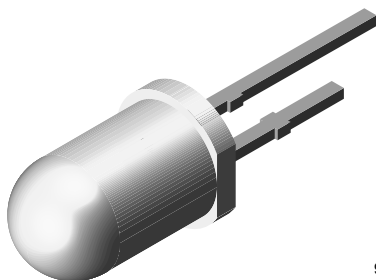


Silicon PIN Photodiode



94 8390

FEATURES

- Package type: leaded
- Package form: T-1 $\frac{3}{4}$
- Dimensions (in mm): \varnothing 5
- Leads with stand-off
- High photo sensitivity
- High sensitivity
- Suitable for visible and near infrared radiation
- Fast response times
- Angle of half sensitivity: $\varphi = \pm 20^\circ$
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912



RoHS
COMPLIANT
HALOGEN
FREE
GREEN
(5-2008)

DESCRIPTION

BPV10 is a PIN photodiode with high speed and high sensitivity in clear, T-1 $\frac{3}{4}$ plastic package. It is sensitive to visible and near infrared radiation.

APPLICATIONS

- High speed photo detector

PRODUCT SUMMARY

| COMPONENT | I_{ra} (μ A) | φ ($^\circ$) | $\lambda_{0.1}$ (nm) |
|-----------|---------------------|------------------------|----------------------|
| BPV10 | 70 | ± 20 | 380 to 1100 |

Note

- Test condition see table "Basic Characteristics"

ORDERING INFORMATION

| ORDERING CODE | PACKAGING | REMARKS | PACKAGE FORM |
|---------------|-----------|------------------------------|-------------------|
| BPV10 | 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 |
|--|--|------------|-------------|------------------|
| Reverse voltage | | V_R | 60 | V |
| Power dissipation | $T_{amb} \leq 25^\circ\text{C}$ | P_V | 215 | 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 | $t \leq 5$ s, 2 mm from body | T_{sd} | 260 | $^\circ\text{C}$ |
| Thermal resistance junction to ambient | Connected with Cu wire, 0.14 mm ² | R_{thJA} | 350 | K/W |

| BASIC CHARACTERISTICS ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified) | | | | | | |
|---|--|-----------------|------|---------------------|------|--|
| PARAMETER | TEST CONDITION | SYMBOL | MIN. | TYP. | MAX. | UNIT |
| Forward voltage | $I_F = 50\text{ mA}$ | V_F | - | 1.0 | 1.3 | V |
| Breakdown voltage | $I_R = 100\text{ }\mu\text{A}$, $E = 0$ | $V_{(BR)}$ | 60 | - | - | V |
| Reverse dark current | $V_R = 20\text{ V}$, $E = 0$ | I_{ro} | - | 0.1 | 5 | nA |
| Diode capacitance | $V_R = 0\text{ V}$, $f = 1\text{ MHz}$, $E = 0$ | C_D | - | 11 | - | pF |
| | $V_R = 5\text{ V}$, $f = 1\text{ MHz}$, $E = 0$ | C_D | - | 3.8 | - | pF |
| Open circuit voltage | $E_A = 1\text{ klx}$ | V_O | - | 480 | - | mV |
| | $E_e = 1\text{ mW/cm}^2$, $\lambda = 950\text{ nm}$ | V_O | - | 450 | - | mV |
| Short circuit current | $E_A = 1\text{ klx}$ | I_K | - | 80 | - | μA |
| | $E_e = 1\text{ mW/cm}^2$, $\lambda = 950\text{ nm}$ | I_K | - | 65 | - | μA |
| Reverse light current | $E_A = 1\text{ klx}$, $V_R = 5\text{ V}$ | I_{ra} | - | 85 | - | μA |
| | $E_e = 1\text{ mW/cm}^2$, $\lambda = 950\text{ nm}$, $V_R = 5\text{ V}$ | I_{ra} | 38 | 70 | - | μA |
| Absolute spectral sensitivity | $V_R = 5\text{ V}$, $\lambda = 950\text{ nm}$ | $s(\lambda)$ | - | 0.55 | - | A/W |
| Angle of half sensitivity | | ϕ | - | ± 20 | - | $^{\circ}$ |
| Wavelength of peak sensitivity | | λ_p | - | 920 | - | nm |
| Range of spectral bandwidth | | $\lambda_{0.1}$ | - | 380 to 1100 | - | nm |
| Quantum efficiency | $\lambda = 950\text{ nm}$ | η | - | 72 | - | % |
| Noise equivalent power | $V_R = 20\text{ V}$, $\lambda = 950\text{ nm}$ | NEP | - | 3×10^{-14} | - | W/ $\sqrt{\text{Hz}}$ |
| Detectivity | $V_R = 20\text{ V}$, $\lambda = 950\text{ nm}$ | D | - | 3×10^{12} | - | $\text{cm}^2/\text{V}\sqrt{\text{Hz}}$ |
| Rise time | $V_R = 10\text{ V}$, $R_L = 50\text{ }\Omega$, $\lambda = 830\text{ nm}$ | t_r | - | 80 | - | ns |
| Fall time | $V_R = 10\text{ V}$, $R_L = 50\text{ }\Omega$, $\lambda = 830\text{ nm}$ | t_f | - | 60 | - | ns |

