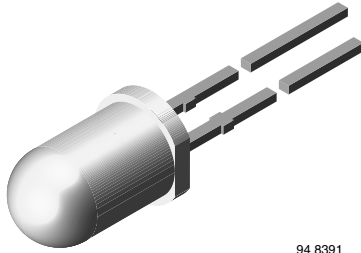


Silicon NPN Phototransistor



94 8391



FEATURES

- Package type: leaded
- Package form: T-1 $\frac{3}{4}$
- Dimensions (in mm): \varnothing 5
- Leads with stand-off
- High photo sensitivity
- High radiant sensitivity
- Suitable for visible and near infrared radiation
- Fast response times
- Angle of half sensitivity: $\varphi = \pm 20^\circ$
- Compliant to RoHS Directive 2002/95/EC and in accordance to WEEE 2002/96/EC

DESCRIPTION

BPW96 is a silicon NPN phototransistor with high radiant sensitivity in clear, T-1 $\frac{3}{4}$ plastic package. It is sensitive to visible and near infrared radiation.

Note

** Please see document "Vishay Material Category Policy": www.vishay.com/doc?99902

APPLICATIONS

- Detector in electronic control and drive circuits

| PRODUCT SUMMARY | | | |
|-----------------|---------------|-----------------|----------------------|
| COMPONENT | I_{ca} (mA) | φ (deg) | $\lambda_{0.1}$ (nm) |
| BPW96B | 2.5 to 7.5 | ± 20 | 450 to 1080 |
| BPW96C | 4.5 to 15 | ± 20 | 450 to 1080 |

Note

- Test condition see table "Basic Characteristics"

| ORDERING INFORMATION | | | |
|----------------------|-----------|------------------------------|-------------------|
| ORDERING CODE | PACKAGING | REMARKS | PACKAGE FORM |
| BPW96B | Bulk | MOQ: 4000 pcs, 4000 pcs/bulk | T-1 $\frac{3}{4}$ |
| BPW96C | Bulk | MOQ: 4000 pcs, 4000 pcs/bulk | T-1 $\frac{3}{4}$ |

Note

- MOQ: minimum order quantity

| ABSOLUTE MAXIMUM RATINGS ($T_{amb} = 25^\circ\text{C}$, unless otherwise specified) | | | | |
|---|--|------------|---------------|------------------|
| PARAMETER | TEST CONDITION | SYMBOL | VALUE | UNIT |
| Collector emitter voltage | | V_{CEO} | 70 | V |
| Emitter collector voltage | | V_{ECO} | 5 | V |
| Collector current | | I_C | 50 | mA |
| Collector peak current | $t_p/T \leq 0.5$, $t_p \leq 10$ ms | I_{CM} | 100 | mA |
| Power dissipation | $T_{amb} \leq 47^\circ\text{C}$ | P_V | 150 | mW |
| Junction temperature | | T_j | 100 | $^\circ\text{C}$ |
| Operating temperature range | | T_{amb} | - 40 to + 100 | $^\circ\text{C}$ |
| Storage temperature range | | T_{stg} | - 40 to + 100 | $^\circ\text{C}$ |
| Soldering temperature | $t \leq 3$ s | T_{sd} | 260 | $^\circ\text{C}$ |
| Thermal resistance junction/ambient | Connected with Cu wire, 0.14 mm ² | R_{thJA} | 350 | K/W |

