-1	770027-1	770051-1	770052-1
9	770021-1	770039-1	770040-1	770028-1	770053-1	770054-1
12	770022-1	770041-1	770042-1	770029-1	770055-1	770056-1
15	770023-1	770043-1	770044-1	770030-1	770057-1	770058-1

**Notes:**

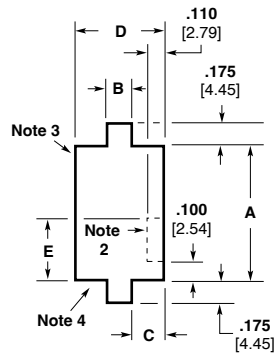
1. Kits consist of a front and rear component.
2. Kit components can be purchased separately.

**Note:** All part numbers are RoHS Compliant.

**Recommended Cap Housing Panel Cutouts**

View is from cap entry side

Refer to Application Specification 114-1043



Number of Circuits	Dimensions				
	A	B	C	D	E
2	.565 14.35	.340 8.63	.095 2.41	.530 13.46	.250 6.35
3	.815 20.70	.340 8.63	.095 2.41	.530 13.46	.250 6.35
4	1.065 27.05	.340 8.63	.095 2.41	.530 13.46	.250 6.35
6	.565 14.35	.480 12.19	.275 6.99	1.030 26.16	.250 6.35
9	.815 20.70	.480 12.19	.275 6.99	1.030 26.16	.250 6.35
12	1.065 27.05	.480 12.19	.275 6.99	1.030 26.16	.350 8.89
15	1.315 33.40	.480 12.19	.275 6.99	1.030 26.16	.350 8.89

**Notes:**

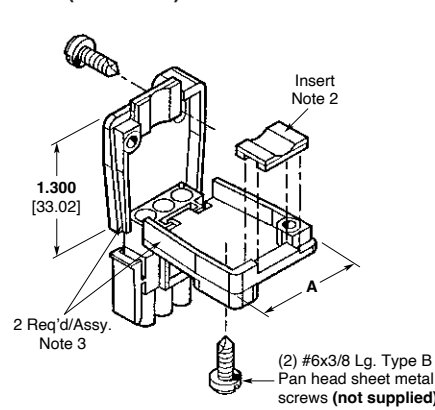
1. Recommended panel thickness — .030-.090 [.762-2.286]. Panel must be punched so that housing enters panel in same direction as the punch.
2. Optional — Do not remove this material when keying cap housing to panel.
3. Circuit #1 location when using panel keying with 6, 9, 12 and 15 circuit housings.
4. Circuit #1 location when using panel keying with 2, 3, and 4 circuit housings.

**Universal MATE-N-LOK II Connectors** (Continued)

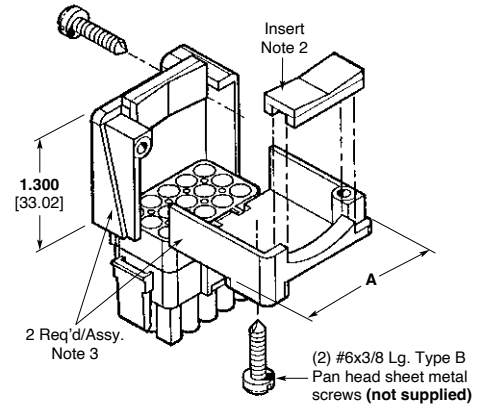
**Plug or Cap Housing Strain Reliefs**  
IS 408-3320

**Material** — Nylon  
**Flammability Rating** — UL 94V-0

**2, 3, 4, 5, 6, 9, 12 and 15 Circuit (Enclosed)**



**In-Line**



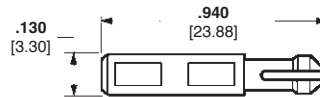
**Matrix**

Style	Number of Circuits	A Dim.	Insert Supplied	Single Wire Dia. Range	Wire Bundle Dia. Range	Strain Relief Part Numbers
In-Line	2	.960 24.38	Yes	.040 – .190 1.02 – 4.83	—	640713-1
			No	—	.200 – .350 5.08 – 8.89	640713-2
	3	1.140 28.96	Yes	.040 – .190 1.02 – 4.83	—	640714-1
			No	—	.200 – .350 5.08 – 8.89	641945-1
	4	1.340 34.04	Yes	.040 – .190 1.02 – 4.83	—	641776-1
			No	—	.200 – .350 5.08 – 8.89	641776-2
Matrix	5	1.530 38.86	Yes	.040 – .190 1.02 – 4.83	—	643030-1
			No	—	.200 – .350 5.08 – 8.89	643030-4
	6	1.030 26.16	Yes	—	.120 – .650 3.05 – 16.51	640715-1
			Yes	—	.120 – .650 3.05 – 16.51	640716-1
	9	1.030 26.16	Yes	—	.120 – .650 3.05 – 16.51	640716-1
			Yes	—	.150 – .750 3.81 – 19.05	640717-1
	12	1.280 32.51	Yes	—	.150 – .750 3.81 – 19.05	640717-1
			Yes	—	.200 – .850 5.08 – 21.59	640718-1
	15	1.530 38.86	Yes	—	.200 – .850 5.08 – 21.59	640718-1

**Notes:**

1. Insert comes attached to strain relief. It can be used to provide additional adjustment for small wire bundles or discarded.
2. Insert to be positioned as shown by dotted lines.
3. Strain relief part number represents one-half of a strain relief. Two of a part number are required for one connector.

**Keying Plug**  
IS 408-3200



**Related Product Data**

**Housings** — pages 193-194  
**Technical Documents** — pages 189 and 205-206

**Part Number**  
UL94V-0 Nylon material — 770377-1

**Note:** All part numbers are RoHS Compliant.

Standard Density

Universal MATE-N-LOK II Connectors  
.250 [6.35] Centerline

## Universal MATE-N-LOK Headers for UMNL II Connectors

### PC Board Vertical Pin Headers

.250 [6.35] Centerline spacing

#### Material

Housing — Nylon

Flammability Rating — UL94V-0

Contacts — Phosphor bronze

Solder tail diameter .062 [1.57]

#### Related Product Data

##### Product Specification

108-1053 Universal MATE-N-LOK  
PC Board Headers

Performance Characteristics —  
pages 189-190

Recommended PC Board Hole  
Layout — page 199

Technical Documents — pages 189  
and 205-206

#### Mating Connectors

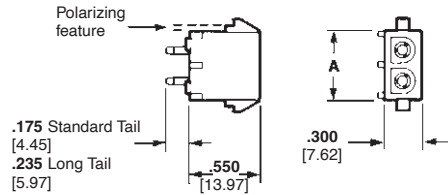
##### Universal MATE-N-LOK II

Plug Housings — pages 193-194

##### Universal MATE-N-LOK

Plug Housings — page 175

### 2, 3, 4 and 5 Circuit, In-Line



Number of Circuits	A Dim.	Pin Finish	Pin Header Part Numbers			Mates with Plug Housing Part Number (Using Socket Contacts)	
			Standard Tail <sup>2</sup>	Standard Tail Polarized <sup>2</sup>	Long Tail <sup>3</sup>	Universal MATE-N-LOK II	Universal MATE-N-LOK
2	.550 13.97	Pre-tin	350786-1	641964-1 1-641964-14	350787-1	770017-1	350777-1
		Duplex <sup>1</sup>	350786-3	641964-3	350787-3		
3	.800 20.32	Pre-tin	350789-1	641966-1 1-641966-14	350790-1	770018-1	350766-1
		Duplex <sup>1</sup>	350789-3	—	350790-3		
4	1.050 26.67	Pre-tin	350792-1	641968-1	350793-1	770019-1	350779-1
		Duplex <sup>1</sup>	350792-3	—	350793-3		
5	1.300 33.02	Pre-tin	640900-1	643406-1	—	770016-1	350809-1
		Duplex <sup>1</sup>	640900-3	—	—		

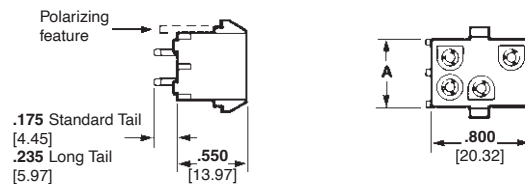
<sup>1</sup>Duplex Finish — Plated with .000030 [.000762] min. gold in mating area, matte tin on solder tail end over .000050 [.00127] min. nickel underplate on entire contact.

<sup>2</sup>Use Standard Tail for .062 [1.57] thick PC Board.

<sup>3</sup>Use Long Tail for .125 [3.18] thick PC Board.

<sup>4</sup>Black in color.

### 6, 9, 12 and 15 Circuit, Matrix



Number of Circuits	A Dim.	Pin Finish	Pin Header Part Numbers			Mates with Plug Housing Part Number (Using Socket Contacts)	
			Standard Tail <sup>2</sup>	Standard Tail Polarized <sup>2</sup>	Long Tail <sup>3</sup>	Universal MATE-N-LOK II	Universal MATE-N-LOK
6	.550 13.97	Pre-tin	350711-1	641970-1	350732-1	770020-1	350715-1
		Duplex <sup>1</sup>	350711-4	641970-3	350732-4		
9	.800 20.32	Pre-tin	350712-1	641972-1 1-641972-14	350742-1	770021-1	350720-1
		Duplex <sup>1</sup>	350712-4	641972-3	350742-4		
12	1.050 26.67	Pre-tin	350713-1	641974-1 1-641974-14	350737-1	770022-1	350735-1
		Duplex <sup>1</sup>	350713-4	641974-3	350737-4		
15	1.300 33.02	Pre-tin	350714-1	641976-1	350738-1	770023-1	350736-1
		Duplex <sup>1</sup>	350714-4	641976-4	350738-4		

<sup>1</sup>Duplex Finish — Plated with .000030 [.000762] min. gold in mating area, matte tin on solder tail end over .000050 [.00127] min. nickel underplate on entire contact.

<sup>2</sup>Use Standard Tail for .062 [1.57] thick PC Board.

<sup>3</sup>Use Long Tail for .125 [3.18] thick PC Board.

<sup>4</sup>Black in color.

**Note:** All part numbers are RoHS Compliant.

**Universal MATE-N-LOK Headers for UMNL II Connectors** (Continued)

**PC Board Vertical Socket Headers**

.250 [6.35] Centerline spacing

**Material**

**Housing** — Nylon

**Flammability Rating** — UL94V-0

**Contacts** — Phosphor bronze

Solder tail diameter .062 [1.57]

**Related Product Data**

**Product Specification**

108-1053 Universal MATE-N-LOK  
PC Board Headers

**Performance Characteristics** —  
pages 189-190

**Recommended PC Board Hole Layout** — page 199

**Technical Documents** — pages 189  
and 205-206

**Mating Connectors**

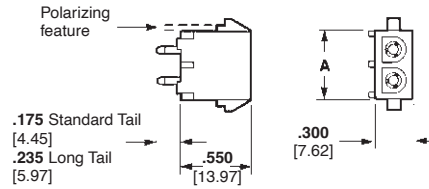
**Universal MATE-N-LOK II**

Plug Housings — pages 193-194

**Universal MATE-N-LOK**

Plug Housings — page 175

**2, 3, 4 and 5  
Circuit, In-Line**



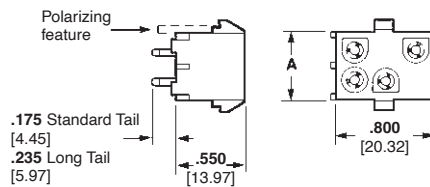
Number of Circuits	A Dim.	Socket Finish	Socket Header Part Numbers			Mates with Plug Housing Part Number (Using Pin Contacts)	
			Standard Tail <sup>2</sup>	Standard Tail Polarized <sup>2</sup>	Long Tail <sup>3</sup>	Universal MATE-N-LOK II	Universal MATE-N-LOK
2	.550 13.97	Pre-tin	350824-1	643412-1	350831-1	770017-1	350777-1
		Duplex <sup>1</sup>	350824-4	643412-3	—		
3	.800 20.32	Pre-tin	350825-1	643414-1	350832-1	770018-1	350766-1
		Duplex <sup>1</sup>	350825-4	643414-3	350832-4		
4	1.050 26.67	Pre-tin	350826-1	643416-1	350833-1	770019-1	350779-1
		Duplex <sup>1</sup>	350826-4	—	350833-4		
5	1.300 33.02	Pre-tin	640901-1	—	—	770016-1	350809-1
		Duplex <sup>1</sup>	640901-3	—	—		

<sup>1</sup>Duplex Finish — Plated with .000030 [.000762] min. gold in mating area, matte tin on solder tail end over .000050 [.00127] min. nickel underplate on entire contact.

<sup>2</sup>Use Standard Tail for .062 [1.57] thick PC Board.

<sup>3</sup>Use Long Tail for .125 [3.18] thick PC Board.

**6, 9, 12 and 15  
Circuit, Matrix**



Number of Circuits	A Dim.	Socket Finish	Socket Header Part Numbers			Mates with Plug Housing Part Number (Using Pin Contacts)	
			Standard Tail <sup>2</sup>	Standard Tail Polarized <sup>2</sup>	Long Tail <sup>3</sup>	Universal MATE-N-LOK II	Universal MATE-N-LOK
6	.550 13.97	Pre-tin	350827-1	643424-1	350834-1	770020-1	350715-1
		Duplex <sup>1</sup>	350827-4	643424-3	350834-4		
9	.800 20.32	Pre-tin	350828-1	643426-1	350835-1	770021-1	350720-1
		Duplex <sup>1</sup>	350828-4	643426-3	350835-4		
12	1.050 26.67	Pre-tin	350829-1	643428-1	350836-1	770022-1	350735-1
		Duplex <sup>1</sup>	350829-4	—	350836-4		
15	1.300 33.02	Pre-tin	350830-1	643430-1	350837-1	770023-1	350736-1
		Duplex <sup>1</sup>	350830-4	—	350837-4		

<sup>1</sup>Duplex Finish — Plated with .000030 [.000762] min. gold in mating area, matte tin on solder tail end over .000050 [.00127] min. nickel underplate on entire contact.

