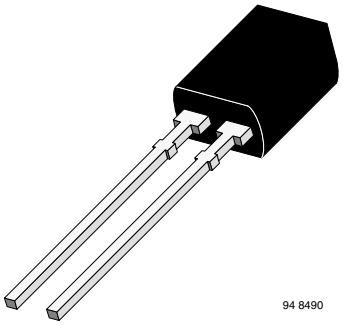
# Silicon PIN Photodiode, RoHS Compliant




## 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 $mm^2$): 7.5
- High radiant sensitivity
- Daylight blocking filter matched with 870 nm to 950 nm emitters
- Fast response times
- Angle of half sensitivity: $\varphi = \pm 65°$
- Lead (Pb)-free component in accordance with RoHS 2002/95/EC and WEEE 2002/96/EC

Pb-free

e4

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) | $\varphi$ (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 | $T_{amb} \leq 25$ °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 | $t \leq 5$ s | $T_{sd}$ | 260 | °C |
| Thermal resistance junction/ambient | Connected with Cu wire, 0.14 $mm^2$ | $R_{thJA}$ | 350 | K/W |

**Note**

$T_{amb}$ = 25 °C, unless otherwise specified

| BASIC CHARACTERISTICS | | | | | | |
|---|---|---|---|---|---|---|
| **PARAMETER** | **TEST CONDITION** | **SYMBOL** | **MIN.** | **TYP.** | **MAX.** | **UNIT** |
| Breakdown voltage | $I_R$ = 100 µA, 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/cm², λ = 870 nm | $V_o$ | | 350 | | mV |
| Short circuit current | $E_e$ = 1 mW/cm², λ = 870 nm | $I_k$ | | 38 | | µA |
| Reverse light current | $E_e$ = 1 mW/cm², λ = 870 nm, $V_R$ = 5 V | $I_{ra}$ | 43 | 45 | | µA |
| Angle of half sensitivity | | φ | | ± 65 | | deg |
| Wavelength of peak sensitivity | | $\lambda_p$ | | 950 | | nm |
| Range of spectral bandwidth | | $\lambda_{0.5}$ | | 790 to 1050 | | nm |
| Noise equivalent power | $V_R$ = 10 V, λ = 870 nm | NEP | | $4 \times 10^{-14}$ | | W/√ Hz |
| Rise time | $V_R$ = 10 V, $R_L$ = 1 kΩ, λ = 820 nm | $t_r$ | | 100 | | ns |
| Fall time | $V_R$ = 10 V, $R_L$ = 1 kΩ, λ = 820 nm | $t_f$ | | 100 | | ns |

