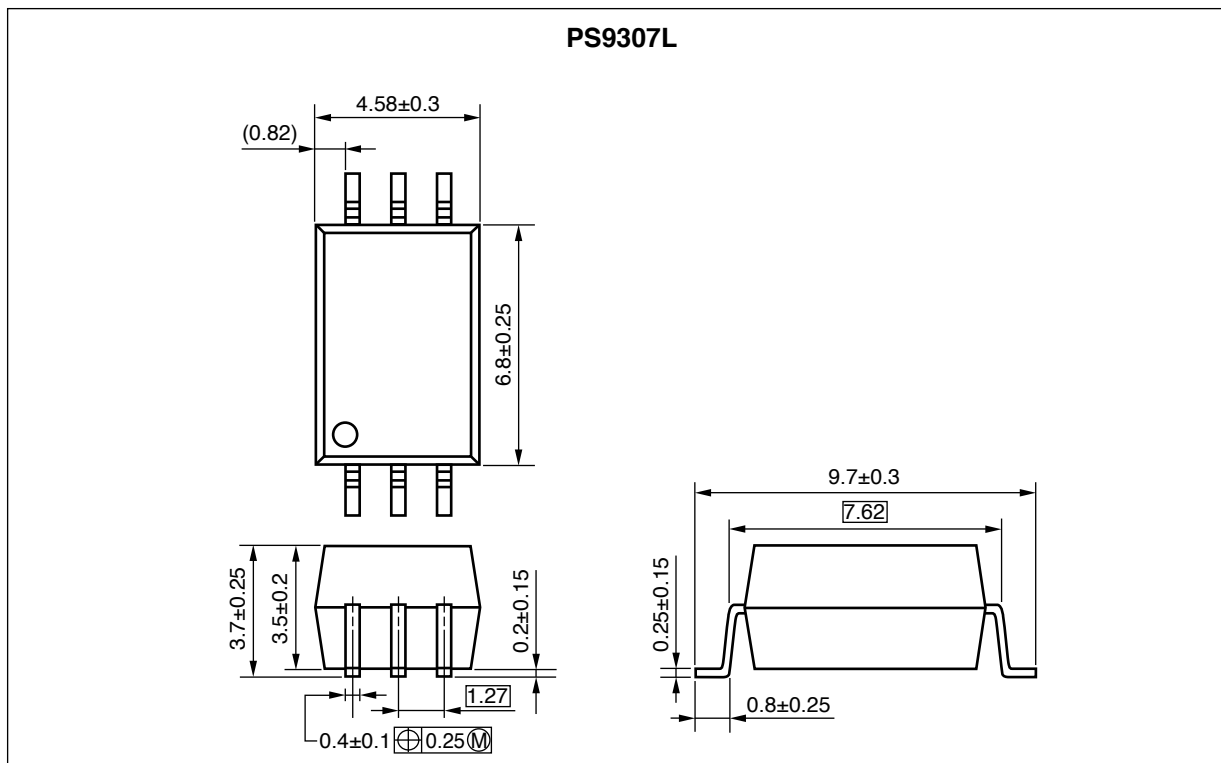


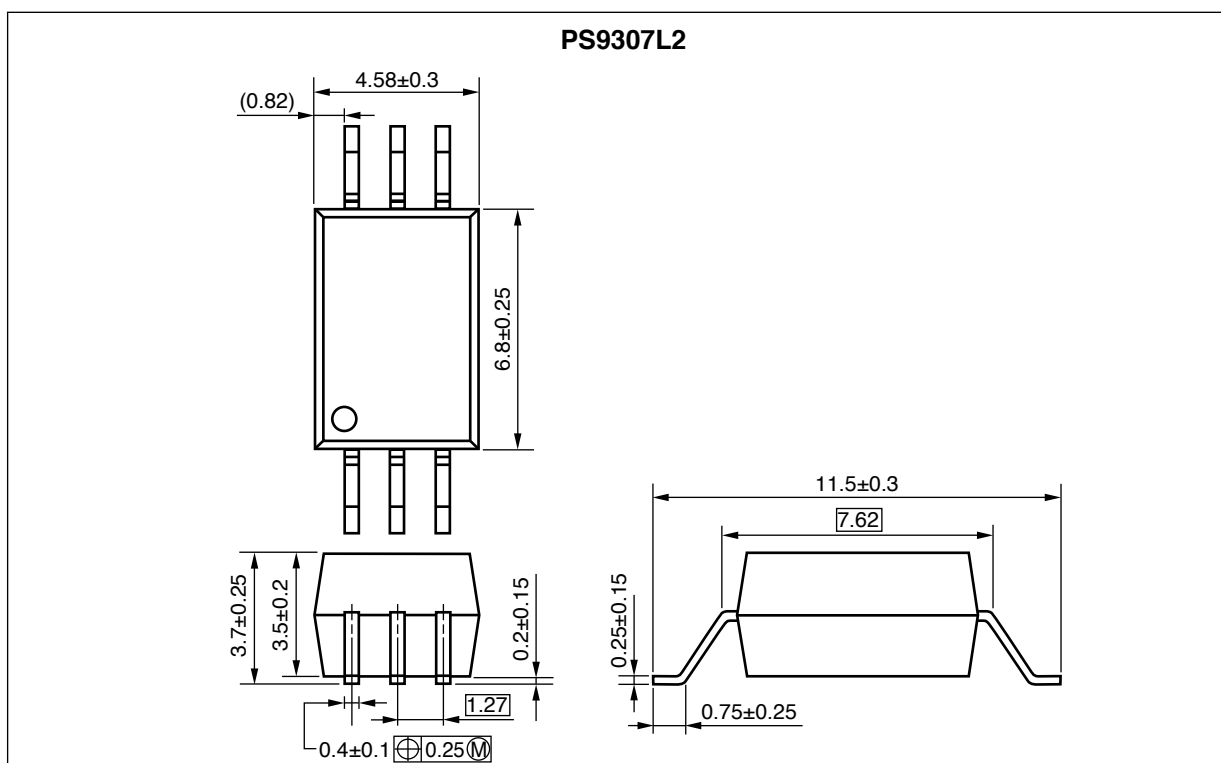


## PACKAGE DIMENSIONS (UNIT: mm)

### Lead Bending Type (Gull-wing) For Surface Mount



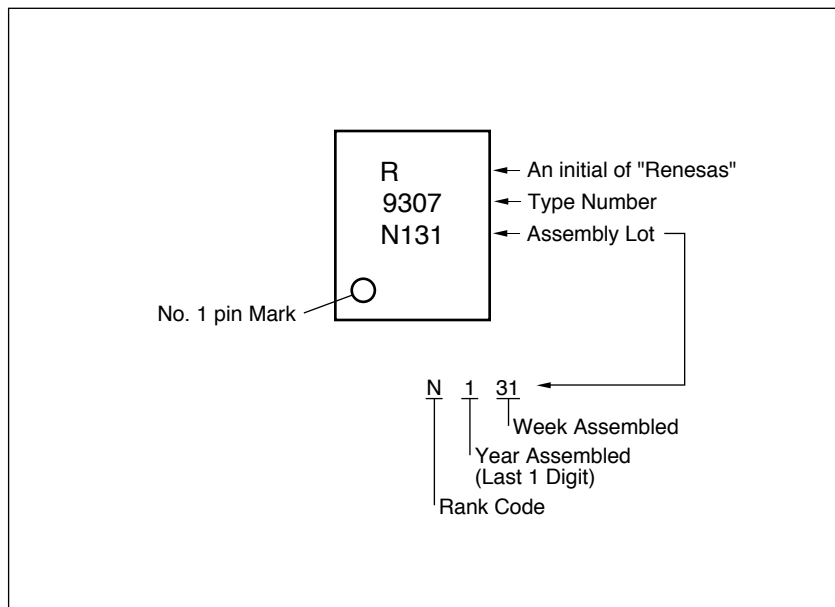
### Lead Bending Type (Gull-wing) For Long Creepage Distance (Surface Mount)



## PHOTOCOUPLER CONSTRUCTION

| Parameter                      | PS9307L | PS9307L2 |
|--------------------------------|---------|----------|
| Air Distance (MIN.)            | 7 mm    | 8 mm     |
| Outer Creepage Distance (MIN.) | 7 mm    | 8 mm     |
| Isolation Distance (MIN.)      | 0.4 mm  | 0.4 mm   |