<sup>2</sup>Use Standard Tail for .062 [1.57] thick PC Board.

<sup>3</sup>Use Long Tail for .125 [3.18] thick PC Board.

**Note:** All part numbers are RoHS Compliant.

Standard Density

Universal MATE-N-LOK Headers  
.250 [6.35] Centerline

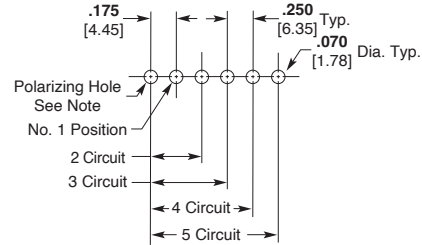
**Universal MATE-N-LOK Headers for UMNL II Connectors** (Continued)

**Recommended  
PC Board  
Hole Layouts  
for Pin and Socket  
Vertical Headers**

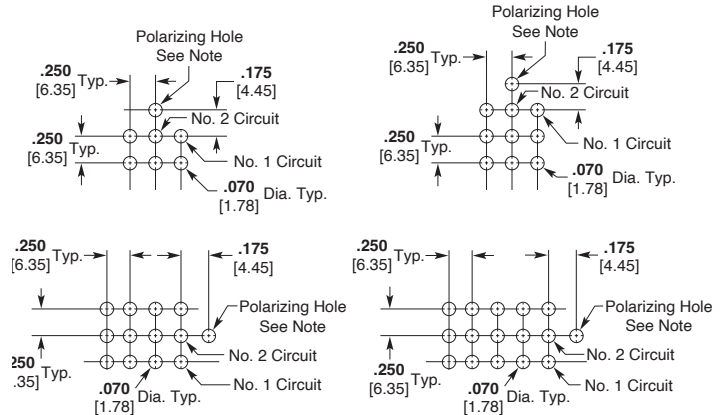
**Related Product Data**

Vertical Headers — pages 197-198

**2, 3, 4 and 5  
Circuit, In-Line**



**6, 9, 12 and 15  
Circuit, Matrix**



**Note:** Polarizing hole .070 [1.78] Dia. required for polarized headers only.

**PC Board Vertical  
Pin Headers with  
ACTION PIN Contacts**

**Material and Finish**

Housing — PBT, black

Flammability Rating — UL94V-0

Contacts — Copper alloy, plated with tin over nickel on entire contact

**Related Product Data**

Performance Characteristics — pages 189-190

Technical Documents — pages 189 and 205-206

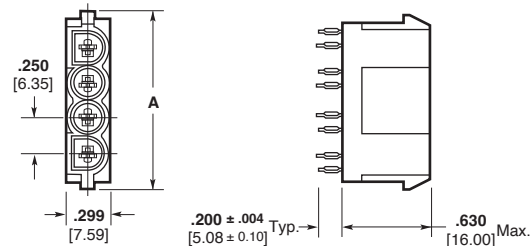
**Product Specification**

108-5222 ACTION PIN Universal  
MATE-N-LOK Header  
Assembly

**Mating Connectors**

Universal MATE-N-LOK II  
Plug Housings — pages 193-194

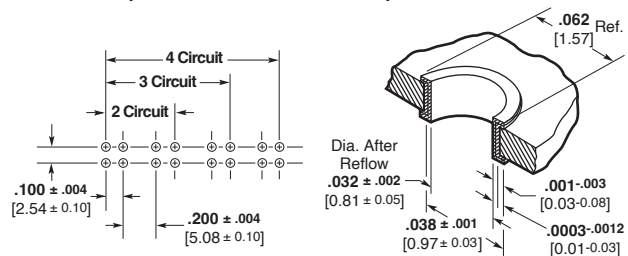
Universal MATE-N-LOK  
Plug Housings — page 175



Number of Circuits	A Dim.	Part Number	Mates with Plug Housing Part Number (Using Socket Contacts)	
			Universal MATE-N-LOK II	Universal MATE-N-LOK
2	.750 19.05	173924-1*	770017-1	350777-1
3	1.000 25.40	173925-1*	770018-1	350766-1
4	1.250 31.75	173926-1*	770019-1	350779-1

\*Install in PC Board with arbor tool.

**Note:** All part numbers are RoHS Compliant.



Recommended PC Board Hole Layout

PC Board Hole Dimensions

**Universal MATE-N-LOK Headers for UMNL II Connectors** (Continued)

**PC Board Right-Angle Pin and Socket Headers**

.250 [6.35] Centerline spacing

**Material**

**Housing** — Nylon

**Flammability Rating** — UL 94V-0

**Contacts** — Phosphor bronze

Solder tail width .052 [1.32]

**Related Product Data**

**Product Specification**

108-1053 Universal MATE-N-LOK  
PC Board Headers

**Performance Characteristics** —  
pages 189-190

**Technical Documents** — pages 189  
and 205-206

**Mating Connectors**

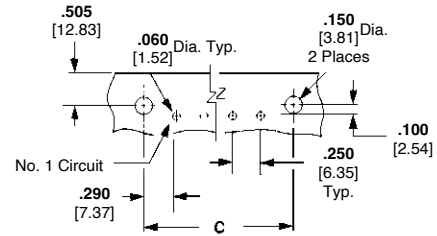
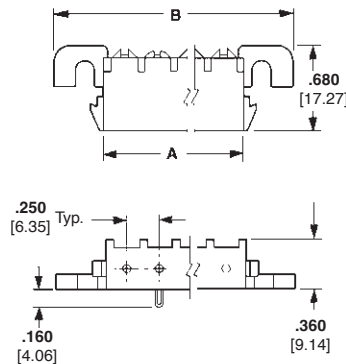
**Universal MATE-N-LOK II**

Plug Housings — pages 193-194

**Universal MATE-N-LOK**

Plug Housings — page 175

**2, 3, 4 and 5 Circuit, In-line**



Use 6-32 UNC Pan Head Screw  
3/8 [9.53] long for mounting  
(Not Supplied)

**Recommended PC Board Hole Layout**  
.062 [1.57] Board Thickness

Number of Circuits	Dimensions			Contact Finish	Part Numbers			
	A	B	C		Right-Angle Header		Mates with Plug Housing	
					Pin	Socket	Universal MATE-N-LOK II	Universal MATE-N-LOK
2	.550 13.97	1.245 31.62	.830 21.08	Pre-tin	1-350942-0	643226-1	770017-1	350777-1
				Duplex <sup>1</sup>	3-350942-0	—		
3	.800 20.32	1.495 37.97	1.080 27.43	Pre-tin	1-350943-0	643228-1	770018-1	350766-1
				Duplex <sup>1</sup>	3-350943-0	3-643228-0		
4	1.050 26.67	1.745 44.32	1.330 33.78	Pre-tin	1-350944-0	643230-1	770019-1	350779-1
				Duplex <sup>1</sup>	3-350944-0	3-643230-0		
5	1.300 33.02	1.995 50.67	1.580 40.13	Pre-tin	1-350945-0	643232-1	770016-1	350809-1
				Duplex <sup>1</sup>	3-350945-0	3-643232-0		

<sup>1</sup>Duplex Finish — Plated with .000030 [0.000762] min. gold in mating area, matte tin on solder tail end over .000050 [0.00127] min. nickel underplate on entire contact.

**Note:** All part numbers are RoHS Compliant.

**Universal MATE-N-LOK Headers for UMNL II Connectors** (Continued)

**High Current Contacts**

The Louvertac bands have the versatility of being designed into contact dimensions used in existing AMP connectors.

Universal MATE-N-LOK II High Current contacts have been designed to fit into an existing Universal MATE-N-LOK II housing. An initial T-Rise test of a fully energized 4 circuit connector with 10 gage wires has shown a 31 amp capability per line with a 30° T-rise.

**Cable-to-Cable**

**Material**

**Body** — Copper Alloy

**Louvertac Band** — Beryllium Copper

**Finish** — Silver

Contact Extraction Tool No. 318851-1

Latch Disengaging Tool No. 58382-1

■ **Recognized under the Component Program of Underwriters Laboratories Inc., File No. E28476**



■ **Certified by Canadian Standards Association, File No. LR7189**



■ **Passed test by VDE under their Registration Number 3980/Continuous Surveillance**



**Design Objective** — 108-1583

**Application Specification** — 114-16021

**Cable-to-Right-Angle Board**

**Material**

**Housing** — UL 94V-0 Nylon

**Contact Body** — Copper Alloy

**Louvertac Band** — Beryllium Copper

**Finish** — Silver

■ **Recognized under the Component Program of Underwriters Laboratories Inc., File No. E28476**



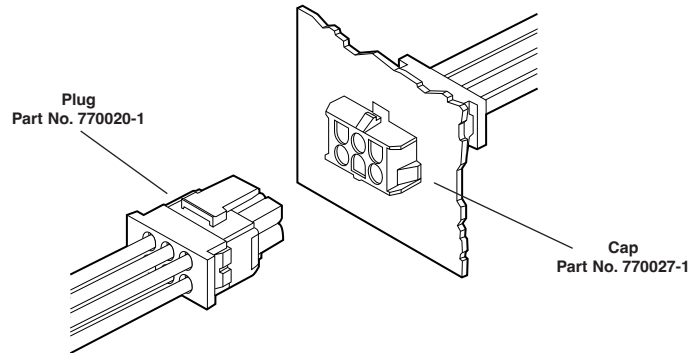
■ **Certified by Canadian Standards Association, File No. LR7189**



■ **Passed test by VDE under their Registration Number 3980/Continuous Surveillance**



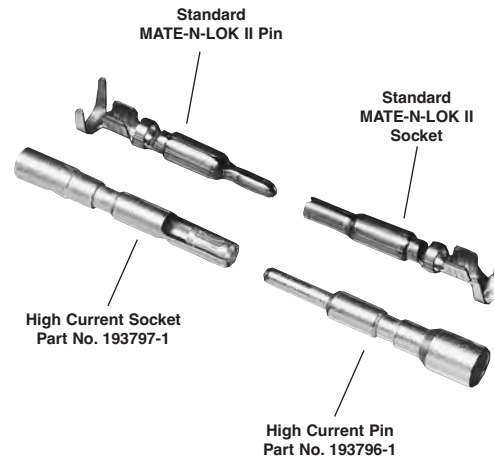
**Design Objective** — 108-1594



**Contacts**

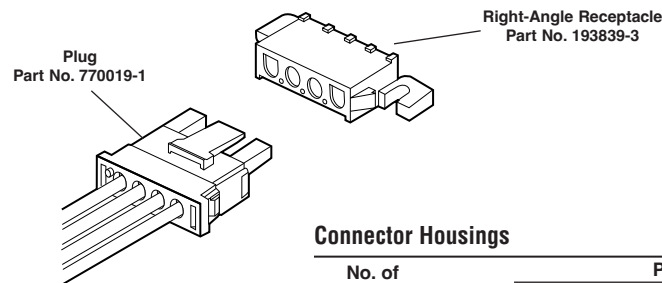
Wire Size AWG	Contact Part Numbers		Crimp Tools
	Pin	Socket	
10	193796-1	193797-1	Daniels Hand Tool #M310 or AMP P/N 356114-1 Positioner #TP1013 or AMP P/N 356337-1
12-14	193841-1	193842-1	

**Note:** High Current contacts are **not** intermateable with any other Universal MATE-N-LOK contact.



**Connector Housings**

No. of Circuits	Kit Part Numbers	
	Plug	Cap
2	770017-1	770024-1
3	770018-1	770025-1
4	770019-1	770026-1
5	770016-1	—
6	770020-1	770027-1
9	770021-1	770028-1
12	770022-1	770029-1
15	770023-1	770030-1



**Connector Housings**

No. of Circuits	Part Numbers	
	Socket Header	Mates with Plug Housing
2	193839-1	770017-1
3	193839-2	770018-1
4	193839-3	770019-1
5	193839-4	770016-1

**Notes:** 1. High Current contacts with Louvertac bands are **not** intermateable with any other contact.  
2. Additional information on connectors is available in AMP High Current Products Catalog 65141.  
3. Additional information on contacts is available in AMP Precision Pin and Socket Contacts Catalog 65910.

**Note:** All part numbers are RoHS Compliant.

Universal MATE-N-LOK Headers for UMNL II Connectors (Continued)

**High Current Vertical Pin Headers**

High Current Universal MATE-N-LOK II Vertical Pin Headers are designed to accept Universal MATE-N-LOK II Plugs with High Current Socket contacts. All housings are polarized in order to allow proper circuit board placement. Eight versions are available from 2 circuit to 15 circuits.