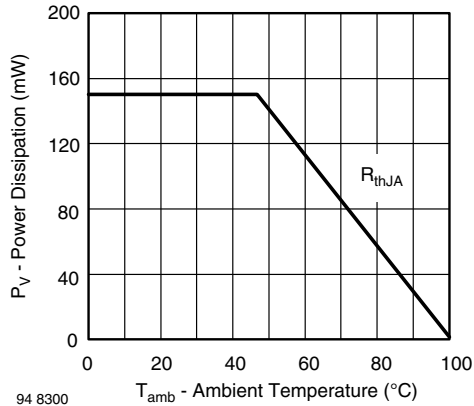


Fig. 1 - Power Dissipation Limit vs. Ambient Temperature

| BASIC CHARACTERISTICS ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified) | | | | | | |
|---|--|-----------------|------|-------------|------|---------------|
| PARAMETER | TEST CONDITION | SYMBOL | MIN. | TYP. | MAX. | UNIT |
| Collector emitter breakdown voltage | $I_C = 1\text{ mA}$ | $V_{(BR)CEO}$ | 70 | | | V |
| Collector emitter dark current | $V_{CE} = 20\text{ V}, E = 0$ | I_{CEO} | | 1 | 200 | nA |
| Collector emitter capacitance | $V_{CE} = 5\text{ V}, f = 1\text{ MHz}, E = 0$ | C_{CEO} | | 3 | | pF |
| Angle of half sensitivity | | φ | | ± 20 | | deg |
| Wavelength of peak sensitivity | | λ_p | | 850 | | nm |
| Range of spectral bandwidth | | $\lambda_{0.1}$ | | 450 to 1080 | | nm |
| Collector emitter saturation voltage | $E_e = 1\text{ mW/cm}^2, \lambda = 950\text{ nm}, I_C = 0.1\text{ mA}$ | V_{CEsat} | | | 0.3 | V |
| Turn-on time | $V_S = 5\text{ V}, I_C = 5\text{ mA}, R_L = 100\text{ }\Omega$ | t_{on} | | 2.0 | | μs |
| Turn-off time | $V_S = 5\text{ V}, I_C = 5\text{ mA}, R_L = 100\text{ }\Omega$ | t_{off} | | 2.3 | | μs |
| Cut-off frequency | $V_S = 5\text{ V}, I_C = 5\text{ mA}, R_L = 100\text{ }\Omega$ | f_c | | 180 | | kHz |

| TYPE DEDICATED CHARACTERISTICS | | | | | | | |
|---------------------------------------|--|--------|----------|------|------|------|------|
| PARAMETER | TEST CONDITION | PART | SYMBOL | MIN. | TYP. | MAX. | UNIT |
| Collector light current | $E_e = 1\text{ mW/cm}^2, \lambda = 950\text{ nm}, V_{CE} = 5\text{ V}$ | BPW96B | I_{ca} | 2.5 | 4.5 | 7.5 | mA |
| | | BPW96C | I_{ca} | 4.5 | 8 | 15 | mA |



BASIC CHARACTERISTICS (T_{amb} = 25 °C, unless otherwise specified)