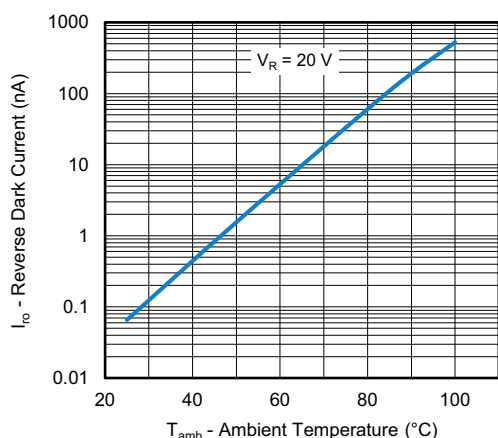
BASIC CHARACTERISTICS ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified)


Fig. 1 - Reverse Dark Current vs. Ambient Temperature

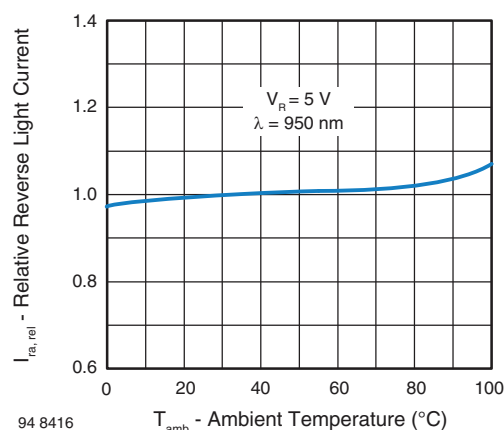


Fig. 2 - Relative Reverse Light Current vs. Ambient Temperature

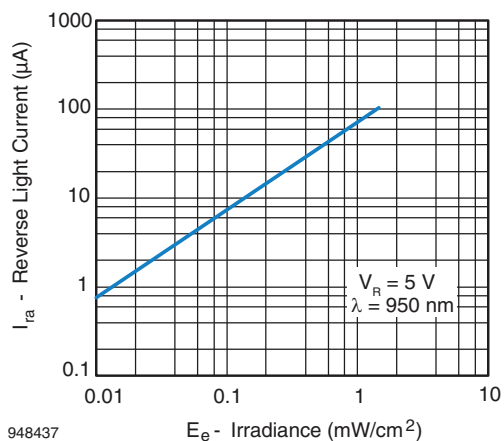


Fig. 3 - Reverse Light Current vs. Irradiance

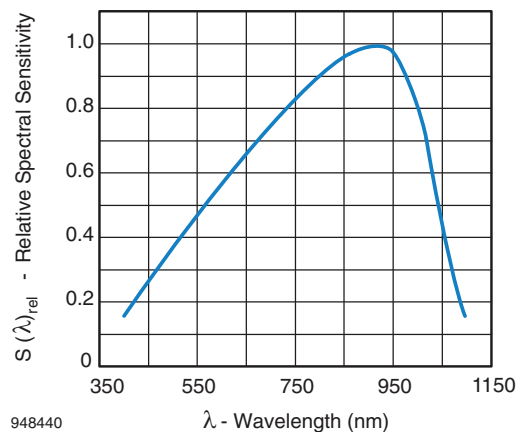


Fig. 6 - Relative Spectral Sensitivity vs. Wavelength

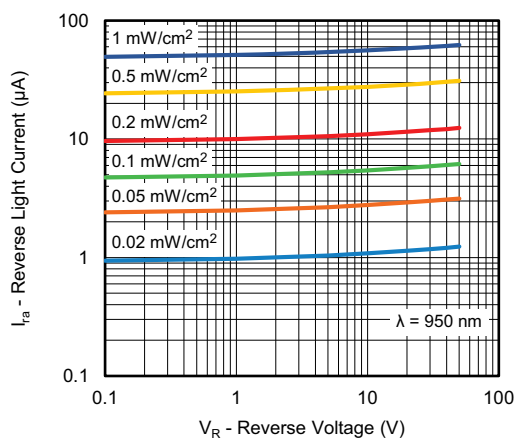