**Material**

**Housing** — UL 94V-0 Nylon

**Contacts** — Copper Alloy

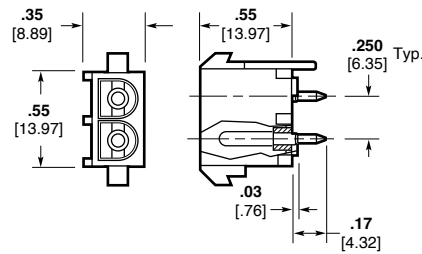
**Finish** — Silver

■ Recognized under the Component Program of Underwriters Laboratories Inc., File No. E28476

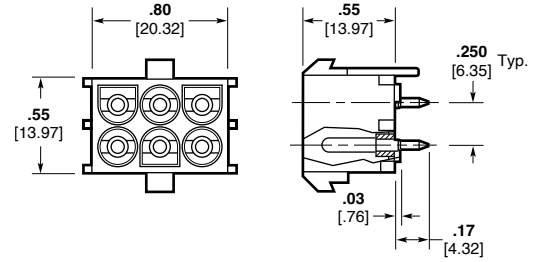
■ Certified by Canadian Standards Association, File No. LR7189

■ Passed test by VDE under their Registration Number 3980/Continuous Surveillance

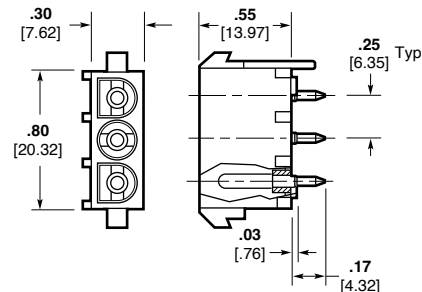
Design Objective — 108-1594



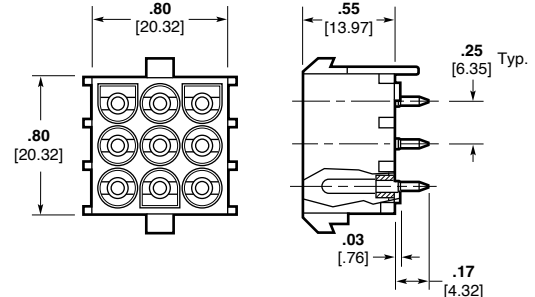
2 Circuit  
Part No. 194009-1



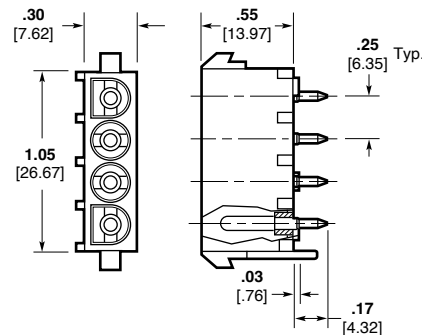
6 Circuit  
Part No. 194002-1



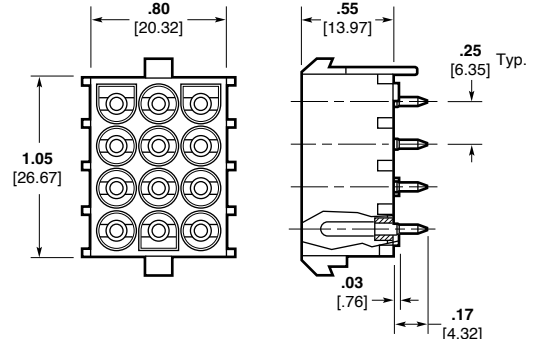
3 Circuit  
Part No. 194017-1



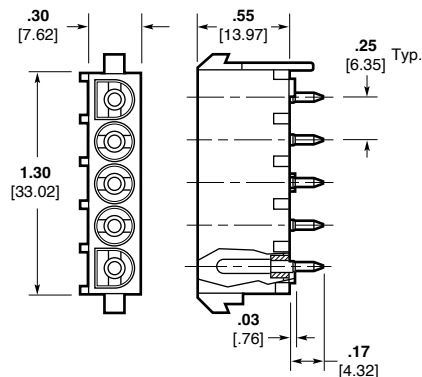
9 Circuit  
Part No. 194012-1



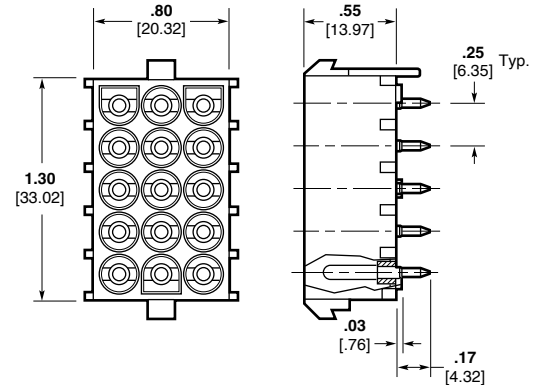
4 Circuit  
Part No. 194010-1



12 Circuit  
Part No. 194014-1



5 Circuit  
Part No. 194018-1



15 Circuit  
Part No. 194013-1

**Notes:** 1. High Current contacts with Louvertac bands are **not** intermateable with any other contact.  
2. Additional information on connectors is available in AMP High Current Products Catalog 65141.

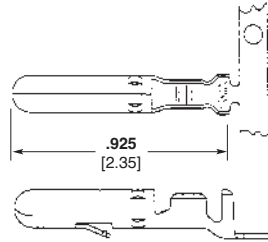
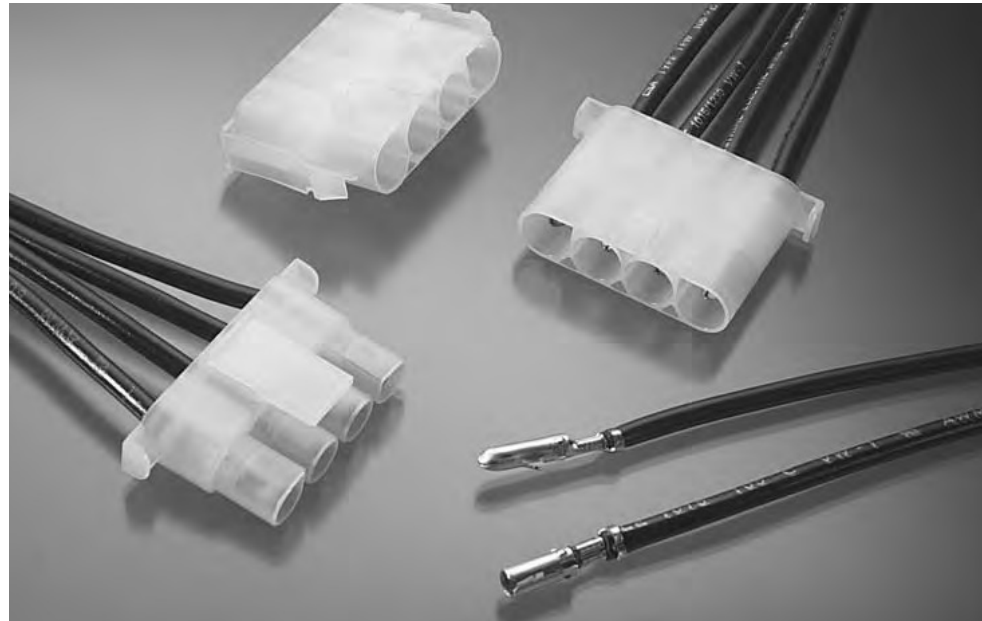
Standard Density

Universal MATE-N-LOK Headers  
.250 [6.35] Centerline

## .156 MATE-N-LOK Connectors

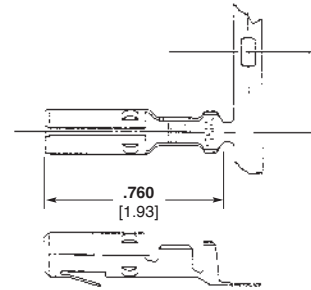
### Product Facts

- Positive polarized nylon housings
- Panel mount or free-hanging
- Numbered cavities for easy circuit identification
- Removable, crimp snap-in contacts
- Contacts accept 20-10 AWG wire sizes
- Pin contacts are used in cap housings, socket contacts are used in plug housings
- Not for interrupting current
- Recognized under the Component Program of Underwriters Laboratories Inc., File No. E28476
- Certified by Canadian Standards Association File No. LR7189



Pin

Used in Caps



Socket

Used in Plugs

### Contacts

Pin diameter .156 [3.96]

### Material and Finish

#### Contacts—

Brass, Pre-tin plated  
Stock thickness .018 [.457]

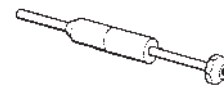
Wire Size Range AWG [mm <sup>2</sup> ]	Ins. Dia. Range	Contact Part Number				HDM <sup>1</sup> Applicator Part No.	Hand Tool Part No.
		Pin		Socket			
		Strip Form	Loose Piece	Strip Form	Loose Piece		
20-14 [.5-2.0]	.125 max.	61086-1	61251-1	61085-1	61250-1	466462-1 466462-2 466462-3	58631-1
12-10 [3.0-6.0]	.185 max.	61234-1	61253-1	61233-1	61252-1	687765-2 687765-3	58632-1

<sup>1</sup>To be used with appropriate application machine. See pages 201-204 for further information.

**Note:** All part numbers are RoHS Compliant.



Insertion Tool  
Part No. 91002-1  
(IS 408-7347)



Extraction Tool  
Part No. 691458-1 (Pins)  
Part No. 691458-2 (Sockets)  
(IS 408-4322)

**.156 MATE-N-LOK Connectors** (Continued)

**Housings**  
Free-Hanging or Panel Mount

**Related Product Data**

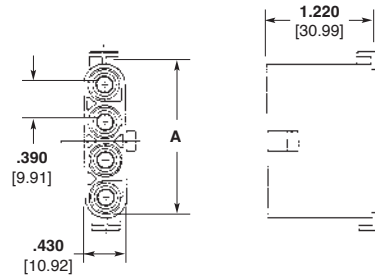
**Contacts**—page 203

**Product Specification**  
108-8002

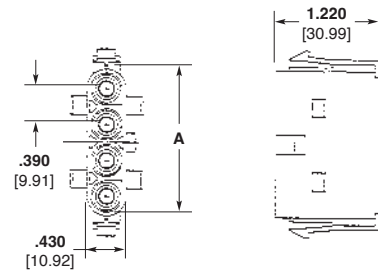
**Application Specification**  
114-1109

**Material**

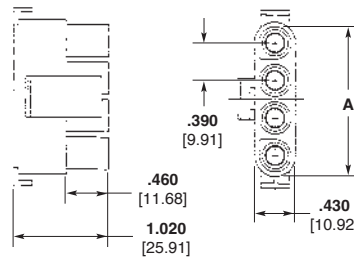
**Housings**—  
Nylon, Natural Color  
Flammability Rating—UL94V-2



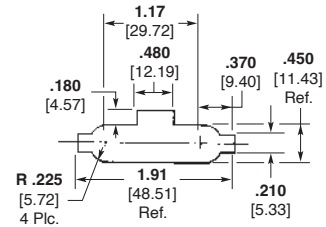
**Pin Housing (Cap)**  
Free-Hanging  
Part Number 794117-1



**Pin Housing (Cap)**  
Panel Mount  
Part Number 794118-1



**Socket Housing (Plug)**  
Part Number 794116-1



**Panel Mount Cutout**

**Note:** Panel must be punched in the same direction as the housing will be inserted.

Number of Circuits	A Dim.	Plug	Cap	
			Free-Hanging	Panel Mount
3	.048 1.210	794412-1	794413-1	—
4	.063 1.590	794116-1	794117-1	794118-1

**Note:** All part numbers are RoHS Compliant.

## Technical Documents

### Related Product Data

#### Connectors

<b>2.5 mm Signal Double Lock (SDL)</b> — pages 9-16
<b>Micro MATE-N-LOK 3 mm</b> — pages 17-47
<b>Grace Inertia Connectors (GIC) 3.5</b> —pages 49-52
<b>.062 Commercial Pin and Socket</b> —pages 53-57
<b>Power Double Lock (PDL)</b> — pages 59-81
<b>Mini Universal MATE-N-LOK</b> — pages 83-94
<b>Mini Universal MATE-N-LOK 2</b> — pages 99-107
<b>(MR) Miniature Rectangular</b> — pages 109-118
<b>VAL-U-LOK Connector System</b> — pages 119-124
<b>AMP-DUAC</b> —pages 125-133
<b>5.0 mm Power Key Connectors (PKC)</b> —pages 135-141
<b>.093 Commercial Pin and Socket</b> —pages 143-149
<b>Commercial MATE-N-LOK</b> — pages 151-162
<b>.140 MATE-N-LOK</b> —pages 165-167
<b>Universal MATE-N-LOK</b> — pages 169-188
<b>Universal MATE-N-LOK II</b> — pages 189-195
<b>.156 MATE-N-LOK</b> —pages 203-204

Various technical documents are available for your use:

**Product Specifications** describe technical performance characteristics and verification tests.

They are intended for the Design, Component and Quality Engineer.

108-1000	Commercial MATE-N-LOK Connectors
108-1022	(MR) Miniature Rectangular Connectors
108-1031	Universal MATE-N-LOK Connectors
108-1031	Splash Proof Seal, Universal MATE-N-LOK Connectors
108-1032	.140 Diameter MATE-N-LOK Pin and Socket Connectors
108-1037	.062 Commercial Pin and Socket Connectors
108-1037-1	.062 Commercial Pin and Socket Contacts
108-1038	.093 Commercial Pin and Socket Connector
108-1053	Universal MATE-N-LOK Printed Circuit Board Headers
108-1077	Commercial MATE-N-LOK Printed Circuit Board Headers
108-1078	(MR) Miniature Rectangular Printed Circuit Board Headers
108-1090	Universal MATE-N-LOK II Connectors
108-1542	Mini-Universal MATE-N-LOK Connectors
108-1542-2	Splash Proof Seals for Mini-Universal MATE-N-LOK Connectors
108-1543	Mini-Universal MATE-N-LOK Headers
108-1594	Universal MATE-N-LOK Headers with High Current Contacts
108-1693	Mini-Universal MATE-N-LOK II Connectors
108-1694	Mini-Universal MATE-N-LOK II Headers
108-1699	AMP-DUAC Headers
108-1836	Micro MATE-N-LOK 3 mm Connectors
108-2069	Universal MATE-N-LOK Circular Connector
108-5138	Mini-Universal MATE-N-LOK Connectors (UL 94V-0)
108-5151	Mini-Universal MATE-N-LOK Connectors (UL 94V-2)
108-5155	Commercial MATE-N-LOK Pin Header Assembly
108-5222	Universal MATE-N-LOK Headers with ACTION PIN Contacts
108-5410	Power Double Lock (PDL) Connectors
108-5439	Power Double Lock (PDL) Connectors (SMT)
108-5459	2.5 mm Signal Double Lock (SDL) Connectors
108-5699	5.0 mm Power Key Connectors (PKC)
108-5810	Grace Inertia Connectors (GIC) 3.5
108-8002	.156 Diameter MATE-N-LOK Connectors
108-19099	AMP-DUAC Receptacles
108-49000	Commercial MATE-N-LOK IDC Insulation Displacement Connectors

**Application Specifications** describe requirements for using the product in its intended application and/or crimping information. They are intended for the Packaging and Design Engineer and the Machine Setup Person.