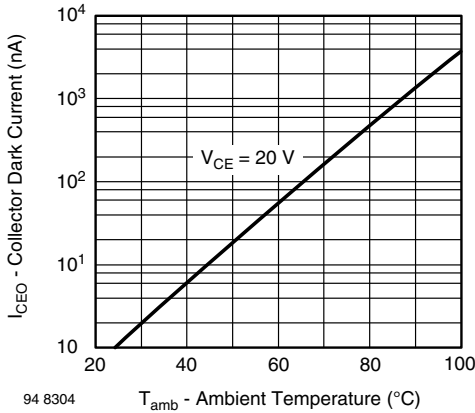


Fig. 1 - Collector Dark Current vs. Ambient Temperature

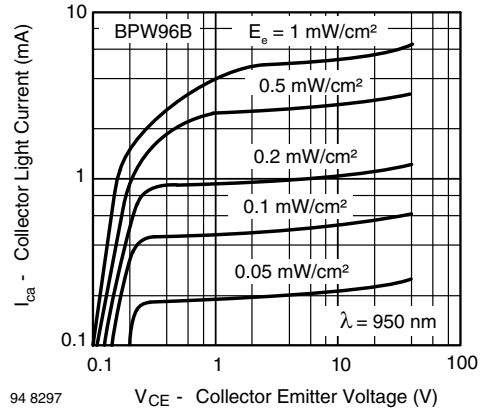


Fig. 4 - Collector Light Current vs. Collector Emitter Voltage

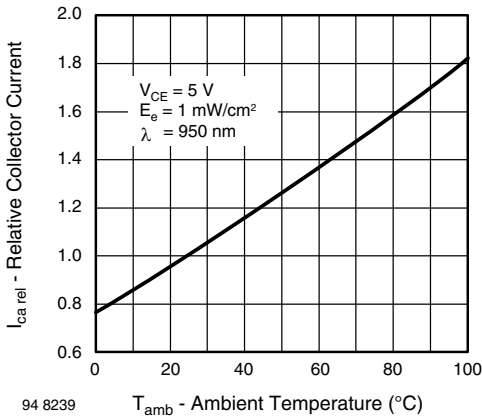


Fig. 2 - Relative Collector Current vs. Ambient Temperature

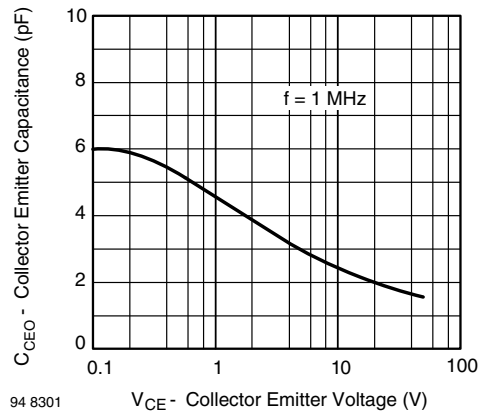


Fig. 5 - Collector Emitter Capacitance vs. Collector Emitter Voltage

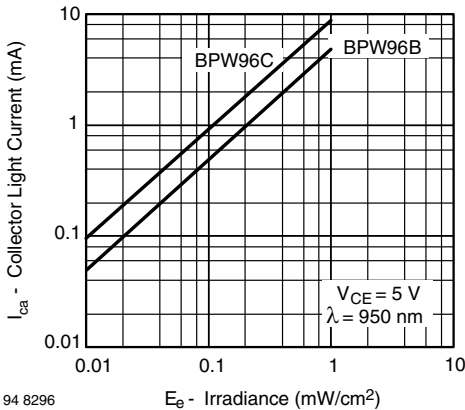


Fig. 3 - Collector Light Current vs. Irradiance

