

# E-T-A® 9001 Over Current Detector

## Description

Hall effect type current sensor with a single digital output factory programmed to go low when a given current threshold is exceeded. The 9001 Series is able to operate within a temperature range of -40° C to 125° C and has a fast response time of 1µs (typical). The miniature package size allows the 9001 series to be mounted on printed circuit boards and is integrated with an open collector digital output which is ideal for interfacing to control circuitry.

## Typical Applications

Welding equipment, servo drives, treadmills, automotive power conversion, power supplies, home audio, MRI equipment

## Ordering Information

### Type No

9001 Over Current Detector

### Trip Point

050 50 Amp

075 75 Amp

100 100 Amp

125 125 Amp

150 150 Amp

9001 - 050 = ordering example

9002 Accessories

### Code

001 Accessory busbar

9002 - 001 = ordering example



Series 9001

## Technical Data

### Absolute Maximum Ratings

|                                      |                                                      |
|--------------------------------------|------------------------------------------------------|
| Supply Voltage                       | -1.0 to +25 VDC                                      |
| Voltage Externally Applied to Output | +25 VDC max (Output high, current below $I_{trip}$ ) |
|                                      | -0.5 VDC min (Output high or low)                    |
| Output ON current (sink)             | 50 mA                                                |
| Operating Temp Range                 | -40° C to +125° C                                    |
| Sensed Current                       | +/- 500 Amp peak                                     |

Absolute ratings are the extreme limits that the detector will withstand without damage. Electrical operation and characteristics are not guaranteed as the maximum limits are approached. Proper application of the detector must ensure that the detector operates within the operating characteristics listed below.

## Operating Characteristics

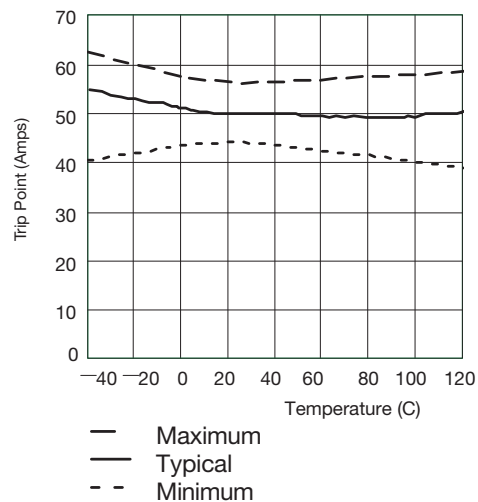
|                       | Symbol     | Min   | Typ.  | Max   | Notes                        |
|-----------------------|------------|-------|-------|-------|------------------------------|
| Supply Voltage        | $V_s$      | 3.8   |       | 24.0  | VDC                          |
| Supply Current        | $I_s$      |       |       | 10.0  | mA                           |
| Operating Temperature | $T_{op}$   | -40   |       | 125   | °C (ref. Note 1)             |
| Output Trip Time      | $T_{trip}$ |       | 1.0   | 2.5   | µS, $di/dt = I_{trip}/\mu S$ |
| Output ON Voltage     | $V_{os}$   |       | 0.15  | 0.40  | VDC sinking 20 mA            |
| Output ON Current     | $I_{os}$   |       |       | 20    | mA                           |
| 9001-050 Trip Current | $I_{trip}$ | 44.0  | 50.0  | 56.0  | Amps @ 25° C                 |
| 9001-075 Trip Current | $I_{trip}$ | 66.0  | 75.0  | 84.0  | Amps @ 25° C                 |
| 9001-100 Trip Current | $I_{trip}$ | 88.0  | 100.0 | 112.0 | Amps @ 25° C                 |
| 9001-125 Trip Current | $I_{trip}$ | 110.0 | 125.0 | 140.0 | Amps @ 25° C                 |
| 9001-150 Trip Current | $I_{trip}$ | 132.0 | 150.0 | 168.0 | Amps @ 25° C                 |

Note 1: See Mounting and Interface Application Note for severe duty mounting recommendations

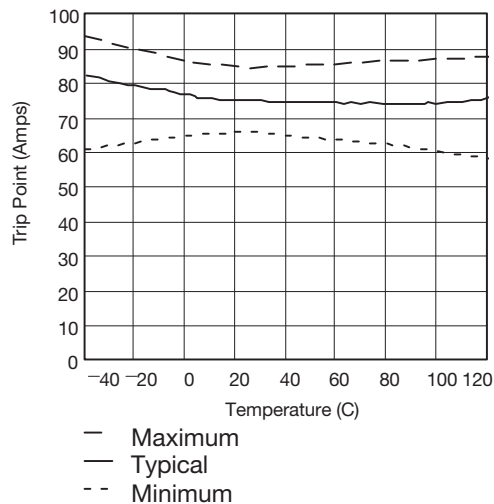
Note 2: Detector sensitive to unidirectional current as defined in mechanical dimension drawing

