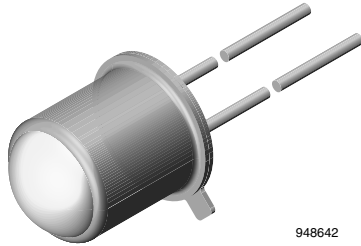


## Silicon PIN Photodiode, RoHS Compliant



948642

### 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.

### FEATURES

- Package type: leaded
- Package form: TO-18
- Dimensions (in mm): Ø 4.7
- Radiant sensitive area (in mm<sup>2</sup>): 0.78
- High photo sensitivity
- High radiant sensitivity
- Suitable for visible and near infrared radiation
- Fast response times
- Angle of half sensitivity:  $\varphi = \pm 12^\circ$
- Hermetically sealed package
- Cathode connected to package
- Central chip alignment
- 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       | $I_{ra}$ (µA) | $\varphi$ (deg) | $\lambda_{0.5}$ (nm) |
| BPW24R          | 60            | $\pm 12$        | 600 to 1050          |

**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            |  |            |               |      |
|-------------------------------------|--|------------|---------------|------|
| 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           | °C   |
| Operating temperature range         |  | $T_{amb}$  | - 40 to + 125 | °C   |
| Storage temperature range           |  | $T_{stg}$  | - 40 to + 125 | °C   |
| Soldering temperature               | $t \leq 5$ s                                 | $T_{sd}$   | 260           | °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

| <b>BASIC CHARACTERISTICS</b>     |   |                 |      |             |      |         |
|----------------------------------|---|-----------------|------|-------------|------|---------|
| PARAMETER                        | TEST CONDITION                                  | SYMBOL          | MIN. | TYP.        | MAX. | UNIT    |
| Breakdown voltage                | $I_R = 100 \mu A, E = 0$                        | $V_{(BR)}$      | 60   | 200         |      | V       |
| Reverse dark current             | $V_R = 50 V, E = 0$                             | $I_{ro}$        |      | 2           | 10   | nA      |
| Diode capacitance                | $V_R = 0 V, f = 1 MHz, E = 0$                   | $C_D$           |      | 11          |      | pF      |
|                                  | $V_R = 5 V, f = 1 MHz, E = 0$                   | $C_D$           |      | 3.8         |      | pF      |
|                                  | $V_R = 20 V, f = 1 MHz, E = 0$                  | $C_D$           |      | 2.5         |      | pF      |
| Open circuit voltage             | $E_e = 1 mW/cm^2, \lambda = 950 nm$             | $V_o$           |      | 450         |      | mV      |
| Temperature coefficient of $V_o$ | $E_e = 1 mW/cm^2, \lambda = 950 nm$             | $TK_{V_o}$      |      | -2          |      | mV/K    |
| Short circuit current            | $E_e = 1 mW/cm^2, \lambda = 950 nm$             | $I_k$           |      | 55          |      | $\mu A$ |
| Temperature coefficient of $I_k$ | $E_A = 1 klx$                                   | $TK_{I_k}$      |      | 0.1         |      | %/K     |
| Reverse light current            | $E_e = 1 mW/cm^2, \lambda = 950 nm, V_R = 20 V$ | $I_{ra}$        | 45   | 60          |      | $\mu A$ |
| Absolute Spectral Sensitivity    | $V_R = 5 V, \lambda = 870 nm$                   | $s(\lambda)$    |      | 0.60        |      | A/W     |
|                                  | $V_R = 5 V, \lambda = 900 nm$                   | $s(\lambda)$    |      | 0.55        |      | A/W     |
| Angle of half sensitivity        |   | $\phi$          |      | $\pm 12$    |      | deg     |
| Wavelength of peak sensitivity   |   | $\lambda_p$     |      | 900         |      | nm      |
| Range of spectral bandwidth      |   | $\lambda_{0.5}$ |      | 600 to 1050 |      | nm      |
| Rise time                        | $V_R = 20 V, R_L = 50 \Omega, \lambda = 820 nm$ | $t_r$           |      | 7           |      | ns      |
| Fall time                        | $V_R = 20 V, R_L = 50 \Omega, \lambda = 820 nm$ | $t_f$           |      | 7           |      | ns      |

