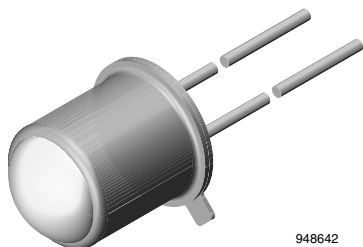


Silicon PIN Photodiode, RoHS-Compliant



FEATURES

- Package type: leaded
- Package form: TO-18
- Dimensions (in mm): Ø 4.7
- Radiant sensitive area (in mm²): 0.88
- High photo sensitivity
- High sensitivity
- Suitable for visible and near infrared radiation
- Fast response times
- Angle of half sensitivity: $\phi = \pm 12^\circ$
- Hermetically sealed package
- Cathode connected to package
- Central chip alignment
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912


RoHS
COMPLIANT

DESCRIPTION

BPW24R is a high sensitive silicon planar photodiode in a standard TO-18 hermetically sealed metal case with a glass lens.

A precise alignment of the chip gives a good coincidence of mechanical and optical axes. The device features a low capacitance and high speed even at low supply voltages.

APPLICATIONS

- High speed photo detector

PRODUCT SUMMARY

| COMPONENT | I_{ra} (µA) | ϕ (°) | $\lambda_{0.5}$ (nm) |
|-----------|---------------|------------|----------------------|
| BPW24R | 60 | ± 12 | 610 to 1040 |

Note

- Test condition see table “Basic Characteristics”

ORDERING INFORMATION

| ORDERING CODE | PACKAGING | REMARKS | PACKAGE FORM |
|---------------|-----------|------------------------------|--------------|
| BPW24R | Bulk | MOQ: 1000 pcs, 1000 pcs/bulk | TO-18 |

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 | 210 | mW |
| Junction temperature | | T_j | 125 | $^\circ\text{C}$ |
| Operating temperature range | | T_{amb} | -40 to +125 | $^\circ\text{C}$ |
| Storage temperature range | | T_{stg} | -40 to +125 | $^\circ\text{C}$ |
| Soldering temperature | $t \leq 5\text{ s}$ | 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 |
| Breakdown voltage | $I_R = 100\text{ }\mu\text{A}$, $E = 0$ | $V_{(BR)}$ | 60 | 200 | - | V |
| Reverse dark current | $V_R = 20\text{ V}$, $E = 0$ | I_{ro} | - | 2 | 10 | 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 |
| | $V_R = 20\text{ V}$, $f = 1\text{ MHz}$, $E = 0$ | C_D | - | 2.5 | - | pF |
| Open circuit voltage | $E_e = 1\text{ mW/cm}^2$, $\lambda = 950\text{ nm}$ | V_o | - | 450 | - | mV |
| Temperature coefficient of V_o | $E_e = 1\text{ mW/cm}^2$, $\lambda = 950\text{ nm}$ | TK_{V_o} | - | -2 | - | mV/K |
| Short circuit current | $E_e = 1\text{ mW/cm}^2$, $\lambda = 950\text{ nm}$ | I_k | - | 55 | - | μA |
| Temperature coefficient of I_k | $E_v = 1\text{ klx}$ | TK_{I_k} | - | 0.1 | - | %/K |
| Reverse light current | $E_e = 1\text{ mW/cm}^2$, $\lambda = 950\text{ nm}$, $V_R = 20\text{ V}$ | I_{ra} | 45 | 60 | - | μA |
| Angle of half sensitivity | | φ | - | ± 12 | - | $^{\circ}$ |
| Wavelength of peak sensitivity | | λ_p | - | 940 | - | nm |
| Range of spectral bandwidth | | $\lambda_{0.5}$ | 610 | - | 1040 | nm |
| 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 |

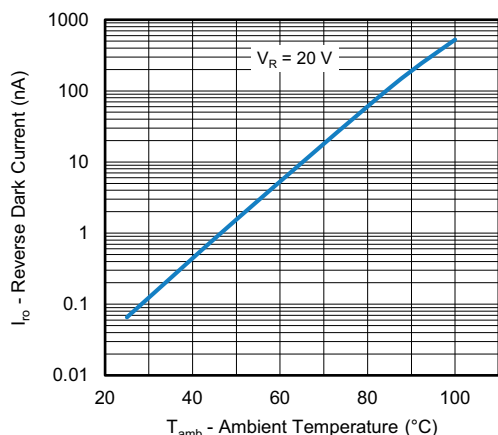
BASIC CHARACTERISTICS ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified)


