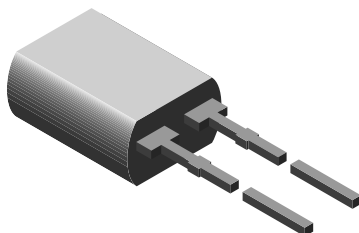


## Silicon PIN Photodiode, RoHS Compliant



94 8632

### DESCRIPTION

BPW46 is a PIN photodiode with high speed and high radiant sensitivity in a clear, side view plastic package. It is sensitive to visible and near infrared radiation.

### 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 photo sensitivity
- High radiant sensitivity
- Suitable for visible and near infrared radiation
- 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

### APPLICATIONS

- High speed photo detector

### PRODUCT SUMMARY

| COMPONENT | $I_{ra}$ (mA) | $\varphi$ (deg) | $\lambda_{0.1}$ (nm) |
|-----------|---------------|-----------------|----------------------|
| BPW46     | 50            | $\pm 65$        | 430 to 1100          |

#### Note

Test condition see table "Basic Characteristics"

### ORDERING INFORMATION

| ORDERING CODE | PACKAGING | REMARKS                      | PACKAGE FORM |
|---------------|-----------|------------------------------|--------------|
| BPW46         | 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               | $t \leq 5\text{ s}$                          | $T_{sd}$   | 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                | $V_R = 0 V, f = 1 MHz, E = 0$                   | $C_D$           |      | 70                  |      | pF             |
|                                  | $V_R = 3 V, f = 1 MHz, E = 0$                   | $C_D$           |      | 25                  | 40   | pF             |
| Open circuit voltage             | $E_e = 1 mW/cm^2, \lambda = 950 nm$             | $V_o$           |      | 350                 |      | mV             |
| Temperature coefficient of $V_o$ | $E_e = 1 mW/cm^2, \lambda = 950 nm$             | $TK_{V_o}$      |      | - 2.6               |      | mV/K           |
| Short circuit current            | $E_A = 1 klx$                                   | $I_k$           |      | 70                  |      | $\mu A$        |
|                                  | $E_e = 1 mW/cm^2, \lambda = 950 nm$             | $I_k$           |      | 47                  |      | $\mu A$        |
| Temperature coefficient of $V_k$ | $E_e = 1 mW/cm^2, \lambda = 950 nm$             | $TK_{V_k}$      |      | 0.1                 |      | %/K            |
| Reverse light current            | $E_A = 1 klx, V_R = 5 V$                        | $I_{ra}$        |      | 75                  |      | $\mu A$        |
|                                  | $E_e = 1 mW/cm^2, \lambda = 950 nm, V_R = 5 V$  | $I_{ra}$        | 40   | 50                  |      | $\mu A$        |
| Angle of half sensitivity        |                                                 | $\phi$          |      | $\pm 65$            |      | deg            |
| Wavelength of peak sensitivity   |                                                 | $\lambda_p$     |      | 900                 |      | nm             |
| Range of spectral bandwidth      |                                                 | $\lambda_{0.1}$ |      | 430 to 1100         |      | nm             |
| Noise equivalent power           | $V_R = 10 V, \lambda = 950 nm$                  | NEP             |      | $4 \times 10^{-14}$ |      | 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**