114-1007	.140 Diameter MATE-N-LOK Contacts
114-1010	Universal MATE-N-LOK Connectors
114-1012	Commercial MATE-N-LOK Contacts
114-1013	.062 Commercial Pin and Socket Connectors
114-1014	(MR) Miniature Rectangular Contacts
114-1043	Universal MATE-N-LOK II Connectors ( housings, contacts and strain reliefs)
114-1109	.156 Diameter MATE-N-LOK Connectors
114-1111	Mini-Universal MATE-N-LOK 2 Connectors
114-5175	Power Double Lock (PDL) Connectors
114-5203	2.5 mm Signal Double Lock (SDL) Connectors
114-5292	5.0 mm Power Key Connectors (PKC)
114-5306	Grace Inertia Connectors (GIC) 3.5
114-6067	AMP-DUAC Crimping Contacts
114-13000	Micro MATE-N-LOK 3 mm Connectors

## Technical Documents (Continued)

### Application Specifications (Continued)

114-13089	Mini-Universal MATE-N-LOK Sealed Connectors
114-16017	Mini-Universal MATE-N-LOK Connectors
114-19048	AMP-DUAC Receptacles (Use of)
114-49000	.093 Commercial Pin and Socket Connectors
114-49001	Commercial MATE-N-LOK IDC Insulation Displacement Connectors

**Instruction Sheets** provide instructions for assembling or applying the product. They are intended for the Manufacturing Assembler or Operator.

408-3186	Terminating Head (PN 231894-1) (Commercial MATE-N-LOK IDC Connector)
408-3200	Universal MATE-N-LOK II Connectors (Housings, Contacts and Accessories)
408-3231	(MR) Miniature Rectangular Connectors (Pin Housing, Socket Housing, Contacts, and Accessories)
408-3234	Mini-Universal MATE-N-LOK Connectors
408-3320	Universal MATE-N-LOK Strain Relief Assembly and Keying Plug
408-3392	Universal MATE-N-LOK Splash Proof Seals
408-3393	Mini-Universal MATE-N-LOK 2 Connectors
408-4118	Contact Extraction Tool (PN 189727-1)
408-4322	Contact Extraction Tools [PN 691458-1 (Pins) and 691458-2 (Sockets)]
408-4370	Contact Extraction Tool (PN 318831-1)
408-4371	Contact Extraction Tool (PN 318851-1)
408-4375	Contact Extraction Tool (PN 318837-1)
408-4378	Extraction Tool (PN 318845-1)
408-6790	Hand Tool Handle (PN 58074-1)
408-7158	Contact Extraction Tools [PN 1-305183-1 (Pins) and 1-305183-2 (Sockets)]
408-7166	Commercial MATE-N-LOK Panel Mount Connector
408-7200	Commercial MATE-N-LOK Free-Hanging Connector
408-7201	Commercial MATE-N-LOK Detent Engagement Connectors, 2 and 3 circuit
408-7209	Commercial MATE-N-LOK Commoning Tabs
408-7211	Pin and Socket Extraction Tool (PN 465644-1)
408-7215	Commercial MATE-N-LOK Single Circuit Connector
408-7300	MATE-N-LOK Contact and Housing Selection Charts
408-7347	Contact Insertion Tool (PN 91002-1)
408-7582	Commercial MATE-N-LOK Keying Plug
408-7714	Universal MATE-N-LOK Connectors
408-7763	Power Unit (PN 91112-2)
408-7984	Contact Insertion Tool (PN 455830-1)
408-9330	Head (PN 231920-2) (Used with Arbor Tool PN 91085-2)
408-9436	Latch Disengaging Tool (PN 58382-1)
408-9570	Contact Extraction Tool (PN 455822-2)
408-10003	Contact Retention Test Tool (PN 1586700-1)
408-10017	Universal MATE-N-LOK Sealed Bulkhead Connectors
411-5105	Mini-Universal MATE-N-LOK Connectors
411-5638	Power Double Lock (PDL) Connectors

## Application Tooling

### Semiautomatic Machines

#### AMP-O-LECTRIC Model "G" Terminating Machines, 354500-1, -9, -11



Semiautomatic bench machines for crimping reeled terminals and contacts, featuring a quiet and reliable direct motor drive, microprocessor controls for ease of setup and operation, and guarding and lighting designed for operator convenience and safety. All models are equipped with either manual or automatic precision adjustment of crimp height. Machine-mounted sensors are available for crimp quality monitoring using conventional miniature-style applicators.

#### Specifications

**Width**—18.7-25.3 [475-643] depending on applicator type

**Depth**—21.5-28.1 [546-713] depending on applicator type

**Height**—20 [508]

**Weight**—240 lb [110 kg]

**Electrical**—120 or 220 VAC, 50 or 60 Hz

**Air**—90-110 psi [6.21-7.59 bar], 6 scfm [0.00282 m<sup>3</sup>/s] when required with air-feed applicators

**Wire Range**—26-10 AWG [0.12-6 mm<sup>2</sup>] solid or stranded, depending on product applied

For more information, request Catalog **65828**, Catalog **82275 (Crimp Quality Monitor (CQM))**.

#### AMP-O-MATIC Stripper-Crimper Machine, 854040-3, -4



Semiautomatic bench crimping machines that also strip the wire, and are therefore used for terminating jacketed cable. Feature manual precision adjustment of crimp height, keyed strip blades for faster, more accurate setups, and an efficient scrap removal system. All adjustments can be made from the front of the machines without special tools. Available with crimp quality monitoring.

#### Specifications

**Width**—14 [355]

**Depth**—18 [457]

**Height**—33 [838] without reel

**Weight**—150 lb [68 kg]

**Electrical**—120 VAC, 50 or 60 Hz, .5 A

**Air**—80-100 psi [5.52-6.90 bar], 3.5 scfm [0.00165 m<sup>3</sup>/s]

**Wire Range**—32-14 AWG [0.03-2 mm<sup>2</sup>]

For more information, request Catalog **65004**.

#### AMP 3K/40 and AMP 5K/40 Terminators



As value oriented terminators, the AMP 3K/40 and AMP 5K/40 are designed for customers that require the increased output and quality of a semi-automatic machine at a competitive price. By incorporating the most commonly requested features as standard and offering a long list of optional equipment, these terminators offer flexibility to meet the specific needs of various applications at the lowest possible cost.

#### Optional Stripping Module for the AMP 3K/40, AMP 5K/40 and AMP-O-LECTRIC Model G Terminators



The combination of the Stripping Module with the AMP-O-LECTRIC Model G Terminator or the AMP 3K/40, 5K/40 provides an economical, proficient method of stripping wire and crimping terminals on the same machine. Wires are stripped moments before crimping, meaning there is virtually no chance of damaging wire conductors during handling or storage. Once the wire is fed into the start sensor the Stripping Module does the rest, improving placement accuracy.

For more information, request Catalog **1309085**.

#### Crimp Quality Monitor



This system measures the crimp height of each termination as it is made. It also evaluates the quality of each crimp. If a crimp is questionable, the monitor alerts the operator with both visual and audible alarms. It also features ports for printing and networking. For use with AMP-O-LECTRIC Model "G" and AMP-O-MATIC Stripper-

Crimper Machines, the monitor is mounted to the machine. For use with AMPOMATOR CLS IV+ Machines, it is integrated into the machine's operating system, with the displays appearing on the machine's touch screen.

For more information, request Catalog **82275**.

**Note:** This listing is for reference purposes only. To obtain part numbers for specific applications call Technical Support.

**Application Tooling** (Continued)

Application Tooling

**Automatic Machines**

**AMPOMATOR System III  
Leadmaker**



The AMPOMATOR System III Leadmaker is designed for the demands of low-volume/high-mix manufacturing and precision quality. This leadmaker combines the best wire processing capabilities with

new technologies in terminal feeding and machine set-up found in the System III Applicator to offer significant advantages for higher throughput and efficiencies. Request Catalog 1654956-5.

**AMPOMATOR CLS IV+  
Lead-Making Machines,  
356500-1, -2**



**System III Applicator**



The System III Applicator introduces several new technologies into the applicator including a precision servo-electric motorized feeding system, a built-in data module for storing terminal crimp and

set-up information, a precision fit round ram, and a newly designed terminal depressor. It still utilizes the proven quality of the HD-M crimper and anvil tooling.

Fully-automatic machines that measure, cut, strip and terminate single leads. Microprocessor-controlled, and programmed and operated using an easy-to-follow, menu-driven touchscreen. Features include direct-drive terminating units with precision crimp height adjustment, fully programmable setups, wire runout and splice detection, and motorized pre-feed with wire straightener. Crimp quality monitoring is also available.

**Specifications**

- Width**—159 [4 039]
  - Depth**—68 [1 730]
  - Height**—90 [2 285] min., with 24 [610] dia. reel
  - Weight**—2 000 lb [907 kg]
  - Electrical**—220 VAC, 50 or 60 Hz, 1  $\varnothing$ , 20 A with neutral and ground
  - Air**—90 psi [6.21 bar], 15 scfm [0.00708 m<sup>3</sup>/s] sustained
  - Wire Range**—26-10 AWG [0.12-6 mm<sup>2</sup>] stranded, 26-16 AWG [0.12-1.4 mm<sup>2</sup>] solid
  - Lead Lengths**—3-90 [76.2-2 286], 90-1 000 [2 286-25 400] with long lead conveyors
- For more information, request Catalog 124324.

**EDGE Electronic Applicator  
Counter**



The new, versatile EDGE applicator counter tracks wearable tool usage for the most effective maintenance planning. The completely electronic counter, with clear LCD display, indicates cycles since installation. By performing maintenance at measured intervals with pre-set

limits, operators avoid break-downs and rejects caused by tool wear or mis-adjustment. For more information, request Catalog 1773385.

**Application Tooling** (Continued)

**Applicator Styles**

**End- and Side-Feed Heavy-Duty Miniature (HDM) Applicators**



- Handle a wide variety of products
- Used with both semi- and fully-automatic machines
- Quickly interchangeable to run different products
- Easily repaired
- Simple dial-in settings to handle similar products and various wire sizes

**Stripper-Crimper (SCA) Applicators**



- For use with AMP-O-MATIC Stripper-Crimper Machines
- Terminate a wide variety of open-barrel products
- Quickly interchangeable to run different products
- Easily repaired
- Simple dial-in settings to handle similar products and various wire sizes
- CQM applicators are available

**Crimp Quality Monitor (CQM) Applicators**



- Same basic features as regular HDM and SCA applicators
- Recommended for use with machines featuring manual or automatic precision-adjust
- Use two built-in sensors to provide the Crimp Quality Monitor with data to measure crimp height, and evaluate the quality of each crimp

**Applicator and Hand Tool Selection Guide**

**Related Product Data**

**Contacts**

- 2.5 mm Signal Double Lock (SDL)—page 12
- Micro MATE-N-LOK 3 mm—page 22
- Grace Inertia Connectors (GIC) 3.5—page 50
- .062 Commercial Pin and Socket—page 55
- Power Double Lock (PDL)—page 61
- Mini Universal MATE-N-LOK—page 84
- Mini Universal MATE-N-LOK 2—pages 100-101
- (MR) Miniature Rectangular—page 112
- VAL-U-LOK Connector System—page 120
- AMP-DUAC—pages 126-127
- 5.0 mm Power Key Connectors (PKC)—page 137
- .093 Commercial Pin and Socket—page 145
- Commercial MATE-N-LOK—pages 155-156
- .140 MATE-N-LOK—page 166
- Universal MATE-N-LOK—pages 172-173
- Universal MATE-N-LOK II—page 192
- .156 MATE-N-LOK—page 203

Density	Product Line	Applicators			Hand Tools	
		A	B	C	D	E
High	2.5 mm Signal Double Lock (SDL)	*	*	*	X	-
	Micro MATE-N-LOK 3 mm	X	X	X	X	-
	Grace Inertia Connectors (GIC) 3.5	*	*	*	X	-
	.062 Commercial Pin and Socket	X	X	X	-	X
	Power Double Lock (PDL)	*	*	*	X	-
	Mini-Universal MATE-N-LOK	X	X	X	X	X
	Sealed Mini-Universal MATE-N-LOK	X	X	X	X	-
	Mini-Universal MATE-N-LOK 2	X	X	X	X	X
	(MR) Miniature Rectangular	X	X	X	X	-
	VAL-U-LOK Connector System	X	-	-	-	X
	AMP-DUAC	X	X	-	X	-
Standard	5.0 mm Power Key Connectors (PKC)	*	*	*	X	-
	.093 Commercial Pin and Socket	X	X	X	-	X
	Commercial MATE-N-LOK	X	X	X	X	X
	.140 MATE-N-LOK	X	X	X	X	-
	Universal MATE-N-LOK	X	X	X	X	X
Universal MATE-N-LOK II	X	X	X	X	X	
.156 MATE-N-LOK	X	-	-	X	-	

A—Heavy Duty Miniature (HDM) Applicators  
 B—Stripper-Crimper Applicators (SCA)  
 C—Crimp Quality Monitor (CQM) Applicators  
 D—CERTI-CRIMP Hand Tool  
 E—PRO-CRIMPER III Commercial Hand Tool

\* Contact the Tooling Assistance Center (TAC) at 1-800-722-1111 for Applicator Part Numbers.

