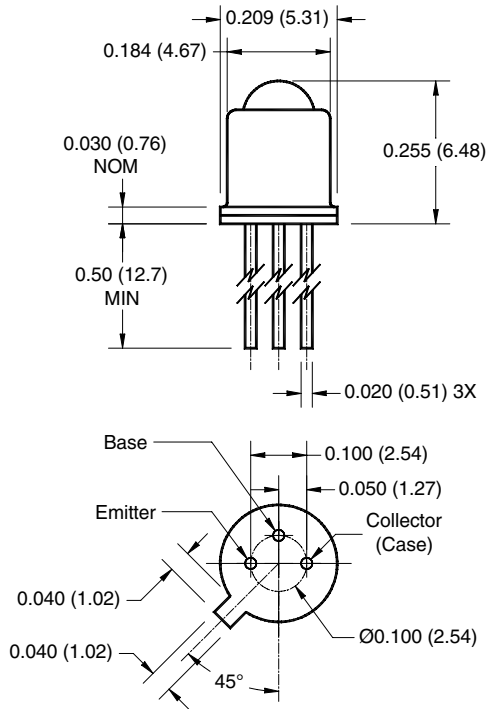


**PACKAGE DIMENSIONS**

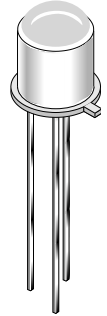


**NOTES:**

1. Dimensions for all drawings are in inches (mm).
2. Tolerance of  $\pm .010$  (.25) on all non-nominal dimensions unless otherwise specified.

**FEATURES**

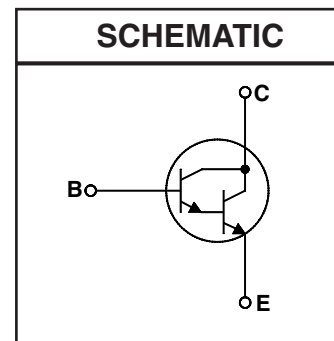
- Hermetically sealed package
- Narrow reception angle
- European "Pro Electron" registered



**DESCRIPTION**

- The BPW38 is a silicon photodarlington mounted in narrow angle TO-18 package.

**SCHEMATIC**



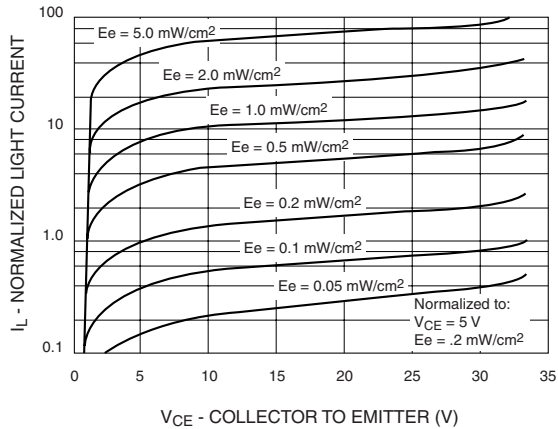
1. Derate power dissipation linearly 3.00 mW/°C above 25°C ambient.
2. Derate power dissipation linearly 6.00 mW/°C above 25°C case.
3. RMA flux is recommended.
4. Methanol or isopropyl alcohols are recommended as cleaning agents.
5. Soldering iron tip 1/16" (1.6mm) minimum from housing.
6. As long as leads are not under any stress or spring tension.
7. Light source is a GaAs LED emitting light at a peak wavelength of 940 nm.

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

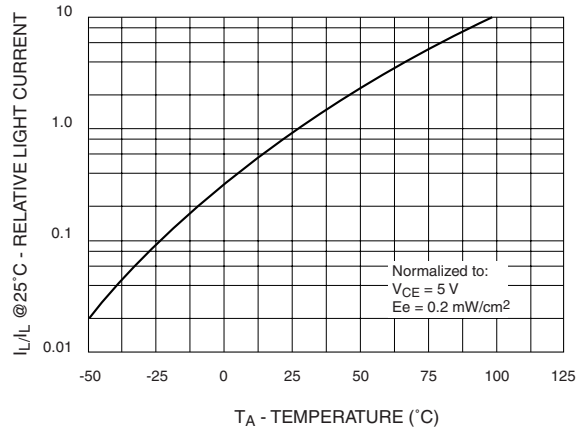
| Parameter   | Symbol      | Rating         | Unit |
|---|-------------|----------------|------|
| Operating Temperature   | $T_{OPR}$   | -65 to +125    | °C   |
| Storage Temperature   | $T_{STG}$   | -65 to +150    | °C   |
| Soldering Temperature (Iron) <sup>(3,4,5 and 6)</sup>         | $T_{SOL-I}$ | 240 for 5 sec  | °C   |
| Soldering Temperature (Flow) <sup>(3,4 and 6)</sup>           | $T_{SOL-F}$ | 260 for 10 sec | °C   |
| Collector-Emitter Voltage                                     | $V_{CEO}$   | 25             | V    |
| Collector-Base Voltage  | $V_{CBO}$   | 25             | V    |
| Emitter-Base Voltage  | $V_{EBO}$   | 12             | V    |
| Power Dissipation ( $T_A = 25^\circ\text{C}$ ) <sup>(1)</sup> | $P_D$       | 300            | mW   |
| Power Dissipation ( $T_C = 25^\circ\text{C}$ ) <sup>(2)</sup> | $P_D$       | 600            | mW   |

