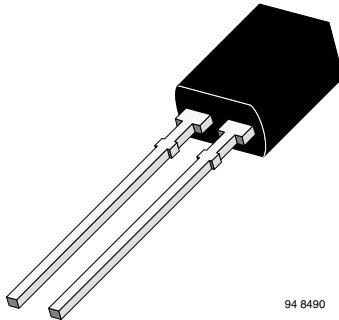


## Silicon PIN Photodiode, RoHS Compliant



### 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<sup>2</sup>): 7.5
- High radiant sensitivity
- Daylight blocking filter matched with 870 nm to 950 nm emitters
- Fast response times
- Angle of half sensitivity:  $\phi = \pm 65^\circ$
- 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) | $\phi$ (deg) | $\lambda_{0.5}$ (nm) |
|-----------|---------------|--------------|----------------------|
| BPW83     | 45            | $\pm 65$     | 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                   | $T_{amb} \leq 25^\circ\text{C}$              | $P_V$      | 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                                 | $T_{sd}$   | 260           | $^\circ\text{C}$ |
| Thermal resistance junction/ambient | Connected with Cu wire, 0.14 mm <sup>2</sup> | $R_{thJA}$ | 350           | K/W              |

**Note**

$T_{amb} = 25^\circ\text{C}$ , 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              | $V_R = 0 V, f = 1 \text{ MHz}, E = 0$                           | $C_D$           |      | 70                  |      | pF                    |
|                                | $V_R = 3 V, f = 1 \text{ MHz}, E = 0$                           | $C_D$           |      | 25                  | 40   | pF                    |
| Open circuit voltage           | $E_e = 1 \text{ mW/cm}^2, \lambda = 870 \text{ nm}$             | $V_o$           |      | 350                 |      | mV                    |
| Short circuit current          | $E_e = 1 \text{ mW/cm}^2, \lambda = 870 \text{ nm}$             | $I_k$           |      | 38                  |      | $\mu A$               |
| Reverse light current          | $E_e = 1 \text{ mW/cm}^2, \lambda = 870 \text{ nm}, V_R = 5 V$  | $I_{ra}$        | 43   | 45                  |      | $\mu A$               |
| Angle of half sensitivity      |                                                                 | $\phi$          |      | $\pm 65$            |      | deg                   |
| Wavelength of peak sensitivity |                                                                 | $\lambda_p$     |      | 950                 |      | nm                    |
| Range of spectral bandwidth    |                                                                 | $\lambda_{0.5}$ |      | 790 to 1050         |      | nm                    |
| Noise equivalent power         | $V_R = 10 V, \lambda = 870 \text{ nm}$                          | NEP             |      | $4 \times 10^{-14}$ |      | W/ $\sqrt{\text{Hz}}$ |
| Rise time                      | $V_R = 10 V, R_L = 1 \text{ k}\Omega, \lambda = 820 \text{ nm}$ | $t_r$           |      | 100                 |      | ns                    |
| Fall time                      | $V_R = 10 V, R_L = 1 \text{ k}\Omega, \lambda = 820 \text{ nm}$ | $t_f$           |      | 100                 |      | ns                    |