## Trip Current vs. Temperature

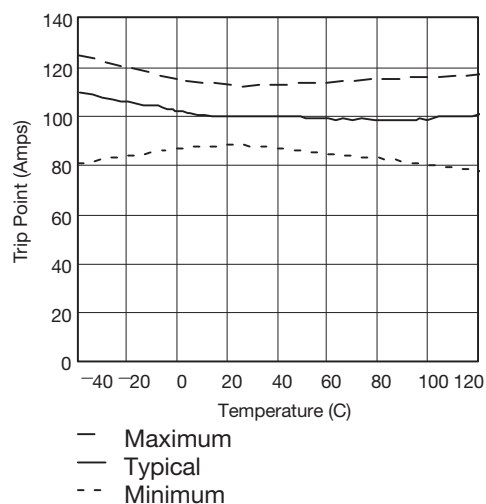
**Figure 1 - 9001-050**



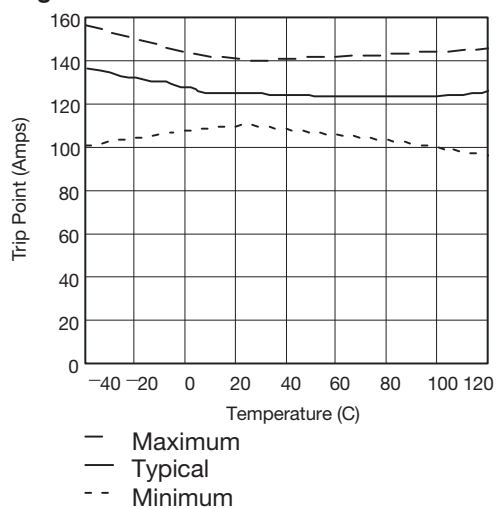
**Figure 2 - 9001-075**



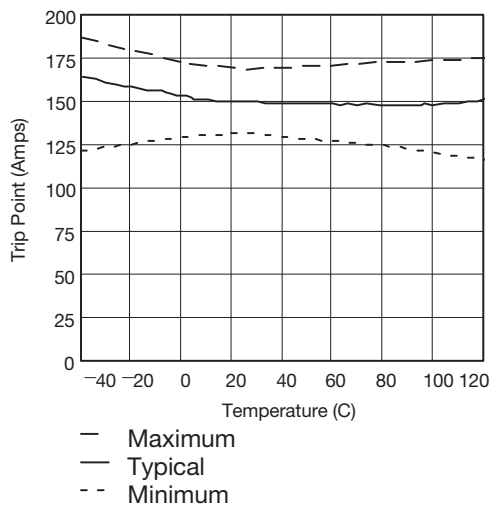
**Figure 3 - 9001-100**



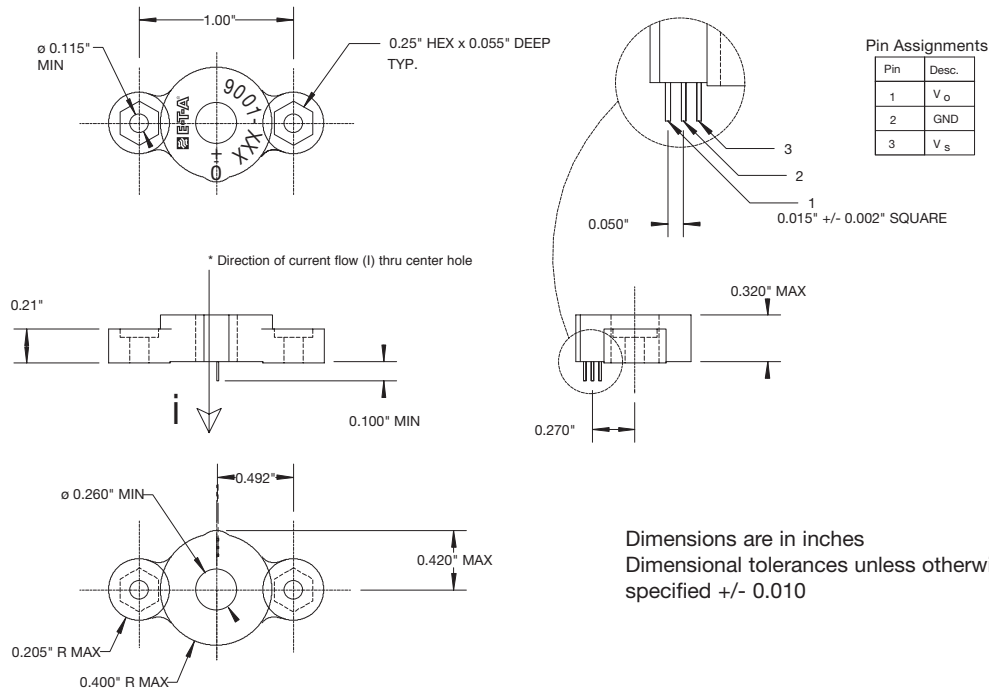
**Figure 4 - 9001-125**



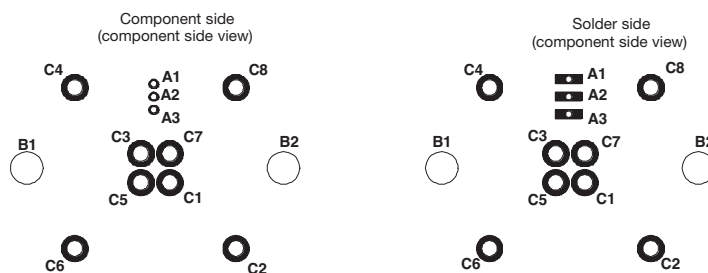
**Figure 5 - 9001-150**



## Mechanical Dimensions



## Printed Circuit Board Mounting Footprint



### Hole Location Chart

| Hole | X       | Y       |
|------|---------|---------|
| A1   | -0.008" | 0.320"  |
| A2   | -0.008" | 0.270"  |
| A3   | -0.008" | 0.220"  |
| B1   | -0.500" | 0.000"  |
| B2   | 0.500"  | 0.000"  |
| C1   | 0.056"  | -0.056" |
| C2   | 0.311"  | -0.311" |
| C3   | -0.056" | 0.056"  |
| C4   | -0.311" | 0.311"  |
| C5   | -0.056" | -0.056" |
