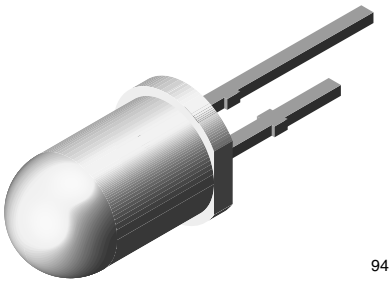
# Silicon PIN Photodiode



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## FEATURES

- Package type: leaded
- Package form: T-1¾
- Dimensions (in mm): Ø 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: φ = ± 20°
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

Pb-free

e4

RoHS COMPLIANT

HALOGEN FREE GREEN (5-2008)

## DESCRIPTION

BPV10 is a PIN photodiode with high speed and high radiant sensitivity in clear, T-1¾ plastic package. It is sensitive to visible and near infrared radiation.

## APPLICATIONS

- High speed photo detector

| PRODUCT SUMMARY | | | |
|---|---|---|---|
| COMPONENT | $I_{ra}$ (µA) | φ (°) | $\lambda_{0.1}$ (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-1¾ |

**Note**

- MOQ: minimum order quantity

| ABSOLUTE MAXIMUM RATINGS ($T_{amb}$ = 25 °C, unless otherwise specified) | | | | |
|---|---|---|---|---|
| PARAMETER | TEST CONDITION | SYMBOL | VALUE | UNIT |
| Reverse voltage | | $V_R$ | 60 | V |
| Power dissipation | $T_{amb} \leq 25$ °C | $P_V$ | 215 | mW |
| Junction temperature | | $T_j$ | 100 | °C |
| Operating temperature range | | $T_{amb}$ | -40 to +100 | °C |
| Storage temperature range | | $T_{stg}$ | -40 to +100 | °C |
| Soldering temperature | t ≤ 5 s, 2 mm from body | $T_{sd}$ | 260 | °C |
| Thermal resistance junction to ambient | Connected with Cu wire, 0.14 mm² | $R_{thJA}$ | 350 | K/W |

| **BASIC CHARACTERISTICS** ($T_{amb}$ = 25 °C, unless otherwise specified) | | | | | | |
|---|---|---|---|---|---|---|
| **PARAMETER** | **TEST CONDITION** | **SYMBOL** | **MIN.** | **TYP.** | **MAX.** | **UNIT** |
| Forward voltage | $I_F$ = 50 mA | $V_F$ | - | 1.0 | 1.3 | V |
| Breakdown voltage | $I_R$ = 100 µA, E = 0 | $V_{(BR)}$ | 60 | - | - | V |
| Reverse dark current | $V_R$ = 20 V, E = 0 | $I_{ro}$ | - | 1 | 5 | nA |
| Diode capacitance | $V_R$ = 0 V, f = 1 MHz, E = 0 | $C_D$ | - | 11 | - | pF |
| | $V_R$ = 5 V, f = 1 MHz, E = 0 | $C_D$ | - | 3.8 | - | pF |
| Open circuit voltage | $E_A$ = 1 klx | $V_O$ | - | 480 | - | mV |
| | $E_e$ = 1 mW/cm², λ = 950 nm | $V_O$ | - | 450 | - | mV |
| Short circuit current | $E_A$ = 1 klx | $I_K$ | - | 80 | - | µA |
| | $E_e$ = 1 mW/cm², λ = 950 nm | $I_K$ | - | 65 | - | µA |
| Reverse light current | $E_A$ = 1 klx, $V_R$ = 5 V | $I_{ra}$ | - | 85 | - | µA |
| | $E_e$ = 1 mW/cm², λ = 950 nm, $V_R$ = 5 V | $I_{ra}$ | 38 | 70 | - | µA |
| Absolute spectral sensitivity | $V_R$ = 5 V, λ = 950 nm | s(λ) | - | 0.55 | - | A/W |
| Angle of half sensitivity | | φ | - | ± 20 | - | ° |
| Wavelength of peak sensitivity | | $\lambda_p$ | - | 920 | - | nm |
| Range of spectral bandwidth | | $\lambda_{0.1}$ | - | 380 to 1100 | - | nm |
| Quantum efficiency | λ = 950 nm | η | - | 72 | - | % |
| Noise equivalent power | $V_R$ = 20 V, λ = 950 nm | NEP | - | 3 x $10^{-14}$ | - | W/√Hz |
| Detectivity | $V_R$ = 20 V, λ = 950 nm | D | - | 3 x $10^{12}$ | - | cm√Hz/W |
| Rise time | $V_R$ = 10 V, $R_L$ = 50 Ω, λ = 830 nm | $t_r$ | - | 80 | - | ns |
| Fall time | $V_R$ = 10 V, $R_L$ = 50 Ω, λ = 830 nm | $t_f$ | - | 60 | - | ns |