**Note**

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

**BASIC CHARACTERISTICS**

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

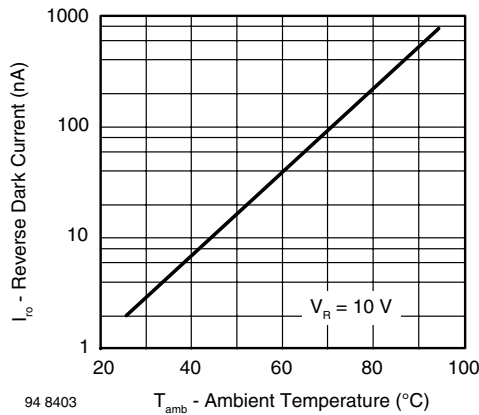


Fig. 1 - Reverse Dark Current vs. Ambient Temperature

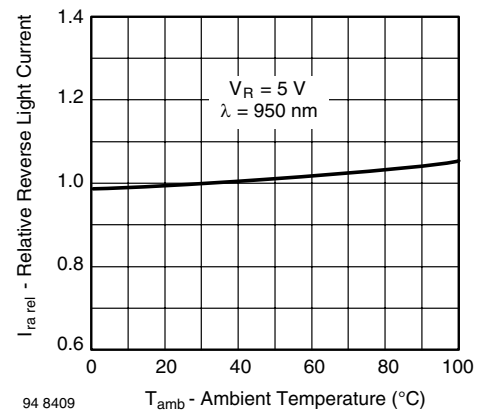


Fig. 2 - Relative Reverse Light Current vs. Ambient Temperature

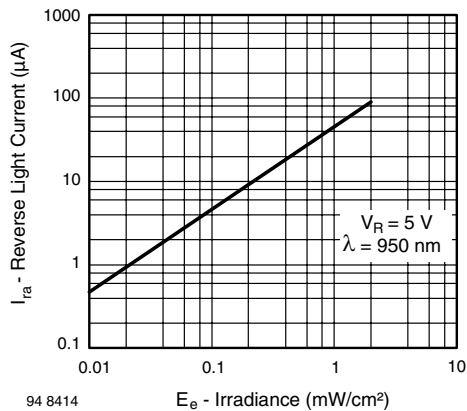


Fig. 3 - Reverse Light Current vs. Irradiance

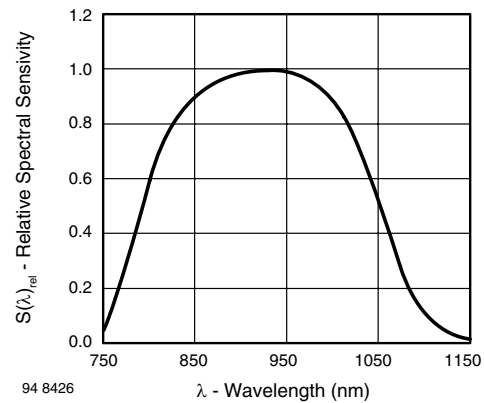