**Mechanical Hand Tools**

**CERTI-CRIMP II Straight Action Hand Tools (SAHT) 91501-1, 91502-1**



Premium grade hand tools. Feature ratchet control to provide complete crimp cycle. Die sets close in a straight line. Include a contact locator and wire stop, plus an insulation crimp

adjustment lever, when applicable. Approximate weight 1.3 lb [0.59 kg] For more information, request Catalog 65780.

**Note:** This listing is for reference purposes only. To obtain part numbers for specific applications call Technical Support.

**Application Tooling** (Continued)

**Hand Tools**

**Related Product Data**

**Contacts**

- 2.5 mm Signal Double Lock (SDL)**—page 12
- Micro MATE-N-LOK 3 mm**—page 22
- Grace Inertia Connectors (GIC) 3.5**—page 50
- .062 Commercial Pin and Socket**—page 55
- Power Double Lock (PDL)**—page 61
- Mini Universal MATE-N-LOK**—page 86
- Mini Universal MATE-N-LOK 2**—pages 100-101
- (MR) Miniature Rectangular**—page 112
- VAL-U-LOK Connector System**—page 120
- AMP-DUAC**—pages 126-127
- 5.0 mm Power Key Connectors (PKC)**—page 137
- .093 Commercial Pin and Socket**—page 145
- Commercial MATE-N-LOK**—pages 155-156
- .140 MATE-N-LOK**—page 166
- Universal MATE-N-LOK**—pages 172-173
- Universal MATE-N-LOK II**—page 192
- .156 MATE-N-LOK**—page 203

**CERTI-CRIMP II Hand Tool**



Catalog 65780

**PRO-CRIMPER III Hand Tool**



Catalog 82276

Features	CERTI-CRIMP Hand Tool	PRO-CRIMPER III Hand Tool
Field Repair/Prototyping	X	X
OEM Applications/Low Volume Production	X	—
Ratchet Control	X	X
Brush/Bellmouth Control	X	X
Precision Crimp Height Control	X	X
Little/No Operator Training	X	—
Insulation Adjustment	X	—
Repairable	X	—

Density	Product Line	CERTI-CRIMP Hand Tool		PRO-CRIMPER III Hand Tool	
		Part Number	Instruction Sheet	Part Number	Instruction Sheet
High	2.5 mm Signal Double Lock (SDL)	234603-1	411-5735	—	—
		234604-1	411-5736	—	—
	Micro MATE-N-LOK 3 mm	91501-1	408-8547	—	—
		91502-1	408-8547	—	—
	Grace Inertia Connectors (GIC) 3.5	1596277-1	411-78101	—	—
		—	—	90870-1	408-9965
	.062 Commercial Pin & Socket	—	—	90869-1	408-9964
		—	—	—	—
	Power Double Lock (PDL)	91567-1	408-8547	—	—
		91569-1	408-8547	—	—
	Mini-Universal MATE-N-LOK and Sealed Mini-Universal MATE-N-LOK	91529-1	408-8547	90758-1	408-9938
		91522-1	408-8547	90759-1	408-9962
		91594-1	408-8547	90760-1	408-9963
		90717-2	408-4443	—	—
Mini-Universal MATE-N-LOK 2	91529-1	408-8547	—	—	
	91522-1	408-8547	—	—	
(MR) Miniature Rectangular	91534-1	408-8547	58514-1	408-9973	
	91526-1	408-8547	58514-1	408-9973	
VAL-U-LOK Connector System	—	—	91387-1	408-8917	
	—	—	91388-1	408-8918	
AMP-DUAC	90714-1	408-4385	—	—	
	734202-2	—	—	—	
Standard	5.0 mm Power Key Connectors (PKC)	—	—	90872-1	408-9967
		—	—	90871-1	408-9966
	.093 Commercial Pin & Socket	91515-1	408-8547	—	—
		91512-1	408-8547	90574-1	408-9886
		91504-1	408-8547	90575-1	408-9887
		91552-1	408-8547	—	—
	.140 MATE-N-LOK	69710-1 <sup>1</sup>	408-2095	—	—
		58373-1 <sup>2</sup>	408-9442	—	—
		58374-1 <sup>2</sup>	408-9442	—	—
		58439-1	408-9591	—	—
Universal MATE-N-LOK and Universal MATE-N-LOK II	91510-1	408-8547	90548-1	408-9885	
	91500-1	408-8547	90546-1	408-9883	
	91508-1	408-8547	90547-1	408-9884	
	91506-1	408-8547	90547-1	408-9884	
	69710-1 <sup>1</sup>	408-2095	—	—	
	58380-1 <sup>2</sup>	408-9433	—	—	
	58380-2 <sup>2</sup>	408-9433	—	—	
	58631-1	408-4341	—	—	
.156 MATE-N-LOK	58632-1	408-4340	—	—	

<sup>1</sup>Hand tool requires die set. <sup>2</sup>Die set.  
**Note:** This listing is for reference purposes only. To obtain part numbers for specific applications call Technical Support.

### Applicator Options

	Strip Form Contact Part Number		Heavy-Duty Miniature Applicator Part Numbers				
			Used on Bench Top Terminators		Used on Automatic Leadmaking Equipment (AMPOMATOR CLS Machine with T or G Terminators)	Used on AMP-O-MATIC Stripper-Crimper Machine	
	Pin	Socket	AMP-O-LECTRIC Model K Machine	AMP-O-LECTRIC Model G Machine			
2.5 mm Signal Double Lock (SDL) Contacts	917764-1	917683-1	*	*	*	*	
	917765-1	917684-1	*	*	*	*	
Micro MATE-N-LOK 3 mm Connector System	1-794608-0	—					
	1-794608-1	—	1385194-2	1385194-3	1385194-1	—	
	1-794608-2	—					
	1-794609-0	—					
	1-794609-1	—	1385377-2	1385377-3	1385377-1	—	
	1-794609-2	—					
	—	794606-1					
	—	1-794606-1	680893-2	680893-3	680893-1	—	
	—	1-794606-2					
	—	794607-1					
Grace Inertia Connectors (GIC) 3.5 .062 Commercial Pin and Socket Contacts	—	1-794607-1	680894-2	680894-3	680894-1	—	
	—	1-794607-2					
	1565080-1	1565079-1	*	*	*	*	
	1612335-1	1612334-1	*	*	*	*	
	640391-1	640392-1					
	640391-5	640392-5	466686-2	466686-3	466686-1	466955-1	
	—	640392-2					
	—	794046-1					
	350629-1	350628-1					
	—	350628-2					
Power Double Lock (PDL)	350629-5	350628-5	687996-2	687996-3	687996-1	—	
	—	350628-6					
	—	794103-1					
	177916-1	177914-1	*	*	*	*	
		177914-2†	*	*	*	*	
	177917-1	177915-1	*	*	*	*	
		177915-2†	*	*	*	*	
	† High contact pressure type.						
	Mini-Universal MATE-N-LOK Contacts	770835-1	770834-1	567418-2	567418-3	567418-1	—
		1-770835-0	1-770834-0				
770901-1		770902-1	567066-4	567066-5	567066-3	466990-2	
1-770901-0		1-770902-0					
770903-1		770904-1	567067-2	567067-3	567067-1	466986-1	
1-770903-0		1-770904-0					
171636-1		171637-1	680582	567251-1	680582	567902-1	
—		171637-3					
Mini-Universal MATE-N-LOK 2 Contacts	794216-1	794217-1	567418-2	567418-3	567418-1	—	
	1-794216-0	1-794217-0					
	794218-1	794219-1	567066-4	567066-5	567066-3	466990-2	
	1-794218-0	1-794219-0					
	794220-1	794221-1	680854-2	680854-3	680854-1	466986-1	
	1-794220-0	1-794221-0					
	794222-1	794223-1	680582-2	680582-3	—	567902-1	
	1-794222-0	1-794223-0					
(MR) Miniature Rectangular Contacts	350968-1	794000-1	466352-2	466352-3	466352-1	—	
	350968-2	794000-2					
	350967-1	641294-1	466351-2	466351-4	466351-1	466913-1	
	350967-2	641294-2					
	350969-1	—	466351-2	466351-4	466351-1	466913-1	
	350969-2	—					

**Note:** Stripper Crimper (SCA) and Crimp Quality Monitor Applicators may be available. Call Technical Support for Part Numbers.  
 \* Contact the Tooling Assistance Center (TAC) at 1-800-722-1111 for Applicator Part Numbers.  
**Note:** All part numbers are RoHS Compliant.

**Applicator Options** (Continued)

Applicator Options

	Strip Form Contact Part Number		Heavy-Duty Miniature Applicator Part Numbers			
			Used on Bench Top Terminators		Used on Automatic Leadmaking Equipment (AMPOMATOR CLS Machine with T or G Terminators)	Used on AMP-O-MATIC Stripper-Crimper Machine
	Pin	Socket	AMP-O-LECTRIC Model K Machine	AMP-O-LECTRIC Model G Machine		
<b>VAL-U-LOK Connector System</b>	794955-1	794956-1				
	794955-2	794956-2				
	794955-3	794956-3	1385817-2	1385817-3	1385817-1	—
	794955-4	794956-4				
	794957-1	794958-1				
	794957-2	794958-2				
	794957-3	794958-3	1385448-2	1385448-3	1385448-1	—
<b>AMP-DUAC</b>	794957-4	794958-4				
	794576-1	106529-2	680308-2	680308-3	—	567959-1
		1-794138-3				
	794578-1	106528-2	680307-2	680307-3	—	567960-1
		1-794139-3				
<b>5.0 mm Power Key Connectors (PKC)</b>	—	1-794140-3	680350-2	680350-3	—	—
		794418-1				
	—	1376347-1	*	*	*	*
<b>.093 Commercial Pin and Socket Contacts</b>	—	1376348-1	*	*	*	*
	350418-1	350417-1				
	—	350417-3	466656-2	466656-3	466656-1	466922-1
	350418-5	350417-5				
	350416-1	350415-1	466878-2	466878-3	466878-1	466959-1
	350416-5	350415-5				
	770530-1	770529-1	567337-4	567337-6	567337-3	—
770385-1	770383-1	567273-2	567273-4	567273-3	—	
<b>Commercial MATE-N-LOK Contacts</b>	—	—				
	350079-1	350078-1				
	350079-4	350078-4	466426-2	466426-3	466426-1	—
	350079-5	350078-5				
	61116-1	61314-1				
	61116-4	61314-4				
	61116-5	61314-5	466320-2	466320-4	466320-1	466917-1
	61116-6	61314-6				
	61116-7	61314-7				
	61118-1	61117-1				
	61118-4	61117-4				
	61118-5	61117-5	687763-2	687763-6	687763-1	466920-1
	61118-6	61117-6				
	61118-7	61117-7				
	350558-1	350557-1				
350558-4	350557-4	687898-2	687898-4	687898-1	—	
61527-2	—	466320-2	466320-4	466320-1	466917-1	
<b>.140 MATE-N-LOK Contacts</b>	61627-1	61626-1	567306-2	567306-3	567306-1	—
	61627-2	61626-2				
	350201-1	350200-1	567309-2	567309-3	587309-1	—
	350201-2	350200-2				
<b>Universal MATE-N-LOK Contacts</b>	350924-1	350925-1	466616-2	466616-3	—	—
	350924-6	350925-6				
	350561-1	350851-1				
	—	350570-1				
	350561-2	350851-2				
	—	350570-2				
	350561-7	350851-7	466320-2	466320-4	466320-1	466917-1
	—	350570-7				
	350561-3	350570-3				
	—	350570-6				

**Note:** Stripper Crimper (SCA) and Crimp Quality Monitor Applicators may be available. Call Technical Support for Part Numbers.  
\* Contact the Tooling Assistance Center (TAC) at 1-800-722-1111 for Applicator Part Numbers.  
**Note:** All part numbers are RoHS Compliant.