Fig. 1 - Reverse Dark Current vs. Ambient Temperature

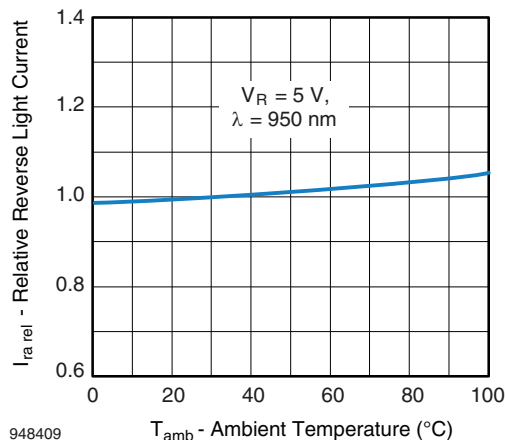


Fig. 2 - Relative Reverse Light Current vs. Ambient Temperature

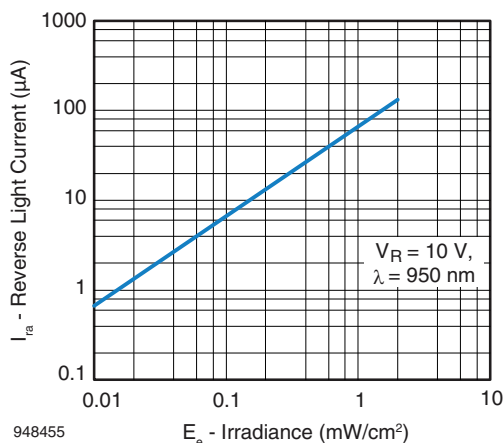


Fig. 3 - Reverse Light Current vs. Irradiance

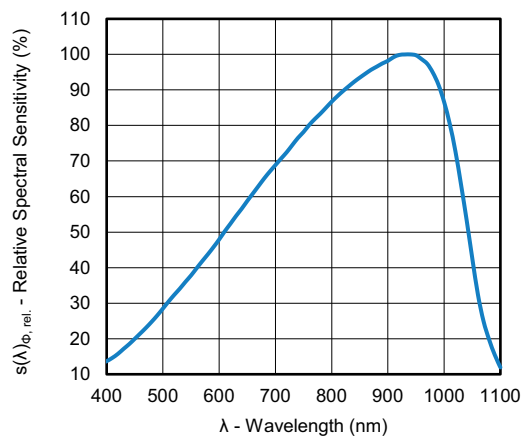


Fig. 6 - Relative Spectral Sensitivity vs. Wavelength

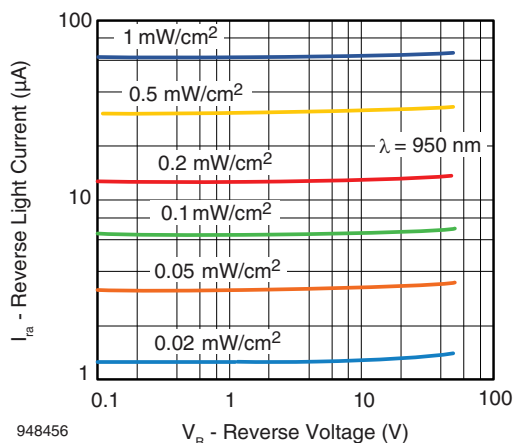