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

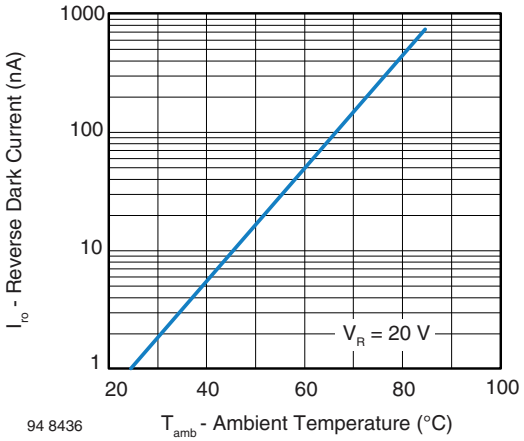



Fig. 1 - Reverse Dark Current vs. Ambient Temperature

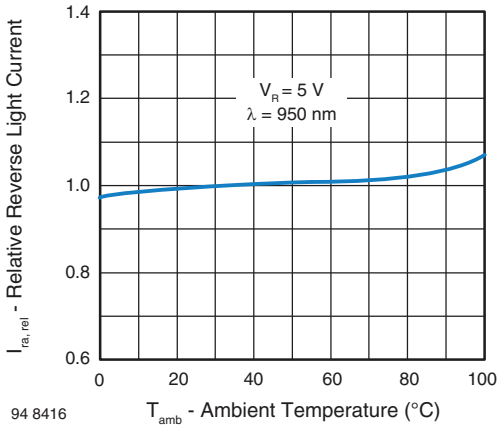



Fig. 2 - Relative Reverse Light Current vs. Ambient Temperature

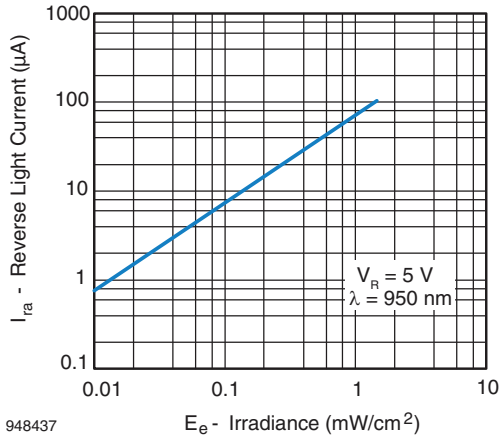



Fig. 3 - Reverse Light Current vs. Irradiance

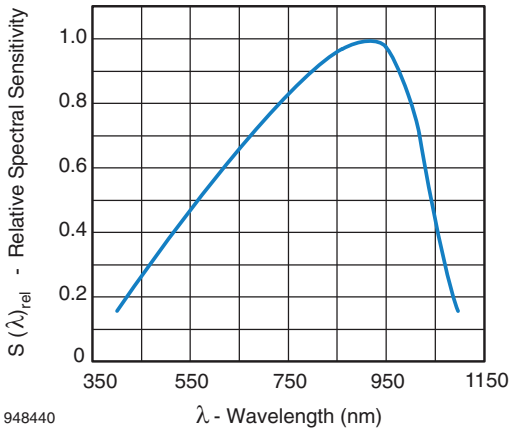



Fig. 6 - Relative Spectral Sensitivity vs. Wavelength