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

**BASIC CHARACTERISTICS**

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

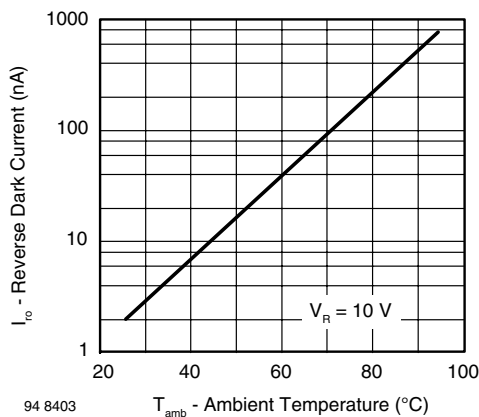


Fig. 1 - Reverse Dark Current vs. Ambient Temperature

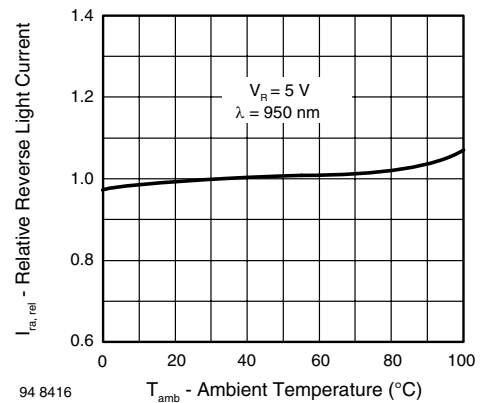


Fig. 2 - Relative Reverse Light Current vs. Ambient Temperature

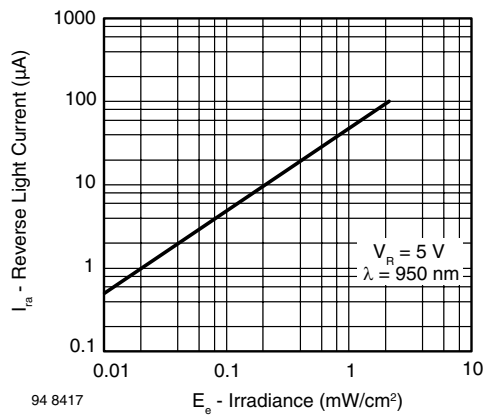


Fig. 3 - Reverse Light Current vs. Irradiance

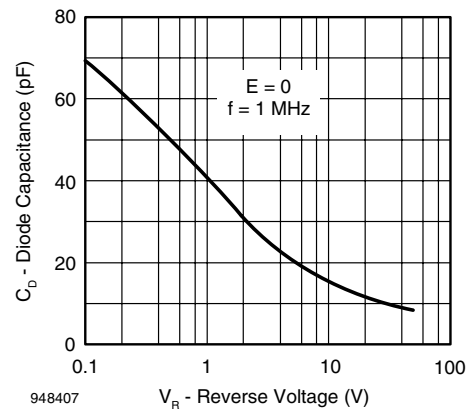


Fig. 6 - Diode Capacitance vs. Reverse Voltage

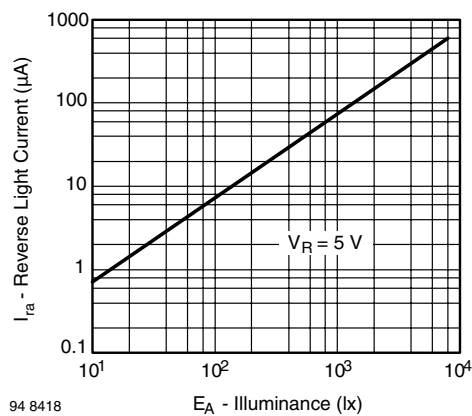