Fig. 6 - Relative Spectral Sensitivity vs. Wavelength

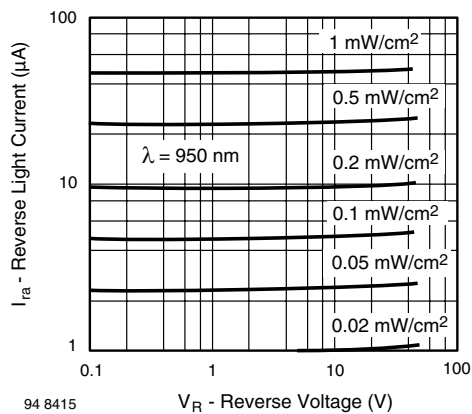


Fig. 4 - Reverse Light Current vs. Reverse Voltage

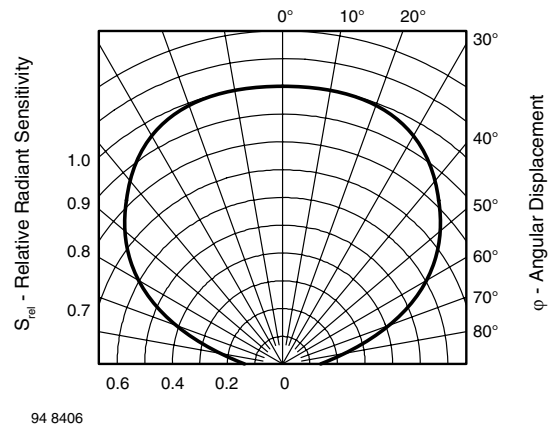


Fig. 7 - Relative Radiant Sensitivity vs. Angular Displacement

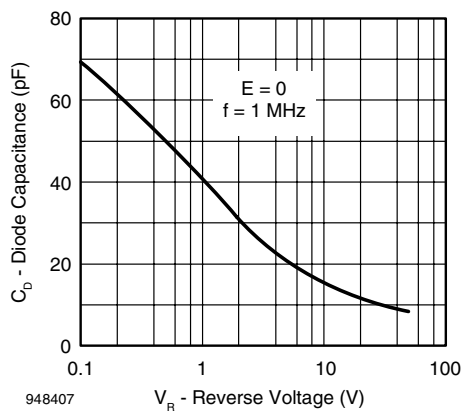
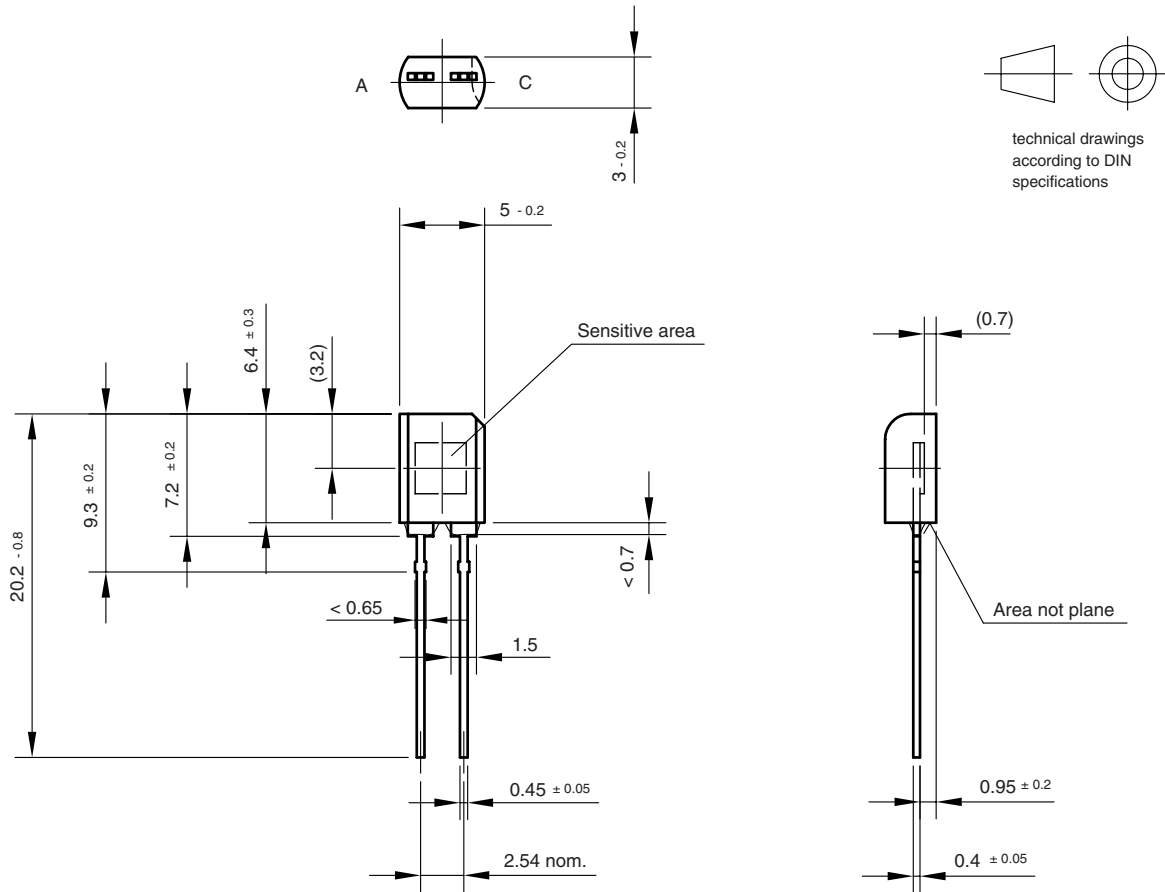


Fig. 5 - Diode Capacitance vs. Reverse Voltage

**PACKAGE DIMENSIONS** in millimeters

Drawing-No.: 6.544-5109.01-4

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