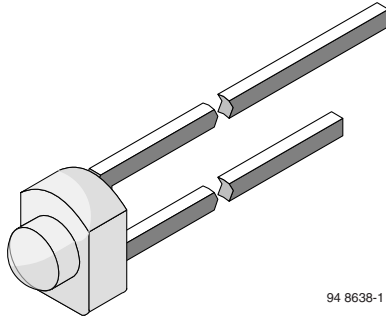


Silicon NPN Phototransistor



94 8638-1

DESCRIPTION

BPW17N is a silicon NPN phototransistor with high radiant sensitivity in clear, T-3/4 plastic package with lens. It is sensitive to visible and near infrared radiation. On PCB this package size enables assembly of arrays with 2.54 mm pitch.

FEATURES

- Package type: leaded
- Package form: T-3/4
- Dimensions (in mm): \varnothing 1.8
- High photo sensitivity
- High radiant sensitivity
- Suitable for visible and near infrared radiation
- Fast response times
- Angle of half sensitivity: $\varphi = \pm 12^\circ$
- Compliant to RoHS Directive 2002/95/EC and in accordance to WEEE 2002/96/EC



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) |
| BPW17N | 1.0 | ± 12 | 450 to 1040 |

Note

- Test condition see table "Basic Characteristics"

| ORDERING INFORMATION | | | |
|----------------------|-----------|------------------------------|--------------|
| ORDERING CODE | PACKAGING | REMARKS | PACKAGE FORM |
| BPW17N | Bulk | MOQ: 5000 pcs, 5000 pcs/bulk | T-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} | 32 | V |
| Emitter collector voltage | | V_{ECO} | 5 | V |
| Collector current | | I_C | 50 | mA |
| Collector peak current | $t_p/T = 0.5, t_p \leq 10 \text{ ms}$ | I_{CM} | 100 | mA |
| Power dissipation | $T_{amb} \leq 55^\circ\text{C}$ | P_V | 100 | 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 | $t \leq 3 \text{ s}$ | T_{sd} | 260 | $^\circ\text{C}$ |
| Thermal resistance junction/ambient | Connected with Cu wire, 0.14 mm ² | R_{thJA} | 450 | K/W |

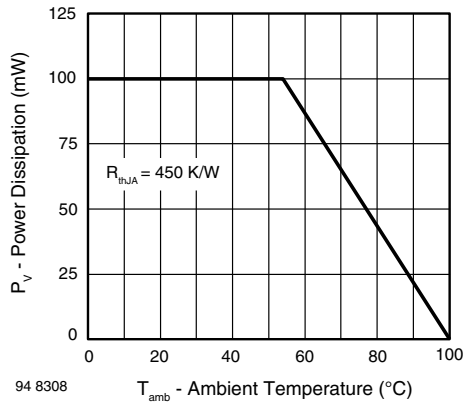


Fig. 1 - Power Dissipation Limit vs. Ambient Temperature

| BASIC CHARACTERISTICS ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified) | | | | | | |
|---|--|-----------------|------|-------------|------|---------------|
| PARAMETER | TEST CONDITION | SYMBOL | MIN. | TYP. | MAX. | UNIT |
| Collector emitter breakdown voltage | $I_C = 1\text{ mA}$ | $V_{(BR)CEO}$ | 32 | | | 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} | | 8 | | pF |
| Collector light current | $E_e = 1\text{ mW/cm}^2, \lambda = 950\text{ nm}, V_{CE} = 5\text{ V}$ | I_{ca} | 0.5 | 1.0 | | mA |
| Angle of half sensitivity | | ϕ | | ± 12 | | deg |
| Wavelength of peak sensitivity | | λ_p | | 825 | | nm |
| Range of spectral bandwidth | | $\lambda_{0.1}$ | | 450 to 1040 | | 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} | | 4.8 | | μs |
| Turn-off time | $V_S = 5\text{ V}, I_C = 5\text{ mA}, R_L = 100\text{ }\Omega$ | t_{off} | | 5.0 | | μs |
| Cut-off frequency | $V_S = 5\text{ V}, I_C = 5\text{ mA}, R_L = 100\text{ }\Omega$ | f_c | | 120 | | kHz |

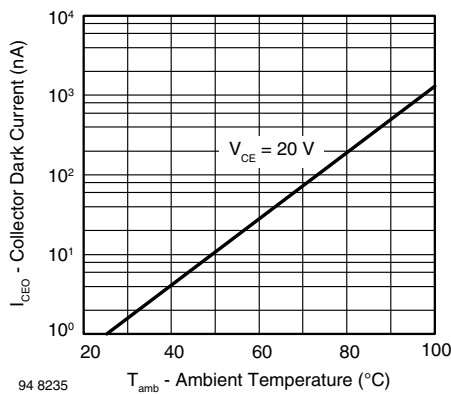
BASIC CHARACTERISTICS ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified)