Fig. 4 - Reverse Light Current vs. Illuminance

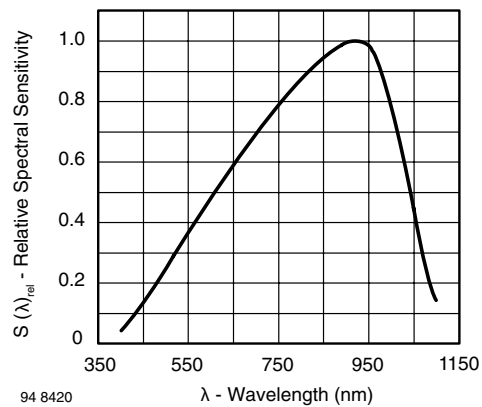


Fig. 7 - Relative Spectral Sensitivity vs. Wavelength

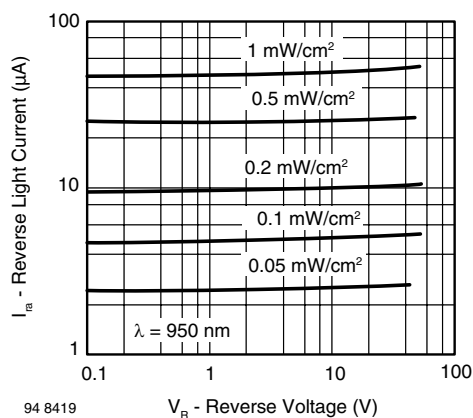


Fig. 5 - Reverse Light Current vs. Reverse Voltage

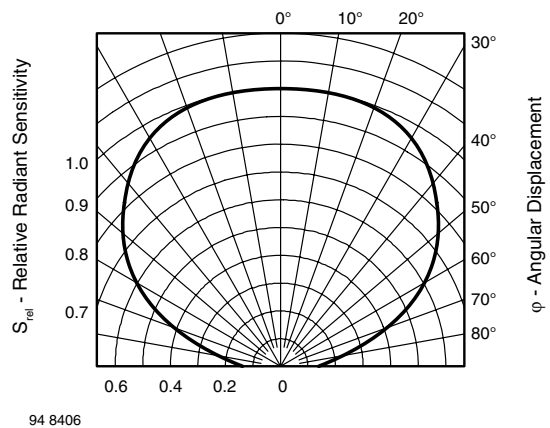
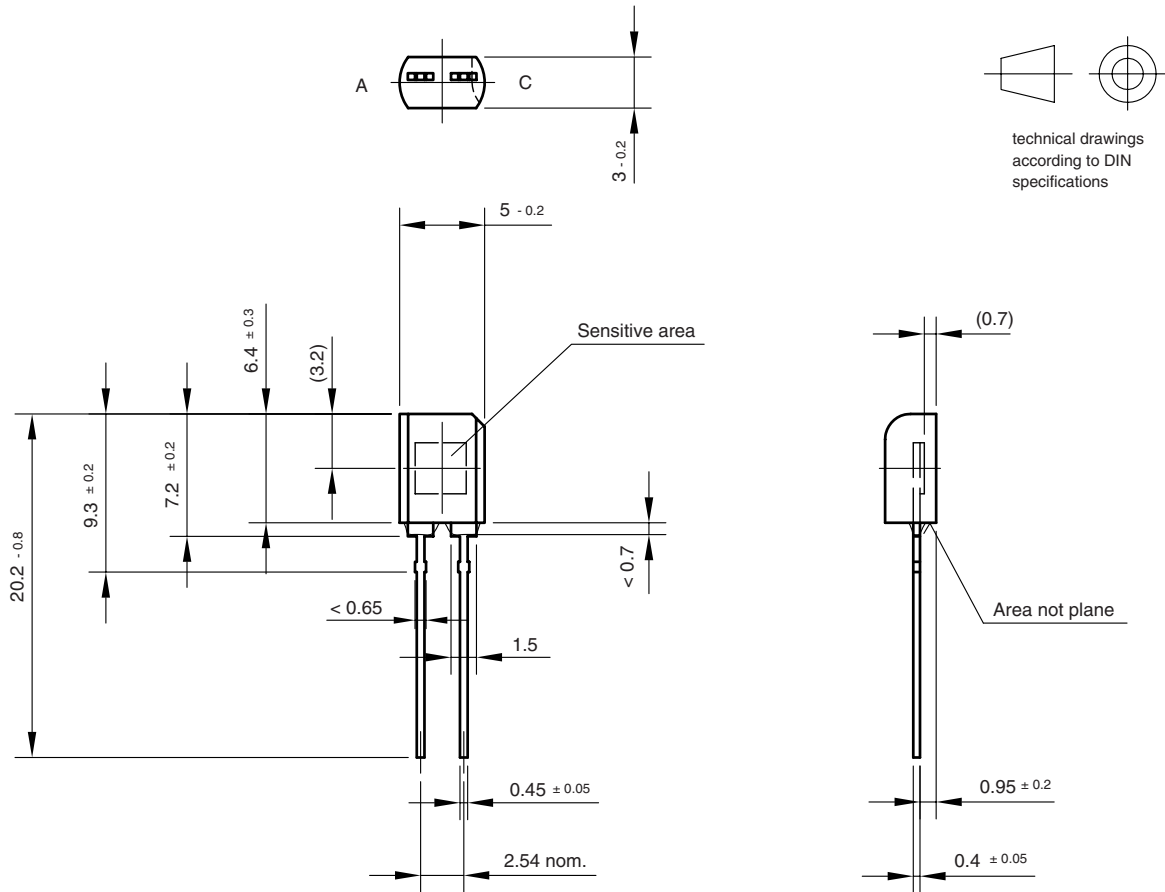


Fig. 8 - Relative Radiant Sensitivity vs. Angular Displacement

**PACKAGE DIMENSIONS** in millimeters

Drawing-No.: 6.544-5109.01-4

Issue:1; 01.07.96

96 12196



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