**Applicator Options** (Continued)

**Universal  
MATE-N-LOK  
Contacts** (Continued)

**Universal  
MATE-N-LOK II  
Contacts**

**.156 MATE-N-LOK  
Contacts**

Strip Form Contact Part Number		Heavy-Duty Miniature Applicator Part Numbers			
Pin	Socket	Used on Bench Top Terminators		Used on Automatic Leadmaking Equipment (AMPOMATOR CLS Machine with T or G Terminators)	Used on AMP-O-MATIC Stripper-Crimper Machine
		AMP-O-LECTRIC Model K Machine	AMP-O-LECTRIC Model G Machine		
350218-1	350536-1				
350218-2	350536-2				
350218-7	350536-7	687763-2	687763-6	687763-1	466920-1
350218-3	350536-3				
350218-6	350536-6				
350538-1	350537-1				
350538-2	350537-2				
350538-7	350537-7	687926-2	687926-6	687926-1	466989-1
350538-3	350537-3				
350538-6	350537-6				
350873-1	350874-1				
350873-3	350874-3	466588-2	466588-3	466588-1	—
350922-3	350923-3				
350922-6	350923-6	466597-2	466597-3	466597-1	—
350922-4	350923-4				
350699-1	—				
350699-2	—	466320-2	466320-4	466320-1	466917-1
350699-7	—				
350687-1	—				
350687-2	—	687763-2	687763-6	687763-1	466920-1
350687-7	—				
350700-1	—				
350700-2	—	687926-2	687926-6	687926-1	466989-1
350700-7	—				
770210-1	—	567216-2	567216-3	567216-1	
350654-1	—	687763-2	687763-6	687763-1	466920-1
770234-3	—	466597-2	466597-3	466597-1	
770011-6	770012-6	—	567252-4	567252-1	—
770009-1	—				
1-770009-0	—				
—	770010-3	—	567214-4	567214-1	567914-1
—	1-770010-0				
770007-1	—				
1-770007-0	—				
—	770008-3	—	567213-4	567213-1	567913-1
—	1-770008-0				
770005-1	—				
1-770005-0	—				
—	770006-3	—	567212-4	567212-1	—
1-770005-1	1-770006-0				
770003-3	770004-3				
1-770003-0	1-770004-0	—	567211-4	567211-1	—
770193-1	—				
1-770193-0	—	—	567213-4	567213-1	567913-1
770194-1	—				
1-770194-0	—	—	567212-4	567212-1	—
61086-1	61085-1	466462-1	466462-3	466462-1	—
61234-1	61233-1	687765-2	687765-2	—	—

Applicator Options

**Note:** Stripper Crimper (SCA) and Crimp Quality Monitor Applicators may be available. Call Technical Support for Part Numbers.  
\* Contact the Tooling Assistance Center (TAC) at 1-800-722-1111 for Applicator Part Numbers.  
**Note:** All part numbers are RoHS Compliant.

**Product Feature Comparisons**

High Density	2.5 mm Signal Double Lock (SDL)	Micro MATE-N-LOK 3 mm	Grace Inertia Connectors (GIC) 3.5	.062 Commercial Pin & Socket	Power Double Lock (PDL)	Mini-Universal MATE-N-LOK	Sealed Mini-Universal MATE-N-LOK	Mini-Universal MATE-N-LOK 2	(MR) Miniature Rectangular	VAL-U-LOK Connector System	AMP-DUAC
<b>Wire AWG –</b>											
Maximum	20	20	18	18	16	16	18	16	18	18	18
Minimum	26	30	26	30	26	30	26	30	26	26	26
<b>Current Rating –</b>											
10 AWG Wire	–	–	–	–	–	–	–	–	–	–	–
14 AWG Wire	–	–	–	–	–	–	–	–	–	–	–
16 AWG Wire	–	–	–	–	14	–	–	–	–	–	–
18 AWG Wire	–	**	7	17	–	9	9	10.5	6	9	9
20 AWG Wire	3	–	–	–	–	–	–	–	–	–	–
Max. Operating Voltage (AC or DC)	50	250	300	250	300	600	600	600	250	600	600
<b>Flammability Rating –</b>											
UL 94V-0	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
UL 94V-2	No	No	No	Yes	No	Yes*	No	Yes	No	Yes	Yes
<b>Approvals –</b>											
UL	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Submitted	Yes	Yes	Yes
CSA	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Submitted	Yes	Yes	Yes
VDE	Yes	Yes	–	No	Yes	Yes	Yes	Submitted	No	–	No
<b>Contact Material –</b>											
Brass	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	–
Phos. Bronze	Yes	Yes	No	Yes	No	Yes	Yes	No	Yes	Yes	Yes
<b>Plating Finish –</b>											
Tin Plating	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Gold Plating	No	Yes	No	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes
<b>Centerline Spacing –</b>	.098 [2.50]	.118 [3.00]	.137 [3.50]	.145 [3.68]	.156 [3.96] 256 [6.50] .312 [7.92] .512 [13.00]	.163 [4.14]	.163 [4.14]	.163 [4.14]	.165 [4.20]	.165 [4.20]	.165 [4.20]
<b>Housings –</b>											
Panel Mount	No	Yes	No	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes
Free-Hanging	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
Secondary Locking Latches	Yes	No	Yes	No	Yes	No	No	Yes	No	Yes	Yes
Contact Position Control	Yes	No	No	No	No	No	No	Yes	No	No	Yes
In-Line Config.	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
Dual Row Config.	No	Yes	Yes	No	Yes	Yes	Yes	Yes	No	Yes	Yes
Matrix Config.	No	No	No	Yes	Yes	Yes	No	Yes	Yes	No	No
<b>Accessories –</b>											
Strain Relief	No	No	Yes	No	Yes	Yes	No	No	Yes	No	Yes
Keying Plug	No	No	No	No	No	Yes	Yes	Yes	Yes	No	No
Seals	No	No	No	No	No	Yes	Yes	No	No	No	No
<b>Headers –</b>											
Vertical	Yes	Yes	No	No	Yes	Yes	Yes	Mini-Universal MATE-N-LOK	Yes	Yes	Yes
Blindmate	No	No	No	No	No	Yes	Yes	Mini-Universal MATE-N-LOK	No	Yes	No
Right-Angle	Planned	Yes	No	No	No	Yes	Yes	Mini-Universal MATE-N-LOK	No	Yes	Yes
<b>Positions –</b>											
Minimum	2	2	2	1	1	1	2	2	2	2	2
Maximum	13	24	6	9	12	24	10	24	36	24	24

\* Wire-to-Wire Only.  
\*\* 5 A on 20 AWG\*

**Product Feature Comparisons** (Continued)

Standard Density	5.0 mm Power Key Connectors (PKC)	.093 Commercial Pin & Socket	Commercial MATE-N-LOK	.140 MATE-N-LOK	Universal MATE-N-LOK	Universal MATE-N-LOK II	.156 MATE-N-LOK
<b>Wire AWG—</b>							
Maximum	16	14	14	10	10	10	10
Minimum	24	24	30	20	30	30	20
<b>Current Rating —</b>							
10 AWG Wire	—	—	—	28	—	—	32.5
14 AWG Wire	—	19	13	—	15	19	—
16 AWG Wire	10	—	—	—	—	—	—
18 AWG Wire	—	—	—	—	—	—	—
20 AWG Wire	—	—	—	—	—	—	—
Max. Operating Voltage (AC or DC)	300	250	250	600	600	600	600
<b>Flammability Rating —</b>							
UL 94V-0	Yes	No	Yes	No	Yes	Yes	No
UL 94V-2	No	Yes	Yes	Yes	Yes	No	Yes
<b>Approvals —</b>							
UL	Yes	Yes	Yes	Yes	Yes	Yes	Yes
CSA	Yes	Yes	Yes	Yes	Yes	Yes	No
VDE	No	No	No	No	Yes	Yes	No
<b>Contact Material —</b>							
Brass	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Phos. Bronze	No	Yes	Yes	Yes	Yes	Yes	No
<b>Plating Finish —</b>							
Tin Plating	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Gold Plating	No	Yes	Yes	No	Yes	Yes	No
<b>Centerline Spacing —</b>							
	.197 [5.00]	.198 [5.03] .250 [6.35] .248 [6.30]	.200 [5.08] .240 [6.10] x .202 [5.13] .195 [4.95] x .360 [9.14]	.240 [6.10]	.250 [6.35]	.250 [6.35]	.390 [9.91]
<b>Housings —</b>							
Panel Mount	No	Yes	Yes	Yes	Yes	Yes	Yes
Free-Hanging	No	Yes	Yes	Yes	Yes	Yes	Yes
Secondary Locking Latches	Yes	No	No	Yes	No	Yes	Yes
Contact Position Control	No	No	No	No	No	Yes	No
In-Line Config.	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Dual Row Config.	Yes	No	Yes	No	No	No	No
Matrix Config.	No	Yes	Yes	Yes	Yes	Yes	No
<b>Accessories —</b>							
Strain Relief	Yes	No	No	No	Yes	Universal MATE-N-LOK	No
Keying Plug	No	No	Yes	No	Yes	Yes	No
Seals	No	No	No	No	Yes	No	No
<b>Headers —</b>							
Vertical	Yes	No	Yes	No	Yes	Universal MATE-N-LOK	No
Blindmate	No	No	No	No	No	No	No
Right-Angle	No	No	Yes	No	Yes	Universal MATE-N-LOK	No
<b>Positions —</b>							
Minimum	2	1	1	2	1	2	3
Maximum	6	15	16	9	15	15	4

\* Wire-to-Wire Only.  
\*\* 5 A on 20 AWG\*

## Non-Compliant to RoHS Compliant Part Number Cross Reference

Non-Compliant to RoHS Compliant Part Number Cross Reference

Non-Compliant Part Number	RoHS Compliant Part Number
350209-2	1586512-2
350210-2	1586514-2
350211-2	1586515-2
350211-3	1586515-3
350212-2	1586518-2
350213-2	1586520-2
350214-2	1586522-2
350220-2	1586524-2
1-350375-0	2-350375-0
1-350376-0	2-350376-0
1-350377-0	2-350377-0
1-350378-1	2-350378-1
1-350379-1	2-350379-1
1-350380-1	2-350380-1
350424-2	1586525-2
350425-2	1586526-2
350426-2	1586528-2
350428-2	350428-4
350429-2	350429-4
350430-2	350430-4
350431-2	350431-4
350432-2	350432-4
350433-2	350433-4
350434-2	350434-4
350539-2	1586530-2
350541-2	1586532-2
350543-2	1586534-2
350544-2	1586536-2
350582-2	350582-4
350583-2	350583-4
350584-2	350584-4
350585-2	350585-4
350586-2	350586-4
350587-2	350587-4
350588-2	350588-4
350641-2	1586539-2
350711-2	350711-4
350712-2	350712-4
350713-2	350713-4
350714-2	350714-4
350714-3	350714-5
350732-2	350732-4
350737-2	350737-4
350738-2	350738-4
350742-2	350742-4
350759-3	350759-5
350760-3	350760-5
350761-3	350761-5
350762-3	350762-5
350763-3	350763-5
350764-3	350764-5
350765-3	350765-5
350786-2	350786-3
350787-2	350787-3
350789-2	350789-3
350790-2	350790-3
350792-2	350792-3
350793-2	350793-3
350824-2	350824-4
350825-2	350825-4
350826-2	350826-4

Non-Compliant Part Number	RoHS Compliant Part Number
350827-2	350827-4
350828-2	350828-4
350829-2	350829-4
350830-2	350830-4
350832-2	350832-4
350833-2	350833-4
350834-2	350834-4
350835-2	350835-4
350836-2	350836-4
350837-2	350837-4
2-350942-0	3-350942-0
2-350943-0	3-350943-0
2-350944-0	3-350944-0
2-350945-0	3-350945-0
350988-3	350988-5
350989-3	350989-5
350990-3	350990-5
350991-3	350991-5
1-380935-0	2-380935-0
1-380936-0	2-380936-0
1-380937-0	2-380937-0
2-380991-0	2-1586544-0
2-380999-0	2-1586546-0
640466-2	640466-3
640467-2	640467-3
640497-2	2-640497-2
640497-4	2-640497-4
640498-2	2-640498-2
640498-4	2-640498-4
640499-2	2-640499-2
640499-4	2-640499-4
640500-2	2-640500-2
640500-4	2-640500-4
640501-2	2-640501-2
640501-4	2-640501-4
640502-2	2-640502-2
640502-4	2-640502-4
640503-2	2-640503-2
640503-4	2-640503-4
640504-2	2-640504-2
640504-4	2-640504-4
640505-2	2-640505-2
640505-4	2-640505-4
640506-2	2-640506-2
640506-4	2-640506-4
640583-2	640583-3
640900-2	640900-3
640901-2	640901-3
641831-2	641831-3
641832-2	641832-3
641963-2	641963-3
641964-2	641964-3
641970-2	641970-3
641971-2	641971-3
641972-2	641972-3
641974-2	641974-3
641976-2	641976-4
643228-2	3-643228-0
643230-2	3-643230-0
643232-2	3-643232-0

Non-Compliant Part Number	RoHS Compliant Part Number
643234-2	3-643234-0
643236-2	3-643236-0
643410-2	643410-3
643412-2	643412-3
643414-2	643414-3
643424-2	643424-3
643426-2	643426-3
770003-4	1-770003-0
770004-4	1-770004-0
770005-2	1-770005-0
770005-4	1-770005-1
770006-4	1-770006-0
770007-2	1-770007-0
770008-4	1-770008-0
770010-4	1-770010-0
770166-1	1-770166-0
770166-2	1-770166-1
770170-1	1-770170-0
770170-2	1-770170-1
770174-1	1-770174-0
770174-2	1-770174-1
770178-1	1-770178-0
770178-2	1-770178-1
770182-1	1-770182-0
770182-2	1-770182-1
770186-1	1-770186-0
770186-2	1-770186-1
770190-1	1-770190-0
770190-2	1-770190-1
770193-2	1-770193-0
770194-2	1-770194-0
770246-4	1-770246-0
770247-4	1-770247-0
770248-2	1-770248-0
770249-4	1-770249-0
770250-2	1-770250-0
770251-4	1-770251-0
770252-2	1-770252-0
770254-2	1-770254-0
770255-2	1-770255-0
770262-2	770262-3
770328-1	1586627-1
1-770328-1	1-1586627-1
770621-1	1-770621-0
770621-2	1-770621-1
770743-1	1-770743-0
770743-2	1-770743-1
770834-3	1-770834-0
770834-6	1-770834-1
770835-3	1-770835-0
770858-1	1-770858-0
770858-2	1-770858-1
770859-1	1-770859-0
770859-2	1-770859-1
770872-1	1-770872-0
770872-2	1-770872-1
770873-1	1-770873-0
770873-2	1-770873-1
770874-2	1-770874-1
770875-1	1-770875-0
770875-2	1-770875-1