| C6   | -0.311" | -0.311" |
| C7   | 0.056"  | -0.056" |
| C8   | 0.311"  | -0.311" |

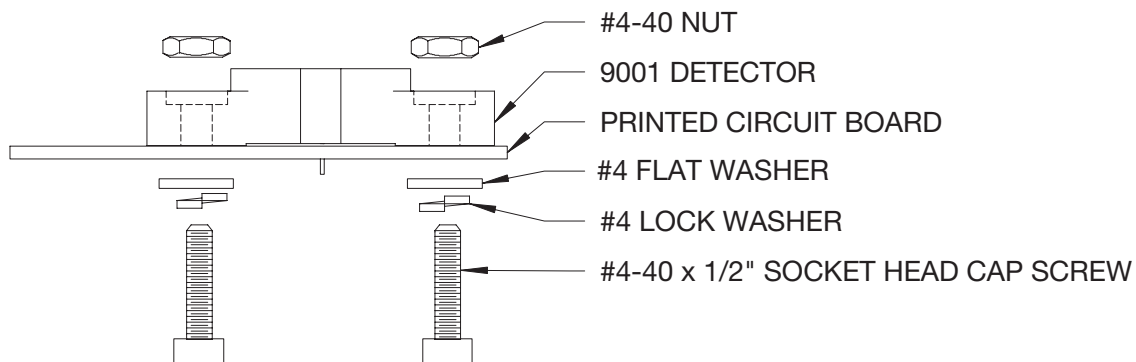
### Hole Description Chart

| Hole | Finished Diameter | Top Pad | Bottom Pad      |
|------|-------------------|---------|-----------------|
| A    | 0.027"            | 0.035"  | 0.035" x 0.100" |
| B    | 0.136"            | None    | None            |
| C    | 0.060"            | 0.100"  | 0.100"          |

#### Notes:

1. B holes for recommended 4-40 mounting screws
2. C holes for optional accessory busbars (part number 9002-001)
3. Center aperture of detector located at X=0.000, Y=0.000
4. Hole diameter tolerance +/- 0.003"
5. Hole location tolerance +/- 0.003"

## Recommended Mounting Exploded View



## 9002-001 Accessory Busbar Mechanical Dimensions