## MARKING EXAMPLE



## ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ , unless otherwise specified)

|                               | Parameter                                                          | Symbol                | Ratings       | Unit             |
|-------------------------------|--------------------------------------------------------------------|-----------------------|---------------|------------------|
| Diode                         | Forward Current                                                    | $I_F$                 | 25            | mA               |
|                               | Peak Transient Forward Current<br>(Pulse Width $< 1 \mu\text{s}$ ) | $I_{F(\text{TRAN})}$  | 1.0           | A                |
|                               | Reverse Voltage                                                    | $V_R$                 | 5             | V                |
|                               | Power Dissipation *1                                               | $P_D$                 | 45            | mW               |
| Detector                      | High Level Peak Output Current *2                                  | $I_{OH(\text{PEAK})}$ | 0.6           | A                |
|                               | Low Level Peak Output Current *2                                   | $I_{OL(\text{PEAK})}$ | 0.6           | A                |
|                               | Supply Voltage                                                     | $(V_{CC}-V_{EE})$     | 0 to 35       | V                |
|                               | Output Voltage                                                     | $V_O$                 | 0 to $V_{CC}$ | V                |
|                               | Power Dissipation *3                                               | $P_C$                 | 250           | mW               |
| Isolation Voltage *4          |                                                                    | BV                    | 5 000         | Vr.m.s.          |
| Operating Frequency           |                                                                    | f                     | 250           | kHz              |
| Operating Ambient Temperature |                                                                    | $T_A$                 | -40 to +125   | $^\circ\text{C}$ |
| Storage Temperature           |                                                                    | $T_{\text{stg}}$      | -55 to +150   | $^\circ\text{C}$ |

Notes: \*1. Reduced to 1.2 mW/ $^\circ\text{C}$  at  $T_A = 110^\circ\text{C}$  or more.

\*2. Maximum pulse width = 10  $\mu\text{s}$ , Maximum duty cycle = 0.5%

\*3. Reduced to 3.9 mW/ $^\circ\text{C}$  at  $T_A = 85^\circ\text{C}$  or more.

\*4. AC voltage for 1 minute at  $T_A = 25^\circ\text{C}$ , RH = 60% between input and output.

Pins 1-3 shorted together, 4-6 shorted together.

## RECOMMENDED OPERATING CONDITIONS

| Parameter                     | Symbol              | MIN. | TYP. | MAX. | Unit             |
|-------------------------------|---------------------|------|------|------|------------------|
| Supply Voltage                | $(V_{CC}-V_{EE})$   | 10   |      | 30   | V                |
| Forward Current (ON)          | $I_{F(\text{ON})}$  | 8    |      | 12   | mA               |
| Forward Voltage (OFF)         | $V_{F(\text{OFF})}$ | -2   |      | 0.8  | V                |
| Operating Ambient Temperature | $T_A$               | -40  |      | 125  | $^\circ\text{C}$ |

**ELECTRICAL CHARACTERISTICS ( $T_A = -40$  to  $+125^\circ\text{C}$ ,  $V_{CC} = 10$  to  $30\text{ V}$ ,  $I_F(\text{ON}) = 8$  to  $12\text{ mA}$ ,  $V_F(\text{OFF}) = -2$  to  $0.8\text{ V}$ ,  $V_{EE} = \text{GND}$ , unless otherwise specified)**

| Parameter | Symbol                        | Conditions                                        | MIN.           | TYP.* <sup>1</sup> | MAX. | Unit          |
|-----------|-------------------------------|---------------------------------------------------|----------------|--------------------|------|---------------|
| Diode     | Forward Voltage               | $I_F = 10\text{ mA}$ , $T_A = 25^\circ\text{C}$   | 1.3            | 1.56               | 1.8  | V             |
|           | Reverse Current               | $V_R = 3\text{ V}$ , $T_A = 25^\circ\text{C}$     |                |                    | 10   | $\mu\text{A}$ |
|           | Input Capacitance             | $f = 1\text{ MHz}$ , $V_F = 0\text{ V}$           |                | 30                 |      | pF            |
| Detector  | High Level Output Current     | $V_O = (V_{CC} - 4\text{ V})^{*2}$                | 0.2            |                    |      | A             |
|           |                               | $V_O = (V_{CC} - 10\text{ V})^{*3}$               | 0.4            | 0.7                |      |               |
|           | Low Level Output Current      | $V_O = (V_{EE} + 2.5\text{ V})^{*2}$              | 0.2            |                    |      | A             |
|           |                               | $V_O = (V_{EE} + 10\text{ V})^{*3}$               | 0.4            | 0.7                |      |               |
|           | High Level Output Voltage     | $I_F = 10\text{ mA}$ , $I_O = 100\text{ mA}^{*4}$ | $V_{CC} - 3.0$ | $V_{CC} - 1.7$     |      | V             |
|           | Low Level Output Voltage      | $I_F = 0\text{ mA}$ , $I_O = 100\text{ mA}$       |                | 0.4                | 1.0  | V             |
|           | High Level Supply Current     | $I_F = 10\text{ mA}$ , $I_O = 0\text{ mA}$        |                | 1.2                | 2.0  | mA            |
|           | Low Level Supply Current      | $I_F = 0\text{ mA}$ , $I_O = 0\text{ mA}$         |                | 1.3                | 2.0  | mA            |
| Coupled   | Threshold Input Current (L H) | $I_O = 0\text{ mA}$ , $V_O > 5\text{ V}$          |                | 2.1                | 5.0  | mA            |
|           | Threshold Input Voltage (H L) | $I_O = 0\text{ mA}$ , $V_O < 5\text{ V}$          | 0.8            |                    |      | V             |

Notes: \*1. Typical values at  $T_A = 25^\circ\text{C}$ ,  $V_{CC} - V_{EE} = 30\text{ V}$ .

