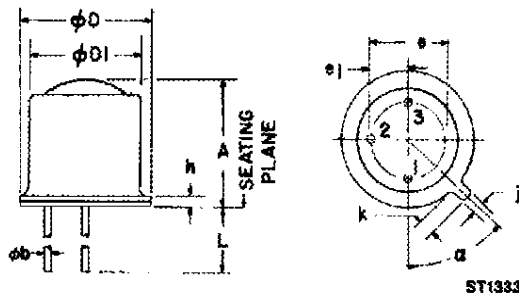


**PACKAGE DIMENSIONS**



ST1333

**DESCRIPTION**

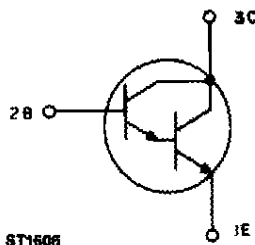
The BPW38 is a silicon photodarlington mounted in a narrow angle TO-18 package.

**FEATURES**

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

| SYMBOL    | INCHES   |      | MILLIMETERS |      | NOTES |
|-----------|----------|------|-------------|------|-------|
|           | MIN.     | MAX. | MIN.        | MAX. |       |
| A         | .225     | .255 | 5.71        | 6.47 |       |
| $\phi b$  | .016     | .021 | .407        | .533 |       |
| $\phi D$  | .209     | .230 | 5.31        | 5.84 |       |
| $\phi D1$ | .178     | .195 | 4.52        | 4.96 |       |
| e         | .100 NOM |      | 2.54 NOM    |      | 2     |
| e1        | .050 NOM |      | 1.27 NOM    |      | 2     |
| h         | ---      | .030 | ---         | .76  |       |
| j         | .036     | .046 | .92         | 1.16 |       |
| k         | .028     | .048 | .71         | 1.22 | 1     |
| L         | .500     | ---  | 12.7        | ---  |       |
| a         | 45°      | 45°  | 45°         | 45°  | 3     |

**PACKAGE OUTLINE**



ST1608

**NOTES:**

1. MEASURED FROM MAXIMUM DIAMETER OF DEVICE.
2. LEADS HAVING MAXIMUM DIAMETER .021" (.533mm) MEASURED IN GAUGING PLANE .054" + .001" - .000 (1.37 + .025 - .000mm) BELOW THE REFERENCE PLANE OF THE DEVICE SHALL BE WITHIN .007" (.778mm) THEIR TRUE POSITION RELATIVE TO MAXIMUM WIDTH TAB.
3. FROM CENTERLINE TAB.



## HERMETIC SILICON PHOTODARLINGTON

### ABSOLUTE MAXIMUM RATINGS (T<sub>a</sub> = 25°C Unless Otherwise Specified)

|   |  |
|---|--|
| Storage Temperature .....                       | -65°C to +150°C                          |
| Operating Temperature .....                     | -65°C to +125°C                          |
| Soldering:                                      |  |
| Lead Temperature (Iron) .....                   | 240°C for 5 sec. <sup>(3),(5),(6)</sup>  |
| Lead Temperature (Flow) .....                   | 260°C for 10 sec. <sup>(3),(4),(6)</sup> |
| Collector-Emitter Breakdown Voltage .....       | 25 Volts                                 |
| Collector-Base Breakdown Voltage .....          | 25 Volts                                 |
| Emitter-Base Breakdown Voltage .....            | 12 Volts                                 |
| Power Dissipation (T <sub>a</sub> = 25°C) ..... | 300 mW <sup>(1)</sup>                    |
| Power Dissipation (T <sub>c</sub> = 25°C) ..... | 600 mW <sup>(2)</sup>                    |

### ELECTRICAL CHARACTERISTICS (T<sub>a</sub> = 25°C Unless Otherwise Specified)

(All measurements made under pulse conditions.)

| PARAMETER                        | SYMBOL             | MIN. | TYP. | MAX. | UNITS   | TEST CONDITIONS  |
|----------------------------------|--------------------|------|------|------|---------|--|
| Collector-Emitter Breakdown      | BV <sub>CEO</sub>  | 25   | —    | —    | V       | I <sub>c</sub> = 10 mA, E <sub>e</sub> = 0                                       |
| Emitter-Base Breakdown           | BV <sub>EB0</sub>  | 12   | —    | —    | V       | I <sub>e</sub> = 100 μA, E <sub>e</sub> = 0                                      |
| Collector-Base Breakdown         | BV <sub>CB0</sub>  | 25   | —    | —    | V       | I <sub>c</sub> = 100 μA, E <sub>e</sub> = 0                                      |
| Collector-Emitter Leakage        | I <sub>CEO</sub>   | —    | —    | 100  | nA      | V <sub>CE</sub> = 12 V, E <sub>e</sub> = 0                                       |
| Reception Angle at ½ Sensitivity | θ                  | —    | ±8   | —    | Degrees |  |
| On-State Collector Current       | I <sub>CO(s)</sub> | 3.0  | —    | —    | mA      | E <sub>e</sub> = .05 mW/cm <sup>2</sup> , V <sub>CE</sub> = 5 V <sup>(7,8)</sup> |
| Rise Time                        | t <sub>r</sub>     | —    | 300  | —    | μS      | I <sub>c</sub> = 10 mA, V <sub>CE</sub> = 10 V, R <sub>L</sub> = 100Ω            |
| Fall Time                        | t <sub>f</sub>     | —    | 250  | —    | μS      | I <sub>c</sub> = 10 mA, V <sub>CE</sub> = 10 V, R <sub>L</sub> = 100Ω            |

### NOTES

- Derate power dissipation linearly 3.00mW/°C above 25°C ambient.
- Derate power dissipation linearly 6.00mW/°C above 25°C case.
- RMA flux is recommended.
- Methanol or Isopropyl alcohols are recommended as cleaning agents.
- Soldering iron tip 1/8" (1.6 mm) minimum from housing.
- As long as leads are not under any stress or spring tension.
- Light source is a GaAs LED emitting light at a peak wavelength of 940 nm.
- Figure 1 and figure 2 use light source of tungsten lamp at 2870°K color temperature. A GaAs source of 0.05 mW/cm<sup>2</sup> is approximately equivalent to a tungsten source, at 2870°K, of 0.2 mW/cm<sup>2</sup>.

