

Silicon PIN Photodiode, RoHS Compliant



FEATURES

- Package type: leaded
- Package form: side view
- Dimensions (L x W x H in mm): 5 x 3 x 6.4
- Radiant sensitive area (in mm²): 7.5
- High radiant sensitivity
- Daylight blocking filter matched with 870 nm to 950 nm emitters
- Fast response times
- Angle of half sensitivity: $\varphi = \pm 65^\circ$
- Lead (Pb)-free component in accordance with RoHS 2002/95/EC and WEEE 2002/96/EC



RoHS
COMPLIANT

DESCRIPTION

BPW83 is a PIN photodiode with high speed and high radiant sensitivity in a black, side view plastic package with daylight blocking filter. Filter bandwidth is matched with 870 nm to 950 nm IR emitters.

APPLICATIONS

- High speed detector for infrared radiation
- Infrared remote control and free air data transmission systems, e.g. in combination with TSFFxxxx series IR emitters

PRODUCT SUMMARY

| COMPONENT | I_{ra} (μA) | φ (deg) | $\lambda_{0.5}$ (nm) |
|-----------|----------------------|-----------------|----------------------|
| BPW83 | 45 | ± 65 | 790 to 1050 |

Note

Test condition see table “Basic Characteristics”

ORDERING INFORMATION

| ORDERING CODE | PACKAGING | REMARKS | PACKAGE FORM |
|---------------|-----------|------------------------------|--------------|
| BPW83 | Bulk | MOQ: 4000 pcs, 4000 pcs/bulk | Side view |

Note

MOQ: minimum order quantity

ABSOLUTE MAXIMUM RATINGS

| PARAMETER | TEST CONDITION | SYMBOL | VALUE | UNIT |
|-------------------------------------|--|------------|---------------|------------|
| Reverse voltage | | V_R | 60 | V |
| Power dissipation | $T_{amb} \leq 25^\circ C$ | P_V | 215 | mW |
| Junction temperature | | T_j | 100 | $^\circ C$ |
| Operating temperature range | | T_{amb} | - 40 to + 100 | $^\circ C$ |
| Storage temperature range | | T_{stg} | - 40 to + 100 | $^\circ C$ |
| Soldering temperature | $t \leq 5$ s | T_{sd} | 260 | $^\circ C$ |
| Thermal resistance junction/ambient | Connected with Cu wire, 0.14 mm ² | R_{thJA} | 350 | K/W |

Note

$T_{amb} = 25^\circ C$, unless otherwise specified

| BASIC CHARACTERISTICS | | | | | | |
|--------------------------------|---|-----------------|------|---------------------|------|----------------|
| PARAMETER | TEST CONDITION | SYMBOL | MIN. | TYP. | MAX. | UNIT |
| Breakdown voltage | $I_R = 100 \mu A, E = 0$ | $V_{(BR)}$ | 60 | | | V |
| Reverse dark current | $V_R = 10 V, E = 0$ | I_{ro} | | 2 | 30 | nA |
| Diode capacitance | $V_R = 0 V, f = 1 MHz, E = 0$ | C_D | | 70 | | pF |
| | $V_R = 3 V, f = 1 MHz, E = 0$ | C_D | | 25 | 40 | pF |
| Open circuit voltage | $E_e = 1 mW/cm^2, \lambda = 870 nm$ | V_o | | 350 | | mV |
| Short circuit current | $E_e = 1 mW/cm^2, \lambda = 870 nm$ | I_k | | 38 | | μA |
| Reverse light current | $E_e = 1 mW/cm^2, \lambda = 870 nm, V_R = 5 V$ | I_{ra} | 43 | 45 | | μA |
| Angle of half sensitivity | | φ | | ± 65 | | deg |
| Wavelength of peak sensitivity | | λ_p | | 950 | | nm |
| Range of spectral bandwidth | | $\lambda_{0.5}$ | | 790 to 1050 | | nm |
| Noise equivalent power | $V_R = 10 V, \lambda = 870 nm$ | NEP | | 4×10^{-14} | | W/ \sqrt{Hz} |
| Rise time | $V_R = 10 V, R_L = 1 k\Omega, \lambda = 820 nm$ | t_r | | 100 | | ns |
| Fall time | $V_R = 10 V, R_L = 1 k\Omega, \lambda = 820 nm$ | t_f | | 100 | | ns |

Note

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BASIC CHARACTERISTICS

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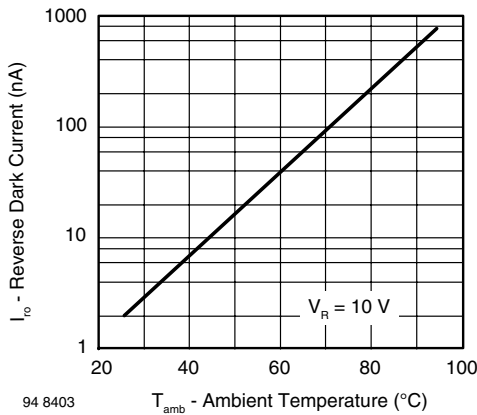