Non-Compliant Part Number	RoHS Compliant Part Number
770876-1	1-770876-0
770876-2	1-770876-1
770901-3	1-770901-0
770902-3	1-770902-0
770902-6	1-770902-1
770903-3	1-770903-0
770903-6	1-770903-1
770904-3	1-770904-0
770904-6	1-770904-1
770966-1	1-770966-0
770966-2	1-770966-1
770967-1	1-770967-0
770967-2	1-770967-1
770968-1	1-770968-0
770968-2	1-770968-1
770969-1	1-770969-0
770969-2	1-770969-1
770970-1	1-770970-0
770970-2	1-770970-1
770971-1	1-770971-0
770971-2	1-770971-1
770972-1	1-770972-0
770972-2	1-770972-1
770973-1	1-770973-0
770973-2	1-770973-1
770974-1	1-770974-0
770974-2	1-770974-1
770985-3	1-770985-0
770986-3	1-770986-0
770987-3	1-770987-0
770988-3	1-770988-0
794040-1	1-794040-0
794040-2	1-794040-1
794058-3	1-794058-0
794059-3	1-794059-0
794065-1	1-794065-0
794065-2	1-794065-1
794066-1	1-794066-0
794066-2	1-794066-1
794067-1	1-794067-0
794067-2	1-794067-1
794068-1	1-794068-0
794068-2	1-794068-1
794069-1	1-794069-0
794069-2	1-794069-1
794070-1	1-794070-0
794070-2	1-794070-1
794071-1	1-794071-0
794071-2	1-794071-1
794072-1	1-794072-0
794072-2	1-794072-1
794073-1	1-794073-0
794073-2	1-794073-1
794074-1	1-794074-0
794074-2	1-794074-1
794075-2	1-794075-1
794076-1	1-794076-0
794076-2	1-794076-1
794077-1	1-794077-0
794077-2	1-794077-1
794078-1	1-794078-0

**Non-Compliant to RoHS Compliant Part Number Cross Reference** (Continued)

Non-Compliant Part Number	RoHS Compliant Part Number	Non-Compliant Part Number	RoHS Compliant Part Number	Non-Compliant Part Number	RoHS Compliant Part Number	Non-Compliant Part Number	RoHS Compliant Part Number
794078-2	1-794078-1	794313-1	794313-3	794472-2	1-794472-2	794610-2	1-794610-1
794079-1	1-794079-0	794313-2	794313-4	794484-1	1-794484-1	794610-3	1-794610-2
794079-2	1-794079-1	794325-1	1-794325-0	794484-2	1-794484-2	794611-2	1-794611-1
794105-1	1-794105-0	794326-2	1-794326-1	794485-1	1-794485-1	794611-3	1-794611-2
794105-2	1-794105-1	794327-1	1-794327-0	794485-2	1-794485-2	794612-1	1-794612-0
794106-1	1-794106-0	794327-2	1-794327-1	794486-1	1-794486-1	794612-2	1-794612-1
794106-2	1-794106-1	794328-1	1-794328-0	794486-2	1-794486-2	794612-3	1-794612-2
794107-1	1-794107-0	794330-2	1-794330-1	794487-1	1-794487-1	794613-1	1-794613-0
794107-2	1-794107-1	794349-1	1-794349-1	794487-2	1-794487-2	794613-2	1-794613-1
794108-1	1-794108-0	794349-2	1-794349-2	794488-1	1-794488-1	794613-3	1-794613-2
794108-2	1-794108-1	794350-1	1-794350-1	794488-2	1-794488-2	794618-2	3-794618-2
794126-1	1-794126-0	794350-2	1-794350-2	794489-1	1-794489-1	794618-4	3-794618-4
794130-2	1-794130-1	794351-1	1-794351-1	794489-2	1-794489-2	794618-6	3-794618-6
794136-3	1-794136-1	794351-2	1-794351-2	794490-1	1-794490-1	794618-8	3-794618-8
794137-3	1-794137-1	794352-1	1-794352-1	794490-2	1-794490-2	1-794618-0	4-794618-0
794138-3	1-794138-3	794352-2	1-794352-2	794491-1	1-794491-1	1-794618-2	4-794618-2
794139-3	1-794139-3	794353-1	1-794353-1	794491-2	1-794491-2	1-794618-4	4-794618-4
794140-3	1-794140-3	794353-2	1-794353-2	794492-1	1-794492-1	1-794618-6	4-794618-6
794141-3	1-794141-3	794354-1	1-794354-1	794492-2	1-794492-2	1-794618-8	4-794618-8
794142-3	1-794142-3	794354-2	1-794354-2	794493-1	1-794493-1	2-794618-0	5-794618-0
794143-3	1-794143-3	794355-1	1-794355-1	794493-2	1-794493-2	2-794618-2	5-794618-2
794181-1	1-794181-1	794355-2	1-794355-2	794494-1	1-794494-1	2-794618-4	5-794618-4
794181-2	1-794181-2	794356-1	1-794356-1	794494-2	1-794494-2	794619-2	3-794619-2
794216-3	1-794216-0	794356-2	1-794356-2	794507-1	1-794507-1	794619-4	3-794619-4
794217-3	1-794217-0	794357-1	1-794357-1	794508-1	1-794508-1	794619-6	3-794619-6
794218-3	1-794218-0	794357-2	1-794357-2	794509-1	1-794509-1	794619-8	3-794619-8
794219-3	1-794219-0	794358-1	1-794358-1	794510-1	1-794510-1	1-794619-0	4-794619-0
794220-3	1-794220-0	794358-2	1-794358-2	794511-1	1-794511-1	1-794619-2	4-794619-2
794221-3	1-794221-0	794359-1	1-794359-1	794512-1	1-794512-1	1-794619-4	4-794619-4
794222-3	1-794222-0	794359-2	1-794359-2	794513-1	1-794513-1	1-794619-6	4-794619-6
794223-3	1-794223-0	794360-1	1-794360-1	794514-1	1-794514-1	1-794619-8	4-794619-8
794224-3	1-794224-0	794360-2	1-794360-2	794515-1	1-794515-1	2-794619-0	5-794619-0
794225-3	1-794225-0	794374-1	1-794374-0	794516-1	1-794516-1	2-794619-2	5-794619-2
794226-3	1-794226-0	794374-2	1-794374-1	794526-1	1-794526-1	2-794619-4	5-794619-4
794227-3	1-794227-0	794406-3	1-794406-0	794527-1	1-794527-1	794620-2	3-794620-2
794228-3	1-794228-0	794407-3	1-794407-0	794528-1	1-794528-1	794620-4	3-794620-4
794229-3	1-794229-0	794415-1	1-794415-1	794529-1	1-794529-1	794620-6	3-794620-6
794230-3	1-794230-0	794415-2	1-794415-2	794530-1	1-794530-1	794620-8	3-794620-8
794231-3	1-794231-0	794429-1	1-794429-1	794531-1	1-794531-1	1-794620-0	4-794620-0
794302-1	1-794302-1	794429-2	1-794429-2	794532-1	1-794532-1	1-794620-2	4-794620-2
794302-2	1-794302-2	794448-1	1-794448-1	794533-1	1-794533-1	1-794620-4	4-794620-4
794303-1	1-794303-1	794449-1	1-794449-1	794534-1	1-794534-1	1-794620-6	4-794620-6
794303-2	1-794303-2	794453-1	1-794453-1	794540-1	1-794540-1	1-794620-8	4-794620-8
794304-1	1-794304-1	794453-2	1-794453-2	794540-2	1-794540-2	2-794620-0	5-794620-0
794304-2	1-794304-2	794454-1	1-794454-1	794543-1	1-794543-1	2-794620-2	5-794620-2
794305-1	1-794305-1	794454-2	1-794454-2	794543-2	1-794543-2	2-794620-4	5-794620-4
794305-2	1-794305-2	794455-1	1-794455-1	794576-2	794576-4	794621-2	3-794621-2
794306-1	1-794306-1	794455-2	1-794455-2	794578-2	794578-4	794621-4	3-794621-4
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Non-Compliant to RoHS Compliant Part Number Cross Reference

**Non-Compliant to RoHS Compliant Part Number Cross Reference** (Continued)

Non-Compliant to RoHS Compliant Part Number Cross Reference

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Non-Compliant Part Number	RoHS Compliant Part Number
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Non-Compliant Part Number	RoHS Compliant Part Number
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794665-6	1586492-6
794665-8	1586492-8
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1-794665-2	1-1586492-2
1-794665-4	1-1586492-4