Fig. 4 - Reverse Light Current vs. Reverse Voltage

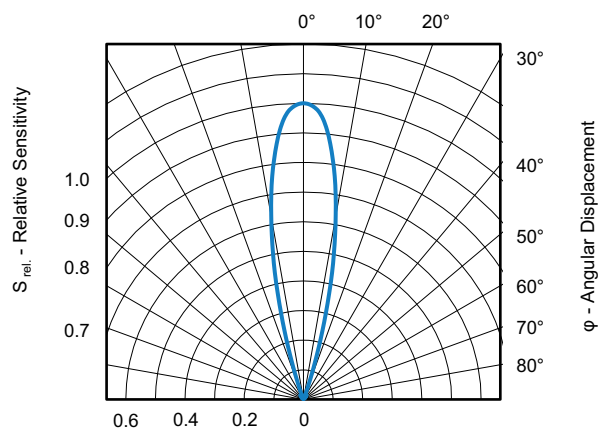


Fig. 7 - Relative Radiant Sensitivity vs. Angular Displacement

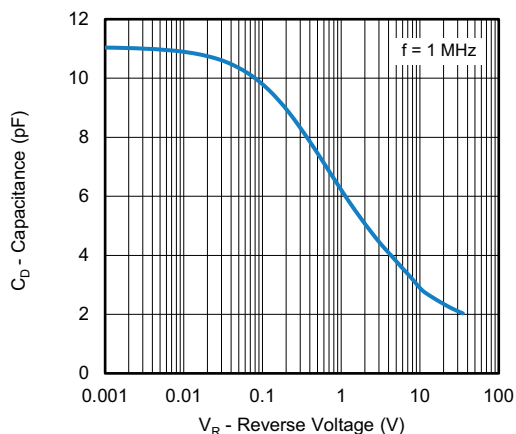
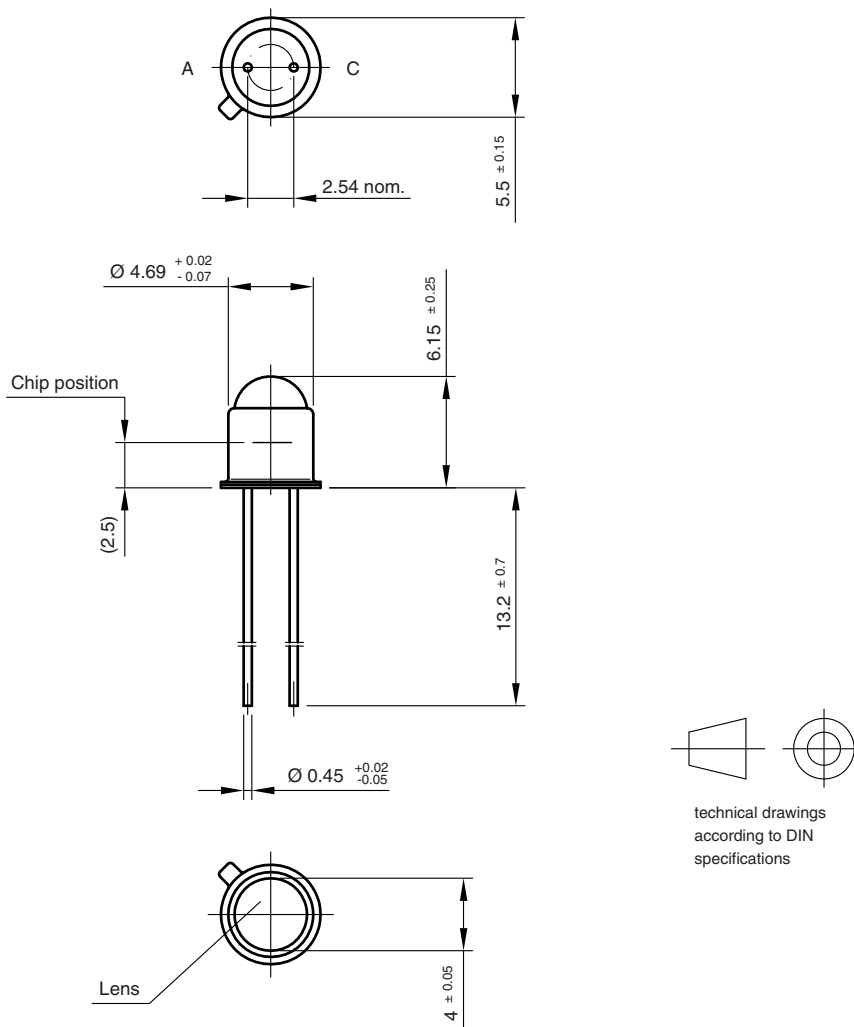


Fig. 5 - Diode Capacitance vs. Reverse Voltage

PACKAGE DIMENSIONS in millimeters


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