\*2. Maximum pulse width =  $50\text{ }\mu\text{s}$ , Maximum duty cycle = 0.2%.

\*3. Maximum pulse width =  $10\text{ }\mu\text{s}$ , Maximum duty cycle = 0.5%.

\*4.  $V_{OH}$  is measured with the DC load current in this testing.

**SWITCHING CHARACTERISTICS ( $T_A = -40$  to  $+125^\circ\text{C}$ ,  $V_{CC} = 10$  to  $30\text{ V}$ ,  $I_F(\text{ON}) = 8$  to  $12\text{ mA}$ ,  $V_F(\text{OFF}) = -2$  to  $0.8\text{ V}$ ,  $V_{EE} = \text{GND}$ , unless otherwise specified)**

| Parameter                                                    | Symbol                | Conditions                                                                                                                                                        | MIN.   | TYP.* <sup>1</sup> | MAX.  | Unit                    |
|--------------------------------------------------------------|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|--------------------|-------|-------------------------|
| Propagation Delay Time (L H)                                 | $t_{PLH}$             | $R_g = 47\text{ }\Omega$ , $C_g = 3\text{ nF}$ ,<br>$f = 50\text{ kHz}$ ,<br>Duty Cycle = 50% <sup>*2</sup> ,<br>$I_F = 10\text{ mA}$ ,<br>$V_{CC} = 30\text{ V}$ | 0.040  | 0.075              | 0.175 | $\mu\text{s}$           |
| Propagation Delay Time (H L)                                 | $t_{PHL}$             |                                                                                                                                                                   | 0.040  | 0.090              | 0.175 | $\mu\text{s}$           |
| Pulse Width Distortion (PWD)                                 | $ t_{PHL} - t_{PLH} $ |                                                                                                                                                                   |        |                    | 0.090 | $\mu\text{s}$           |
| Propagation Delay Time (Difference Between Any Two Products) | $t_{PHL} - t_{PLH}$   |                                                                                                                                                                   | -0.120 |                    | 0.120 | $\mu\text{s}$           |
| Rise Time                                                    | $t_r$                 |                                                                                                                                                                   |        | 30                 |       | ns                      |
| Fall Time                                                    | $t_f$                 |                                                                                                                                                                   |        | 30                 |       | ns                      |
| Common Mode Transient Immunity at High Level Output          | $\text{ICM}_{HI}$     | $T_A = 25^\circ\text{C}$ , $I_F = 10\text{ mA}$ ,<br>$V_{CC} = 30\text{ V}$ , $V_{CM} = 1.5\text{ kV}$                                                            | 50     |                    |       | $\text{kV}/\mu\text{s}$ |
| Common Mode Transient Immunity at Low Level Output           | $\text{ICM}_{LI}$     | $T_A = 25^\circ\text{C}$ , $V_F = 0\text{ mA}$ ,<br>$V_{CC} = 30\text{ V}$ , $V_{CM} = 1.5\text{ kV}$                                                             | 50     |                    |       | $\text{kV}/\mu\text{s}$ |

Notes: \*1. Typical values at  $T_A = 25^\circ\text{C}$ ,  $V_{CC} - V_{EE} = 30\text{ V}$ .

\*2. This load condition is equivalent to the IGBT load at 1 200 V/25 A.

|                |                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|----------------|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Caution</b> | <p>GaAs Products</p> | <p>This product uses gallium arsenide (GaAs).<br/>GaAs vapor and powder are hazardous to human health if inhaled or ingested, so please observe the following points.</p> <ul style="list-style-type: none"><li>• Follow related laws and ordinances when disposing of the product. If there are no applicable laws and/or ordinances, dispose of the product as recommended below.</li><li>1. Commission a disposal company able to (with a license to) collect, transport and dispose of materials that contain arsenic and other such industrial waste materials.</li><li>2. Exclude the product from general industrial waste and household garbage, and ensure that the product is controlled (as industrial waste subject to special control) up until final disposal.</li><li>• Do not burn, destroy, cut, crush, or chemically dissolve the product.</li><li>• Do not lick the product or in any way allow it to enter the mouth.</li></ul> |
|----------------|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|