**Non-Compliant to RoHS Compliant Part Number Cross Reference** (Continued)

Non-Compliant Part Number	RoHS Compliant Part Number	Non-Compliant Part Number	RoHS Compliant Part Number	Non-Compliant Part Number	RoHS Compliant Part Number	Non-Compliant Part Number	RoHS Compliant Part Number
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794666-2	1586493-2	794678-4	3-794678-4	1445050-3	2-1445050-3	1445055-9	2-1445055-9
794666-4	1586493-4	794678-6	3-794678-6	1445050-4	2-1445050-4	1-1445055-0	3-1445055-0
794666-6	1586493-6	794678-8	3-794678-8	1445050-5	2-1445050-5	1-1445055-1	3-1445055-1
794666-8	1586493-8	1-794678-0	4-794678-0	1445050-6	2-1445050-6	1-1445055-2	3-1445055-2
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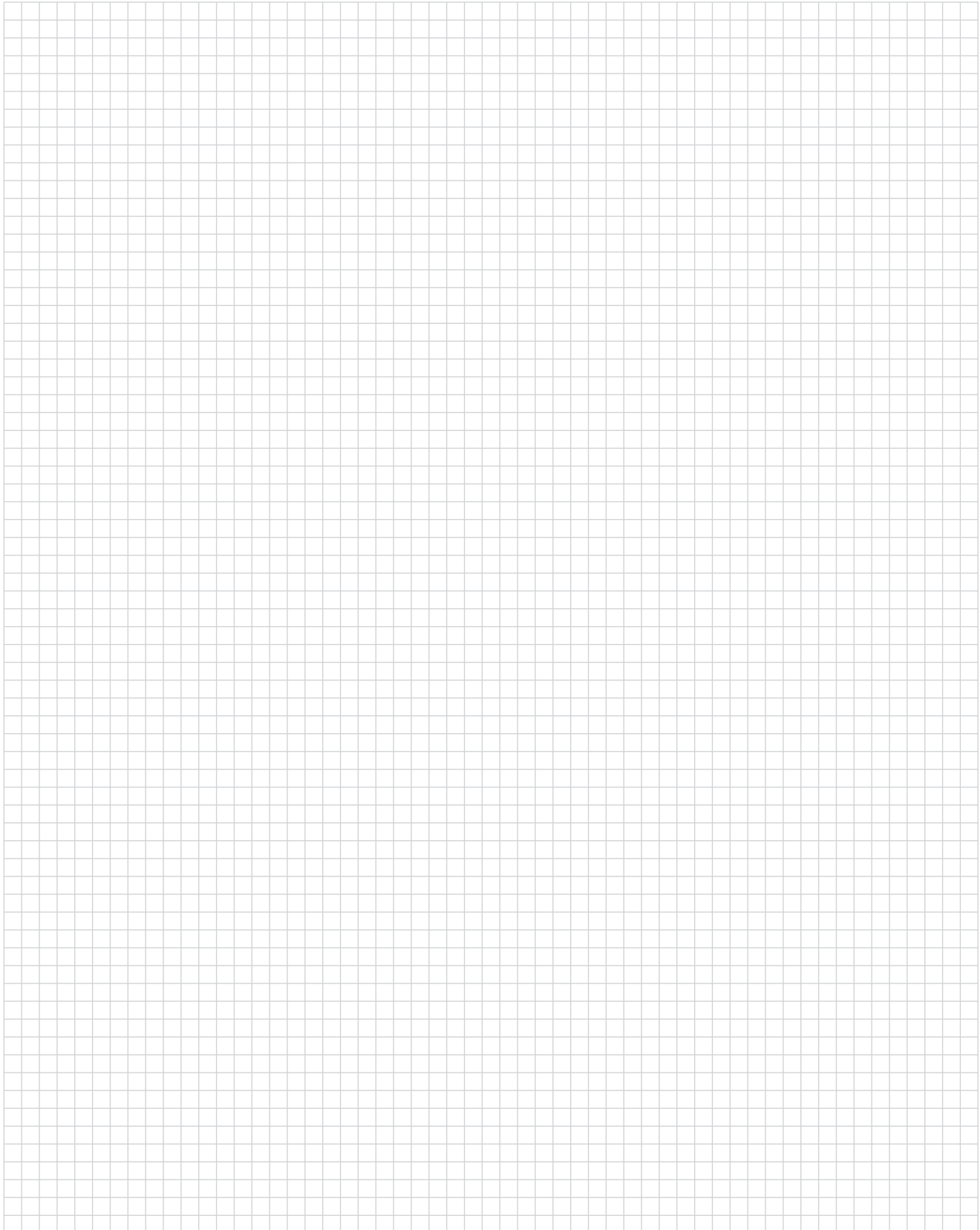
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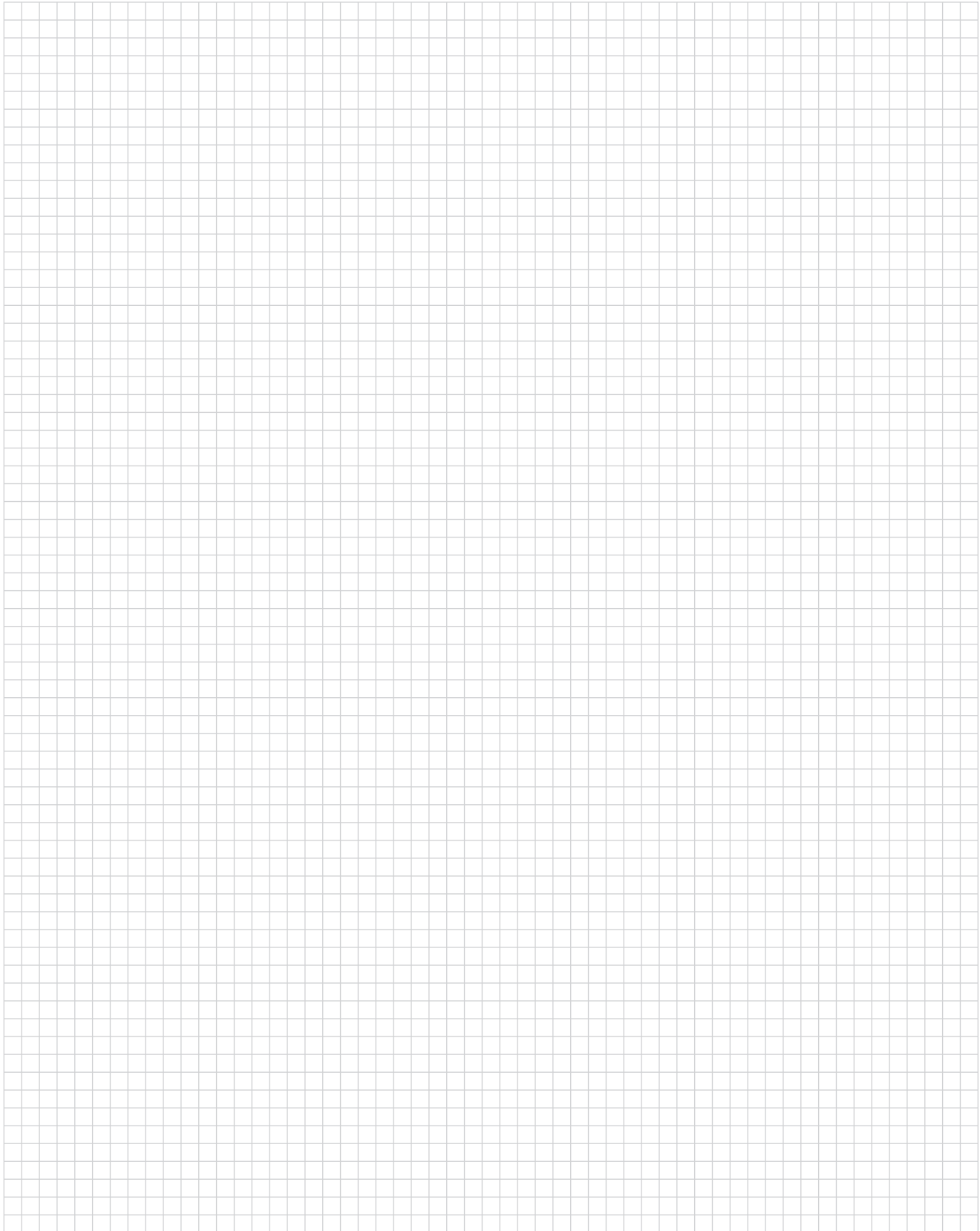
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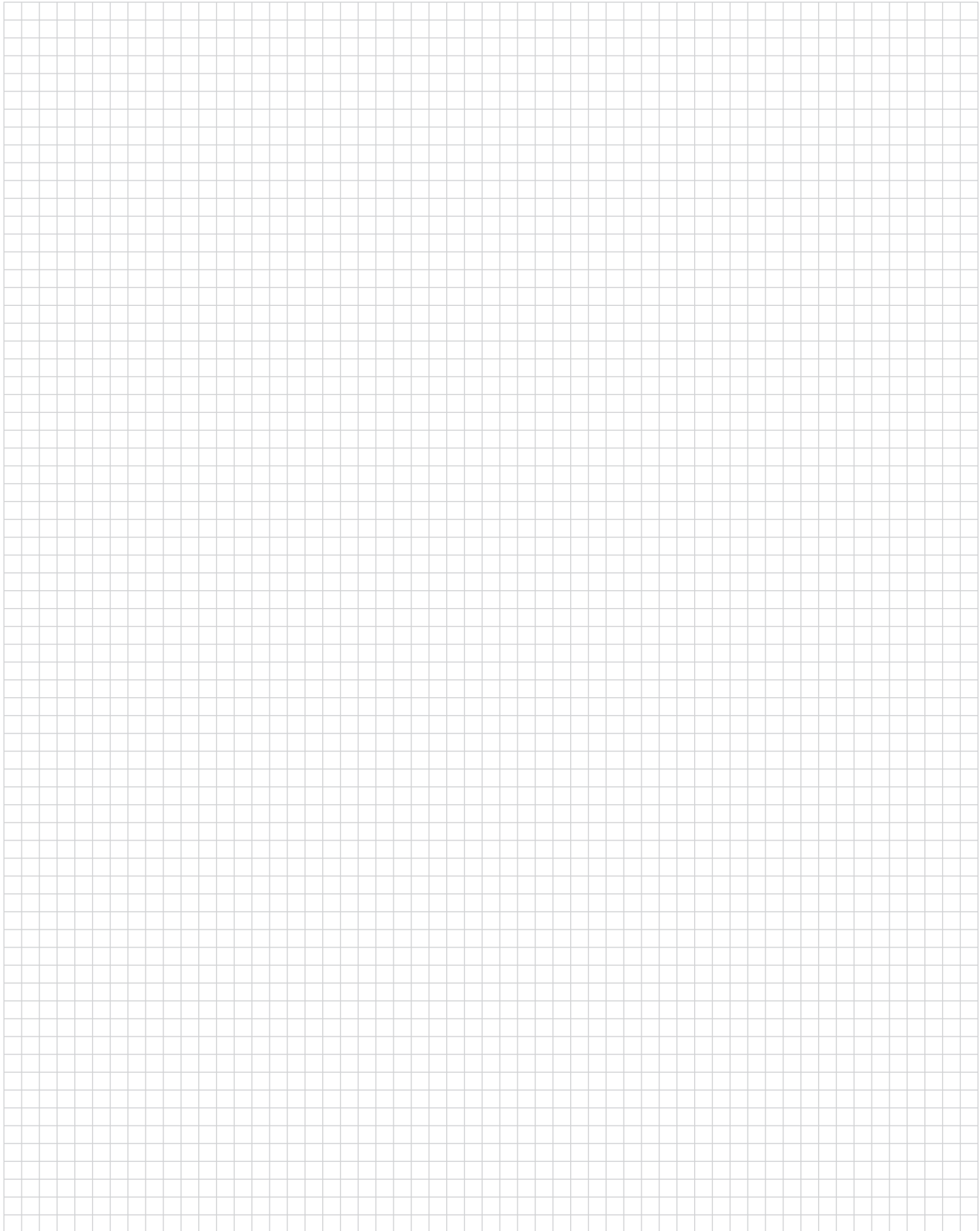
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Fax: +717-986-7575  
**Product Information Center:  
(Technical Support)**  
Phone: +800-522-6752  
Fax: +717-986-7575

**For Latin/South American  
Countries not shown**  
Phone: +54-11-4733-2015  
Fax: +54-11-4733-2083

## Asia/Pacific

**Australia** – Sydney  
Phone: +61-2-9554-2600  
Fax: +61-2-9502-2556  
**Product Information Center:  
(Technical Support)**  
Phone: +61-2-9840-8200  
Fax: +61-2-9634-6188

**India** – Bangalore  
Phone: +91-80-285-40800  
Fax: +91-80-285-40820

**Indonesia** – Jakarta  
Phone: +65-6482-0311  
Fax: +65-6482-1012

**Japan** – Toyko  
Phone: +81-44-844-8111  
Fax: +81-44-812-3207  
**Product Information Center:  
(Technical Support)**  
Phone: +81-44-844-8013  
Fax: +81-44-812-3200

**Korea** – Seoul  
Phone: +82-2-3415-4500  
Fax: +82-2-3486-3810

**Malaysia** – Kuala Lumpur  
Phone: +60-3-78053055  
Fax: +60-3-78053066

**New Zealand** – Auckland  
Phone: +64-9-634-4580  
Fax: +64-9-634-4586

**Philippines** – Makati City  
Phone: +632-848-0171  
Fax: +632-867-8661

**People's Republic of China**  
Hong Kong  
Phone: +852-2735-1628  
Fax: +852-2735-0243

Shanghai  
Phone: +86-21-2407-1588  
Fax: +86-21-2407-1599

Taiwan – Taipei  
Phone: +886-2-8768-2788  
Fax: +886-2-8768-2268

**Singapore** – Singapore  
Phone: +65-6482-0311  
Fax: +65-6482-1012

**Thailand** – Bangkok  
Phone: +66-2-955-0500  
Fax: +66-2-955-0505

**Vietnam and Indochina** –  
Ho Chi Minh City  
Phone: +84-8 930-5546  
Fax: +84-8 930-3443

## Europe/Middle East/Africa

**Austria** – Vienna  
Phone: +43-1 90 5 60-0  
Fax: +43-1 90 5 60-1333

**Belgium** – Kessel-Lo  
Phone: +32-16-35-23-00  
Fax: +32-16-35-23-52

**Bulgaria** – Sofia  
Phone: +359-2-971-2152  
Fax: +359-2-971-2153

**Czech Republic** – Kurim  
Phone: +420-5-41-162-111  
Fax: +420-5-41-162-223

**Denmark** – Glostrup  
Phone: +45-43-480-452  
Fax: +45-43-441-414

**Egypt** – Cairo  
Phone: +20-2-29 04 281  
Fax: +20-2-41 92 334

**Estonia** – Tartu  
Phone: +372-5138-274  
Fax: +372-7400-779

**Finland** – Helsinki  
Phone: +358-95-12-34-20  
Fax: +358-95-12-34-250

**France** – Cergy-Pontoise  
Phone: +33-1-3420-8888  
Fax: +33-1-3420-8600  
**Product Information Center:  
(Technical Support)**  
Phone: +33-1-3420-8943  
Fax: +33-1-3420-8623

**Germany** – Bensheim  
Phone: +49-6251-133-0  
Fax: +49-6251-133-1600  
**Product Information Center:  
(Technical Support)**  
Phone: +49-6251-133-1999  
Fax: +49-6251-133-1988

**Germany** – Langen  
Phone: +49-6103-709-0  
Fax: +49-6103-709-1223

**Germany** – Speyer  
Phone: +49-6232-30-0  
Fax: +49-6232-30-2243

**Germany - HTS Division** – Neunkirchen  
Phone: +49-2247-305-0  
Fax: +49-2247-305-122

**Greece** – Athens  
Phone: +30-210-9370-396/397  
Fax: +30-210-9370-655

**Hungary** – Budapest  
Phone: +36-1-289-1000  
Fax: +36-1-289-1010

**Ireland** – Dublin  
Phone: +353-1-820-3000  
Fax: +353-1-820-9790

**Israel** – Yokneam  
Phone: +972-4-959-0508  
Fax: +972-4-959-0506

**Italy** – Collegno (Torino)  
Phone: +39-011-4012-111  
Fax: +39-011-4031116

**Lithuania** – Vilnius  
Phone: +370-5-2131-402  
Fax: +370-5-2131-403

**Netherlands** – 's-Hertogenbosch  
Phone: +31-73-624-62-46  
Fax: +31-73-621-23-65  
**Product Information Center:  
(Technical Support)**  
Phone: +31-73-6246-999  
Fax: +31-73-6246-998

**Norway** – Nesbru  
Phone: +47-66-77-8886  
Fax: +47-66-77-8855

**Poland** – Warsaw  
Phone: +48-22-45-76-700  
Fax: +48-22-45-76-720

**Romania** – Bucharest  
Phone: +40-21-311-3479/3596  
Fax: +40-21-312-0574

**Russia** – Moscow  
Phone: +7-495-926-5506/07/08/09  
Fax: +7-495-926-5505

**Russia** – St. Petersburg  
Phone: +7-812-718-8192  
Fax: +7-812-718-8193

**Slovenia** – Ljubljana  
Phone: +386-1561-3270  
Fax: +386-1561-3240

**South Africa** – Port Elizabeth  
Phone: +2741-503-4500  
Fax: +2741-581-0440

**Spain** – Barcelona  
Phone: +34-93-291-0330  
Fax: +34-93-201-7879  
**Product Information Center:  
(Technical Support):**  
Phone: +34-93-291-0330  
Fax: +34-93-200-3779

**Sweden** – Upplands Väsby  
Phone: +46-8-50-72-50-00  
Fax: +46-8-50-72-50-01

**Switzerland** – Steinach  
Phone: +41-71-447-0447  
Fax: +41-71-447-0444

**Turkey** – Istanbul  
Phone: +90-212-281-8181/2/3  
Fax: +90-212-281-8184

**Ukraine** – Kiev  
Phone: +380-044-206-2265  
Fax: +380-044-206-2264

**United Kingdom** – Swindon  
Phone: +44-8706-080-208  
Fax: +44-1793-572-516  
**Product Information Center:  
(Technical Support)**  
Freephone GB: 0800-267-666  
Phone: +44-8706-080-208  
Fax: +44-208-420-8081

**For Middle East/African Countries Not  
Shown**  
Phone: +33-1-3420-8866  
Fax: +33-1-3420-8300

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