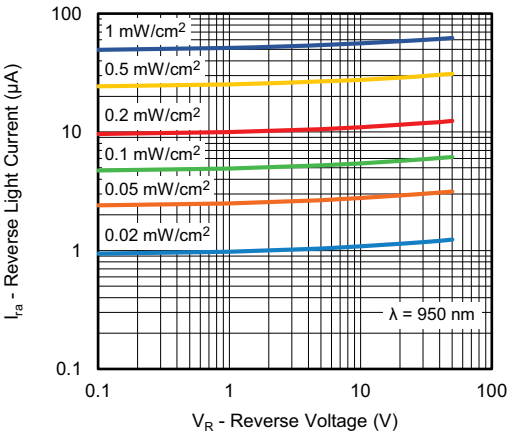



Fig. 4 - Reverse Light Current vs. Reverse Voltage

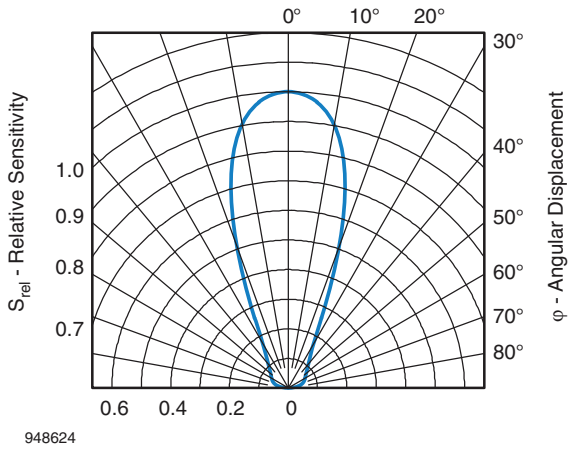



Fig. 7 - Relative Radiant Sensitivity vs. Angular Displacement

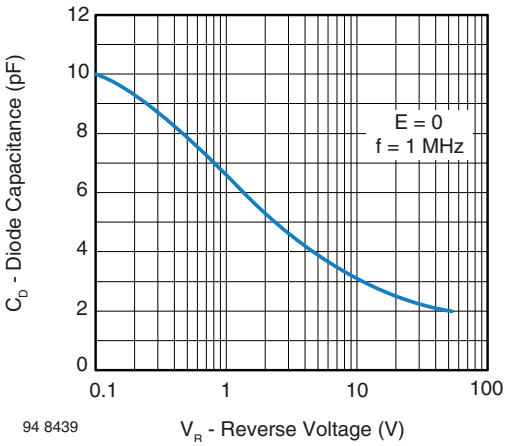
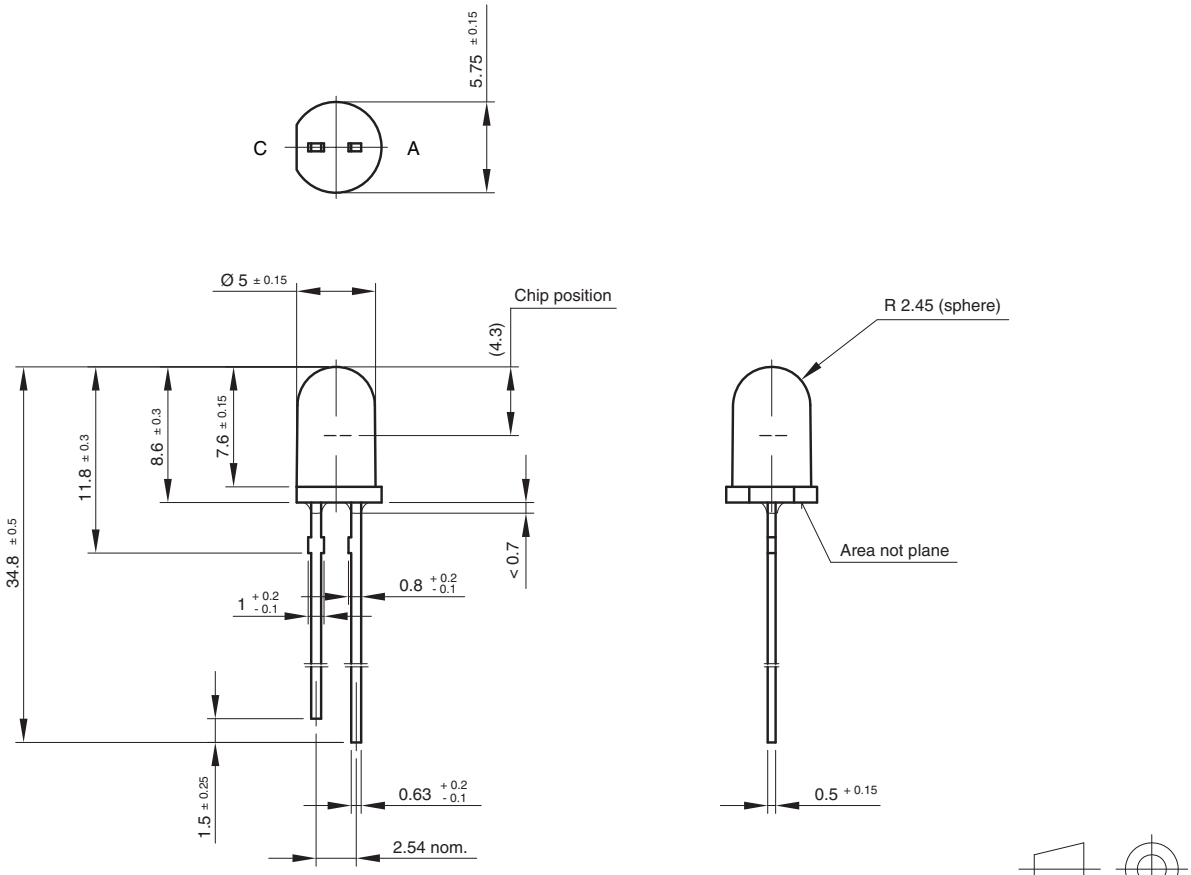



Fig. 5 - Diode Capacitance vs. Reverse Voltage

**PACKAGE DIMENSIONS** in millimeters




Drawing-No.: 6.544-5185.02-4
Issue:1; 01.07.96
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