**Note**

$T_{amb}$ = 25 °C, unless otherwise specified

## BASIC CHARACTERISTICS

$T_{amb}$ = 25 °C, unless otherwise specified

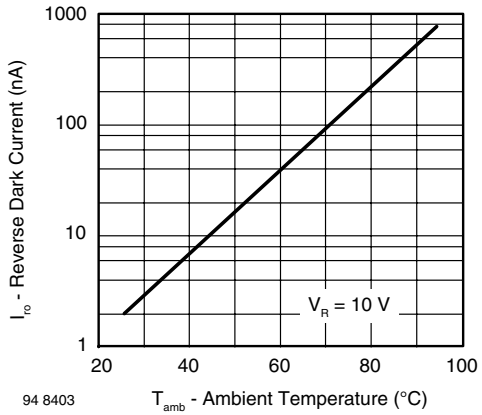



Fig. 1 - Reverse Dark Current vs. Ambient Temperature

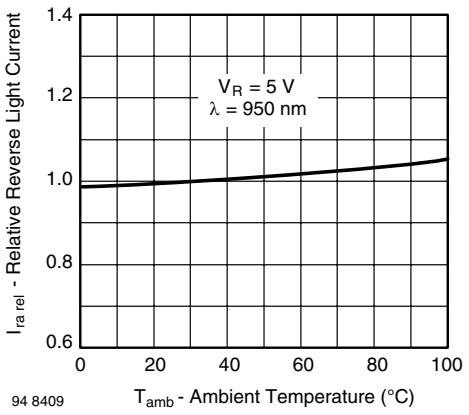



Fig. 2 - Relative Reverse Light Current vs. Ambient Temperature

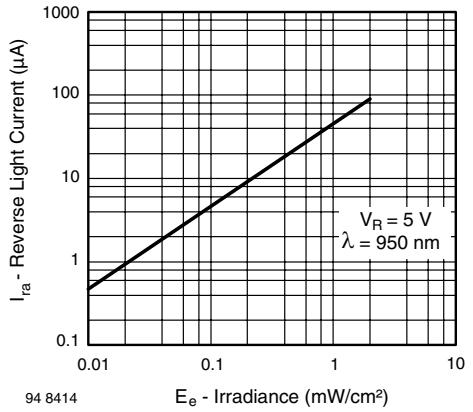



Fig. 3 - Reverse Light Current vs. Irradiance

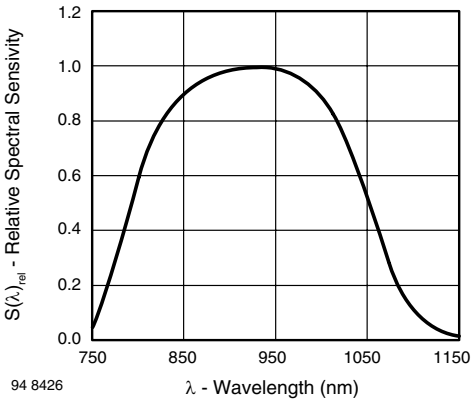



Fig. 6 - Relative Spectral Sensitivity vs. Wavelength

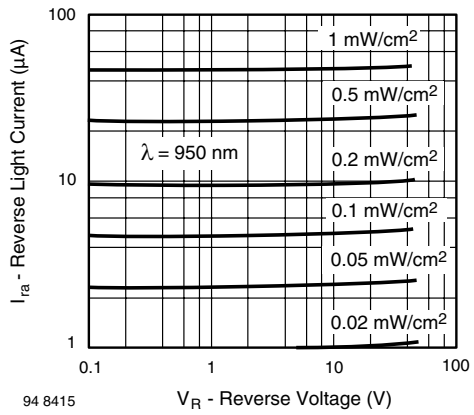



Fig. 4 - Reverse Light Current vs. Reverse Voltage

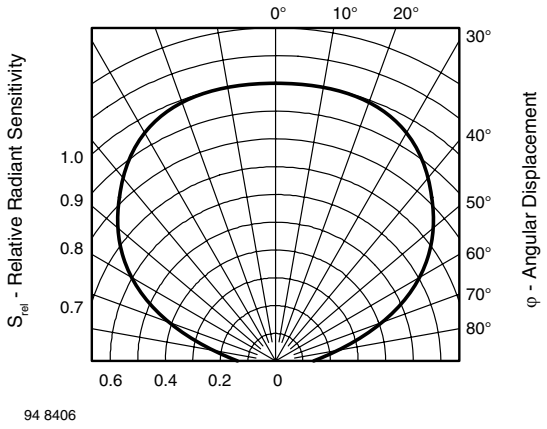



Fig. 7 - Relative Radiant Sensitivity vs. Angular Displacement

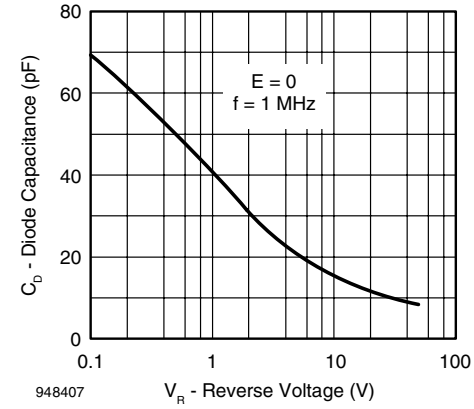
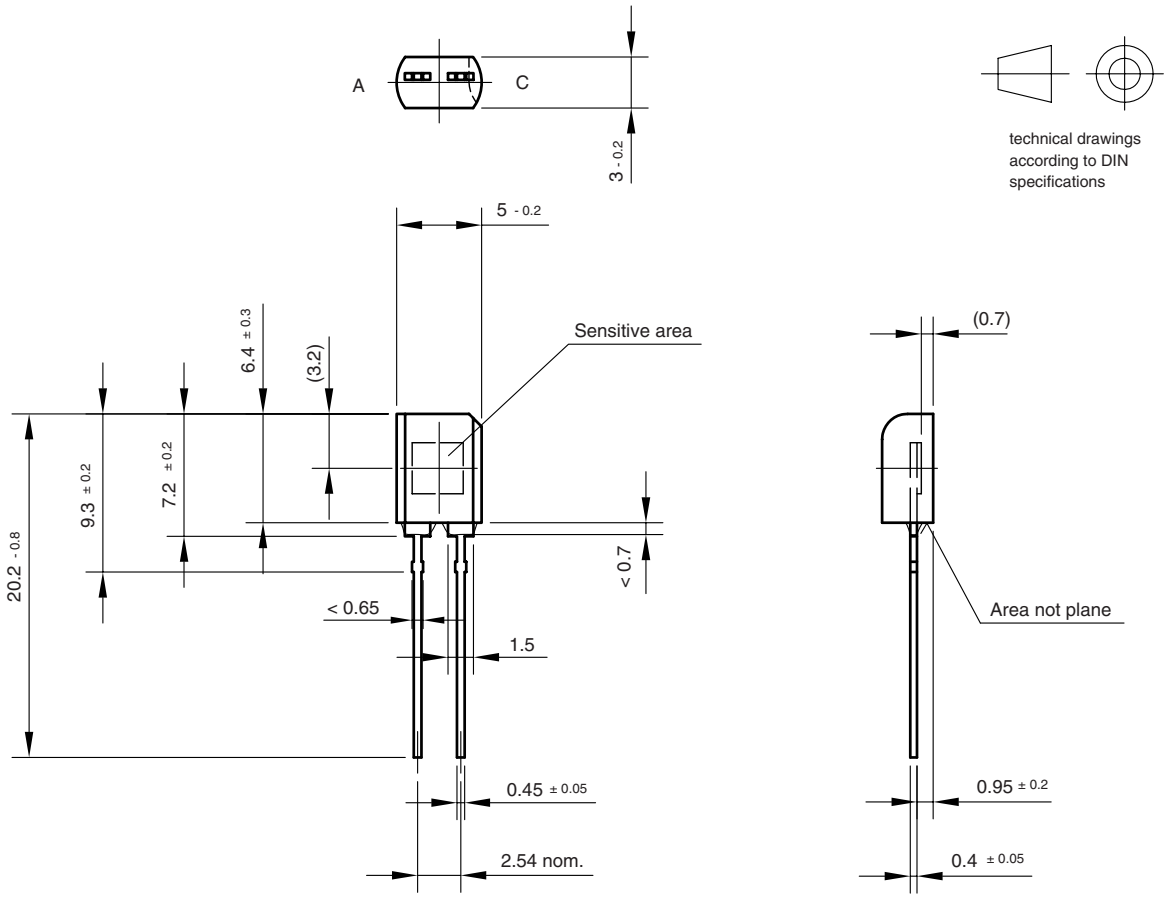



Fig. 5 - Diode Capacitance vs. Reverse Voltage

**PACKAGE DIMENSIONS** in millimeters




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