**TYPICAL CHARACTERISTICS**

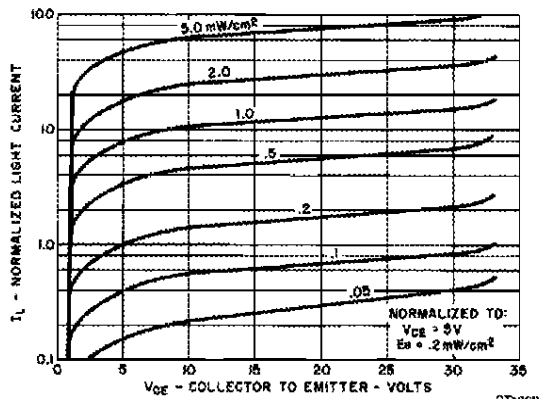


Fig. 1. Light Current vs. Collector to Emitter Voltage ST1280

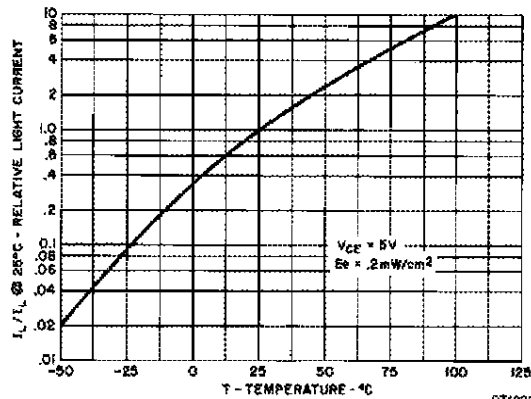


Fig. 2. Relative Light Current vs. Ambient Temperature ST1285

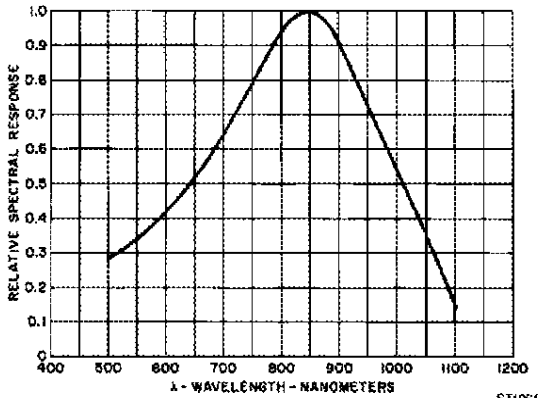


Fig. 3. Spectral Response Curve ST1261

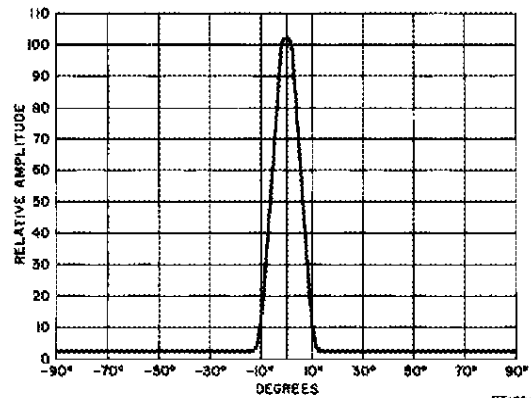


Fig. 4. Angular Response ST1284

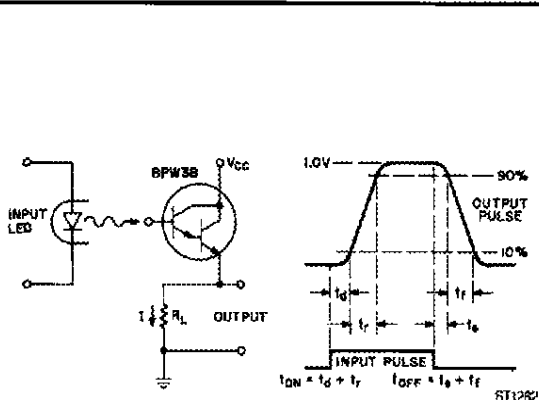


Fig. 5. Test Circuit and Voltage Waveforms ST1282

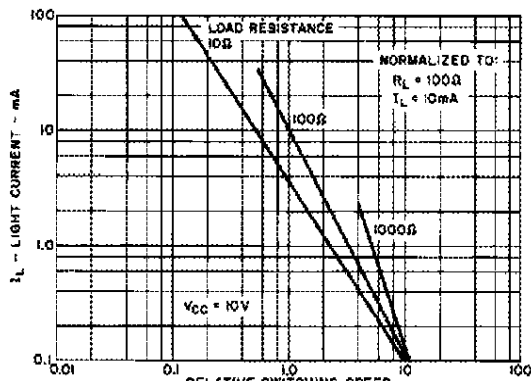


Fig. 6. Light Current vs. Relative Switching Speed ST1283