Fig. 1 - Collector Dark Current vs. Ambient Temperature

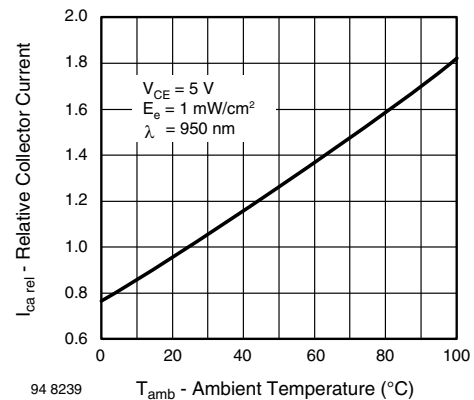


Fig. 2 - Relative Collector Current vs. Ambient Temperature

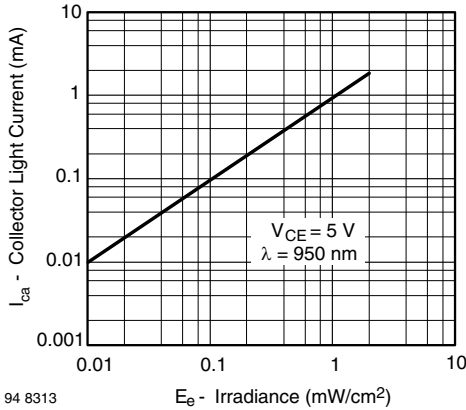


Fig. 3 - Collector Light Current vs. Irradiance

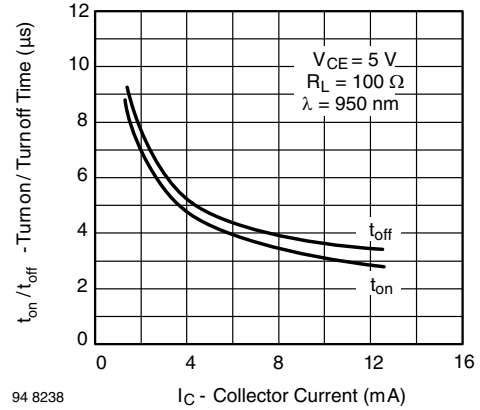


Fig. 6 - Turn-on/Turn-off Time vs. Collector Current

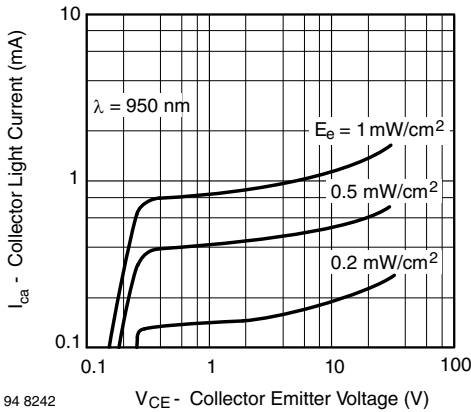


Fig. 4 - Collector Light Current vs. Collector Emitter Voltage