Fig. 1 - Reverse Dark Current vs. Ambient Temperature

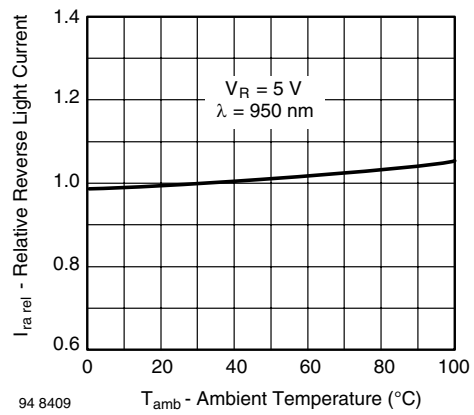


Fig. 2 - Relative Reverse Light Current vs. Ambient Temperature

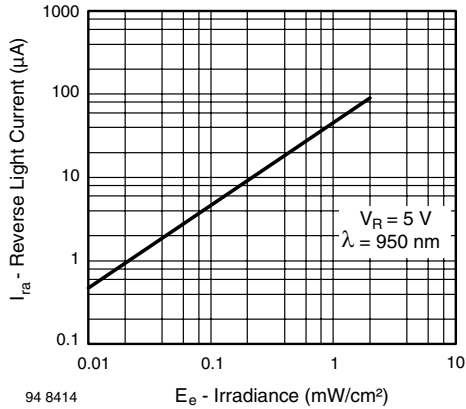


Fig. 3 - Reverse Light Current vs. Irradiance

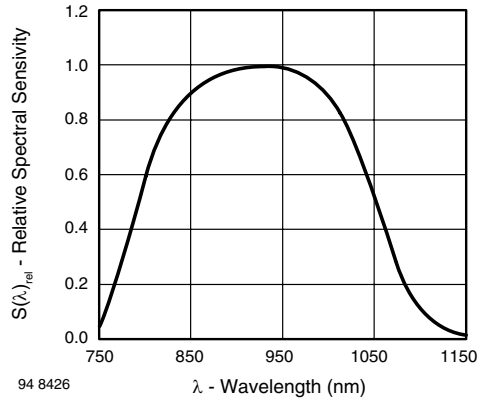


Fig. 6 - Relative Spectral Sensitivity vs. Wavelength

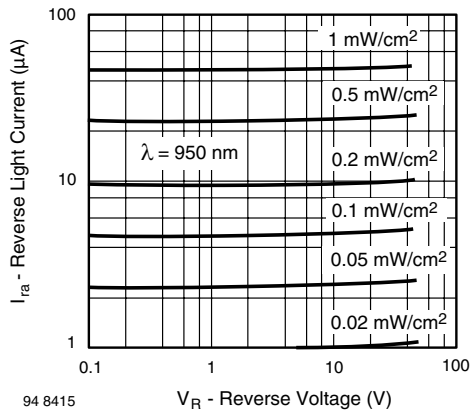


Fig. 4 - Reverse Light Current vs. Reverse Voltage

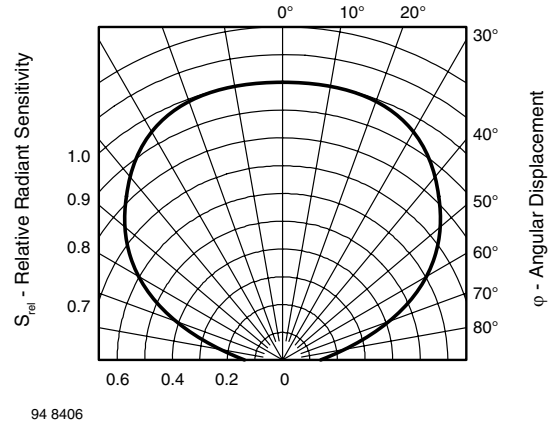


Fig. 7 - Relative Radiant Sensitivity vs. Angular Displacement

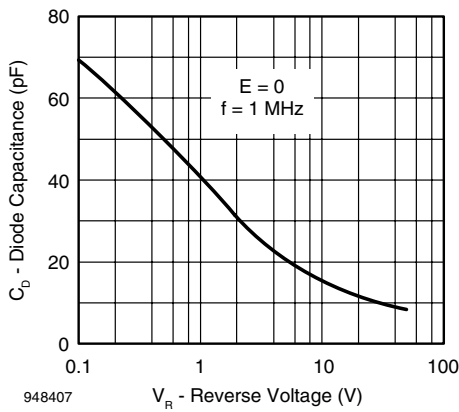


Fig. 5 - Diode Capacitance vs. Reverse Voltage



PACKAGE DIMENSIONS in millimeters



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