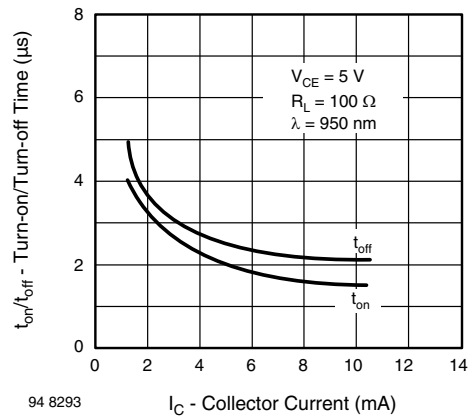


Fig. 6 - Turn-on/Turn-off Time vs. Collector Current

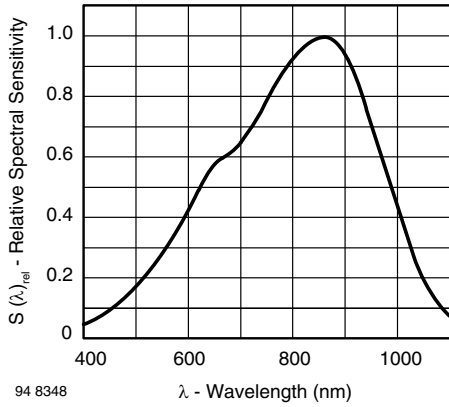


Fig. 7 - Relative Spectral Sensitivity vs. Wavelength

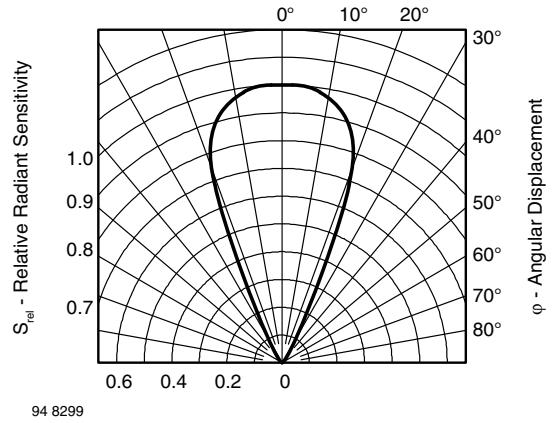
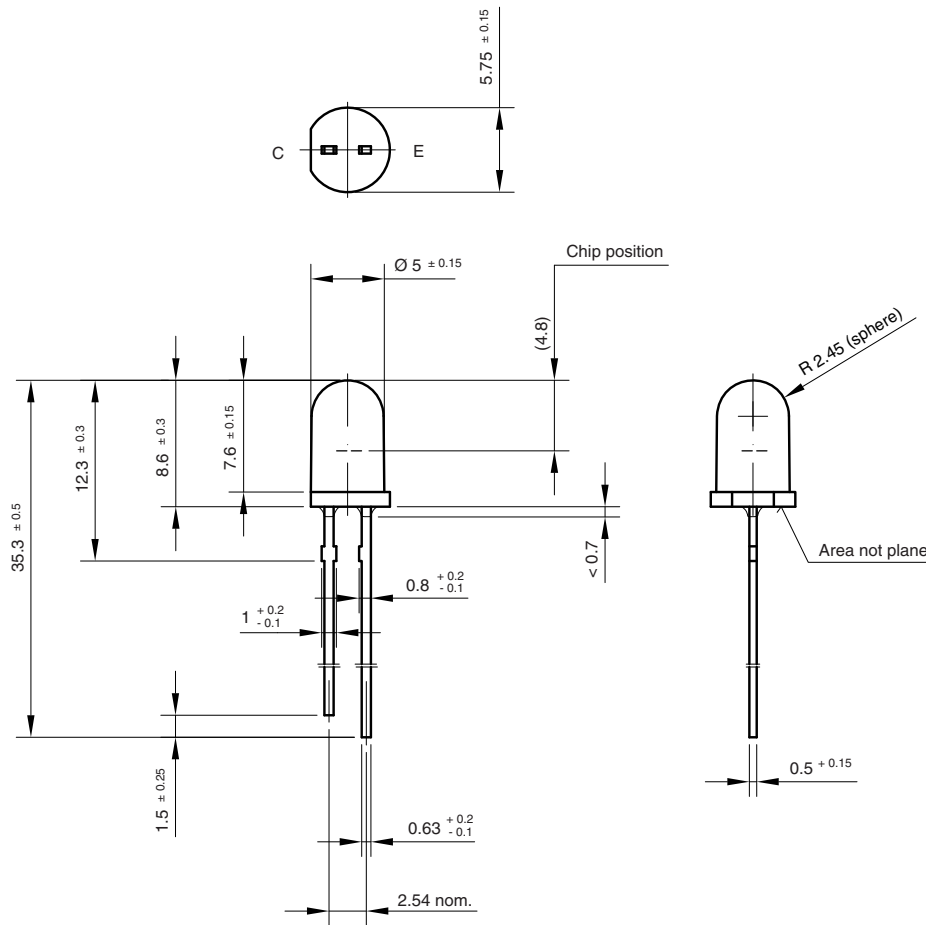


Fig. 8 - Relative Radiant Sensitivity vs. Angular Displacement

PACKAGE DIMENSIONS in millimeters



technical drawings according to DIN specifications

Drawing-No.: 6.544-5086.01-4
 Issue:1; 01.07.96
 96 12192



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