Fig. 4 - Reverse Light Current vs. Reverse Voltage

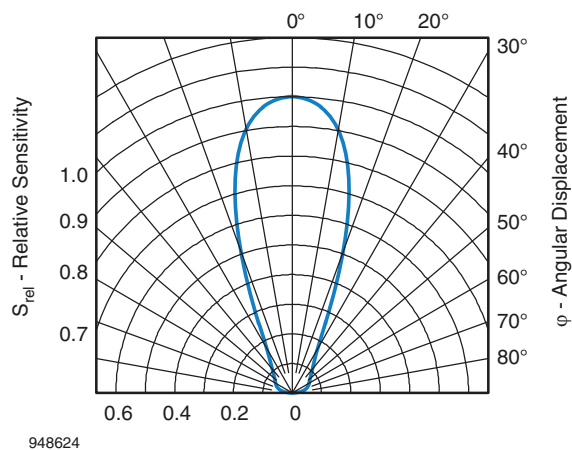


Fig. 7 - Relative Sensitivity vs. Angular Displacement

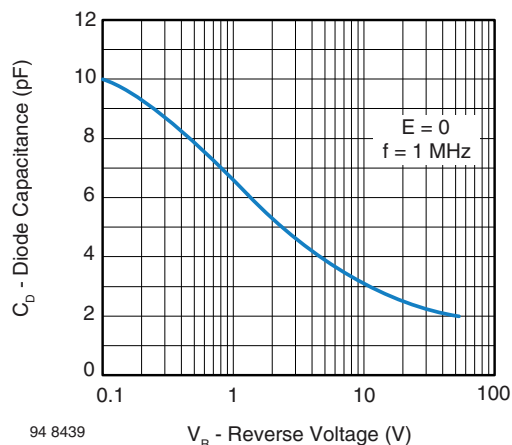
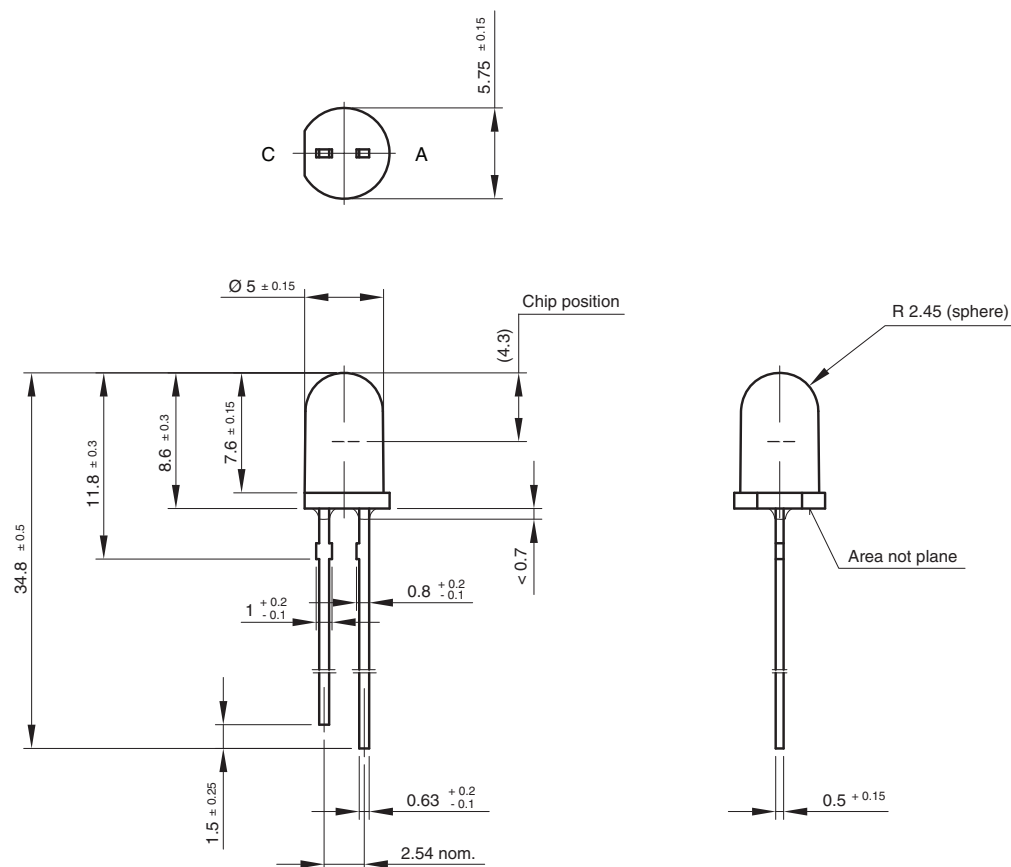


Fig. 5 - Diode Capacitance vs. Reverse Voltage

PACKAGE DIMENSIONS in millimeters


technical drawings
according to DIN
specifications

Drawing-No.: 6.544-5185.02-4

Issue:1; 01.07.96

96 12199



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