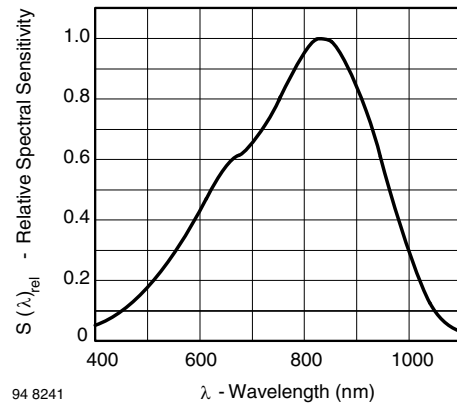


Fig. 7 - Relative Spectral Sensitivity vs. Wavelength

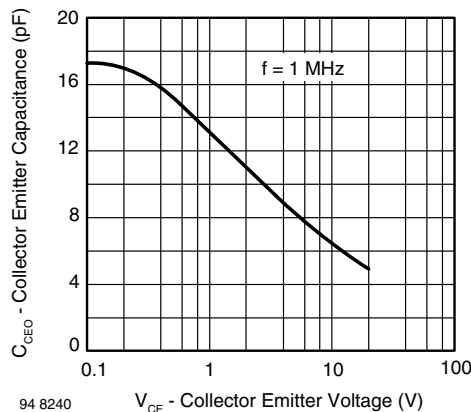


Fig. 5 - Collector Emitter Capacitance vs. Collector Emitter Voltage

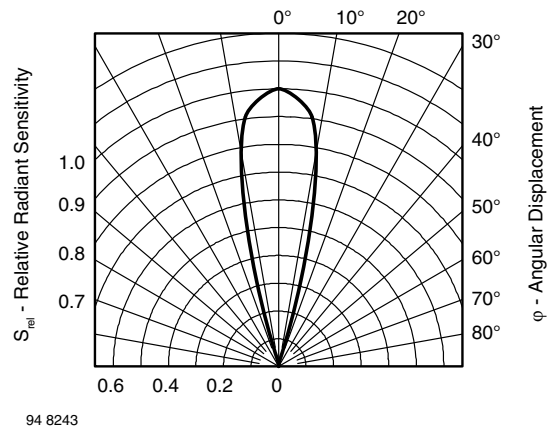
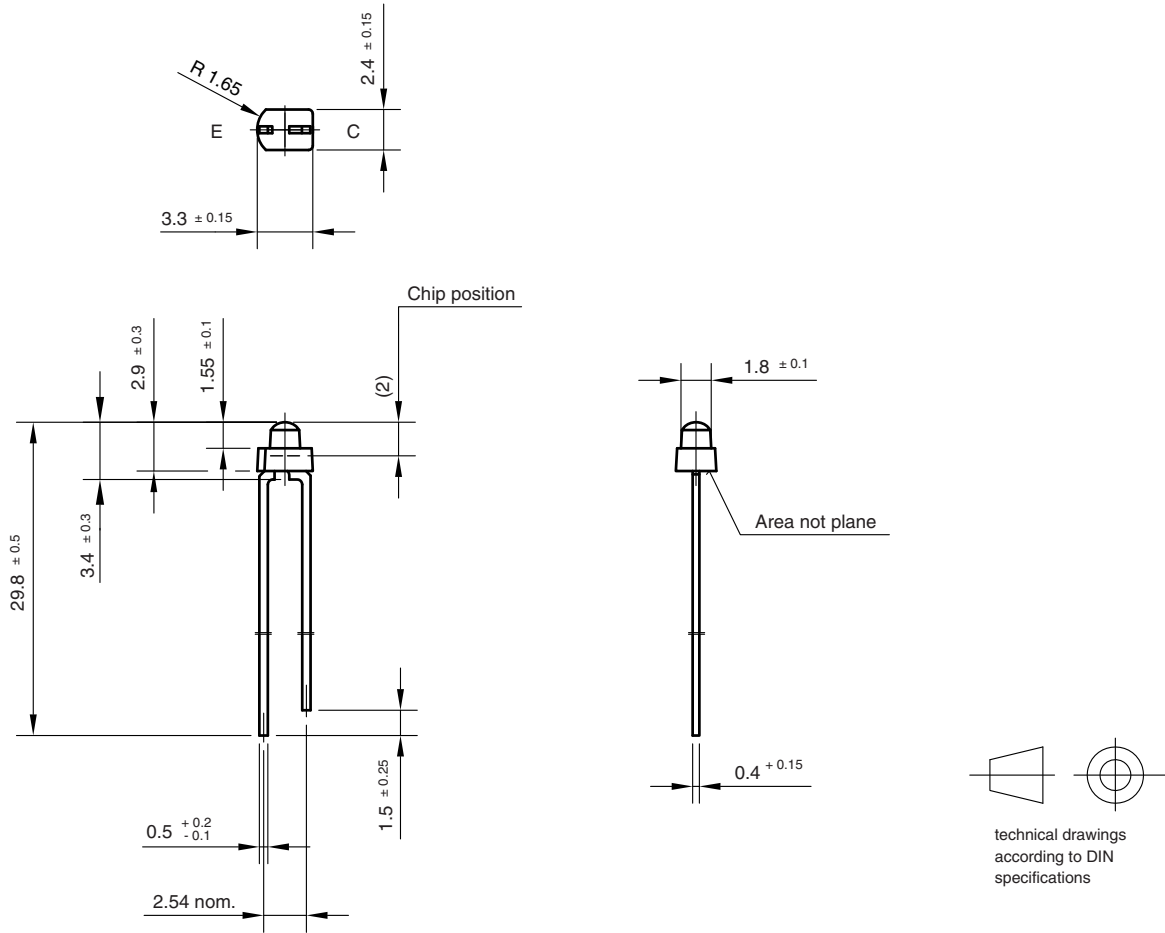


Fig. 8 - Relative Radiant Sensitivity vs. Angular Displacement



PACKAGE DIMENSIONS in millimeters



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