| <b>ELECTRICAL / OPTICAL CHARACTERISTICS</b> ( $T_A = 25^\circ\text{C}$ ) (All measurements made under pulse conditions) |  |             |     |         |     |               |
|---|--|-------------|-----|---------|-----|---------------|
| PARAMETER   | TEST CONDITIONS  | SYMBOL      | MIN | TYP     | MAX | UNITS         |
| Collector-Emitter Breakdown   | $I_C = 10\text{ mA}$ , $E_e = 0$                                     | $BV_{CEO}$  | 25  | —       | —   | V             |
| Emitter-Base Breakdown  | $I_E = 100\ \mu\text{A}$ , $E_e = 0$                                 | $BV_{EBO}$  | 12  | —       | —   | V             |
| Collector-Base Breakdown  | $I_C = 100\ \mu\text{A}$ , $E_e = 0$                                 | $BV_{CBO}$  | 25  | —       | —   | V             |
| Collector-Emitter Leakage   | $V_{CE} = 12\text{ V}$ , $E_e = 0$                                   | $I_{CEO}$   | —   | —       | 100 | nA            |
| Reception Angle at 1/2 Sensitivity  |  | $\Theta$    | —   | $\pm 8$ | —   | Deg.          |
| On-State Collector Current  | $E_e = 0.125\text{ mW/cm}^2$<br>$V_{CE} = 5\text{ V}^{(7)}$          | $I_{C(ON)}$ | 7.5 | —       | —   | mA            |
| Rise Time   | $I_C = 10\text{ mA}$ , $V_{CC} = 10\text{ V}$<br>$R_L = 100\ \Omega$ | $t_r$       | —   | 300     | —   | $\mu\text{s}$ |
| Fall Time   | $I_C = 10\text{ mA}$ , $V_{CC} = 10\text{ V}$<br>$R_L = 100\ \Omega$ | $t_f$       | —   | 250     | —   | $\mu\text{s}$ |

**TYPICAL PERFORMANCE CURVES**

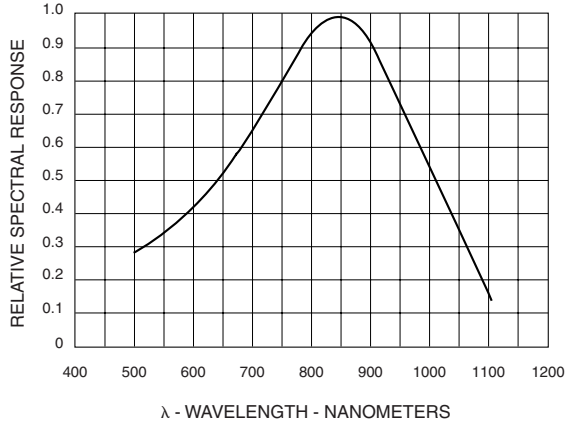


**Fig. 1** Light Current vs. Collector to Emitter Voltage

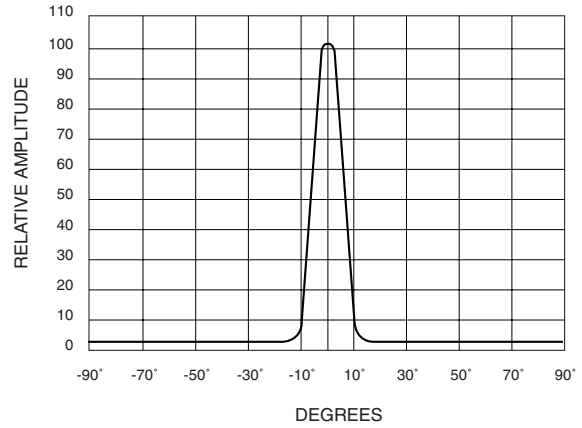


**Fig. 2** Relative Light Current vs. Ambient Temperature

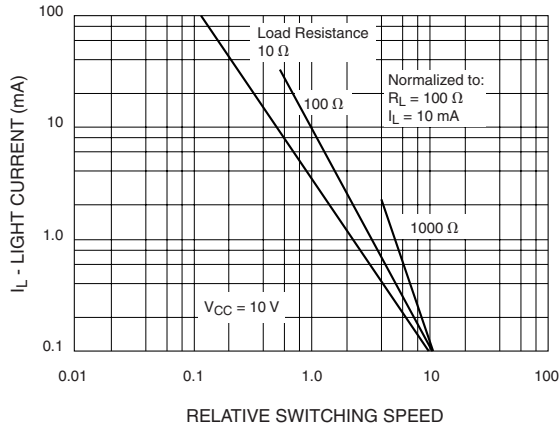
**TYPICAL PERFORMANCE CURVES**



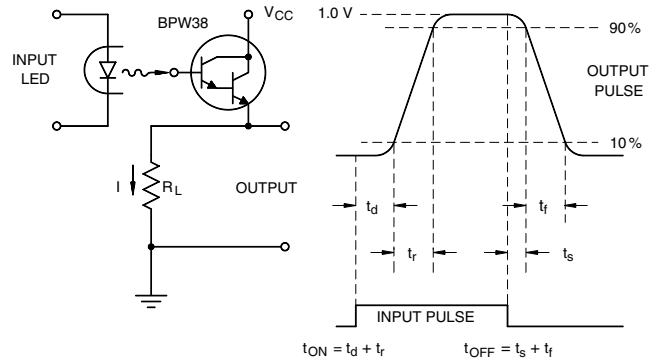
**Fig. 3 Spectral Response Curve**



**Fig. 4 Angular Response**



**Fig. 5 Light Current vs. Relative Switching Speed**



**Fig. 6 Test Circuit and Voltage Waveforms**

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