**Note**

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

**BASIC CHARACTERISTICS**

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

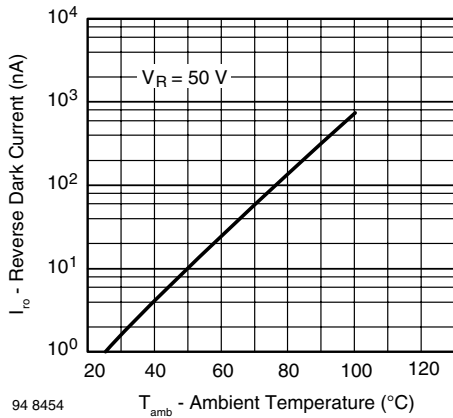


Fig. 1 - Reverse Dark Current vs. Ambient Temperature

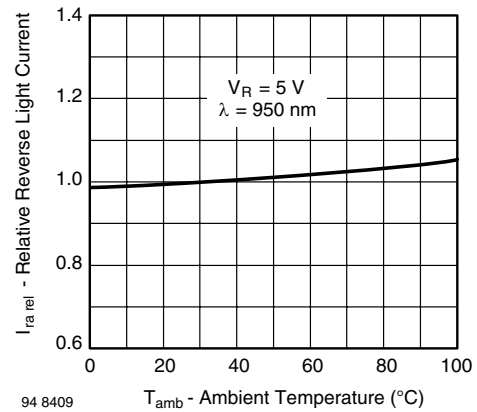


Fig. 2 - Relative Reverse Light Current vs. Ambient Temperature

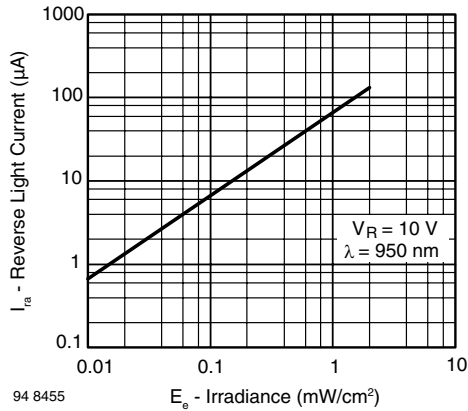


Fig. 3 - Reverse Light Current vs. Irradiance

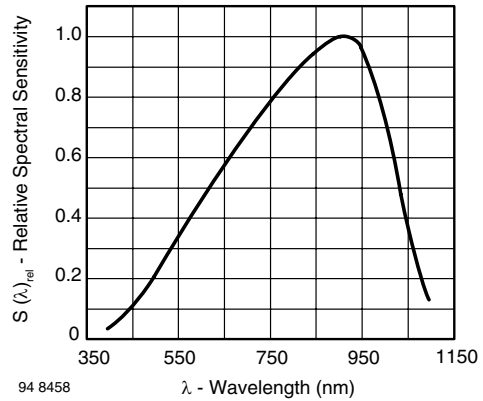


Fig. 6 - Relative Spectral Sensitivity vs. Wavelength

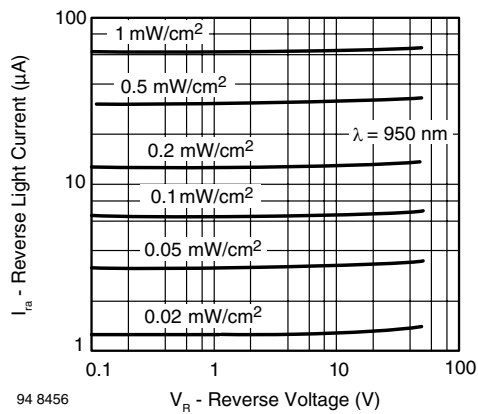


Fig. 4 - Reverse Light Current vs. Reverse Voltage

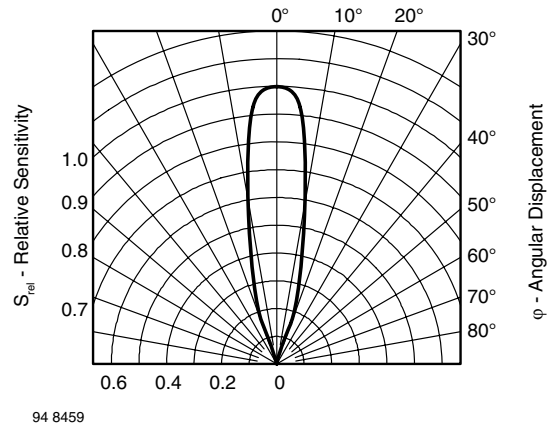


Fig. 7 - Relative Radiant Sensitivity vs. Angular Displacement

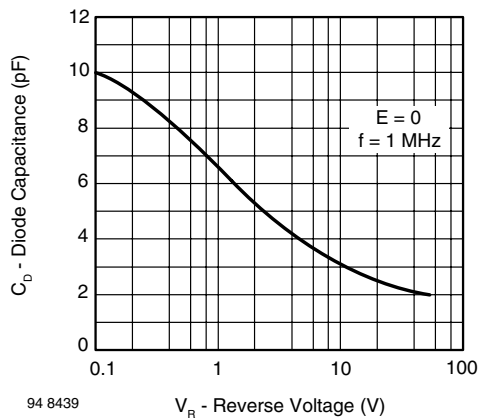
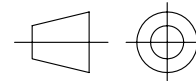
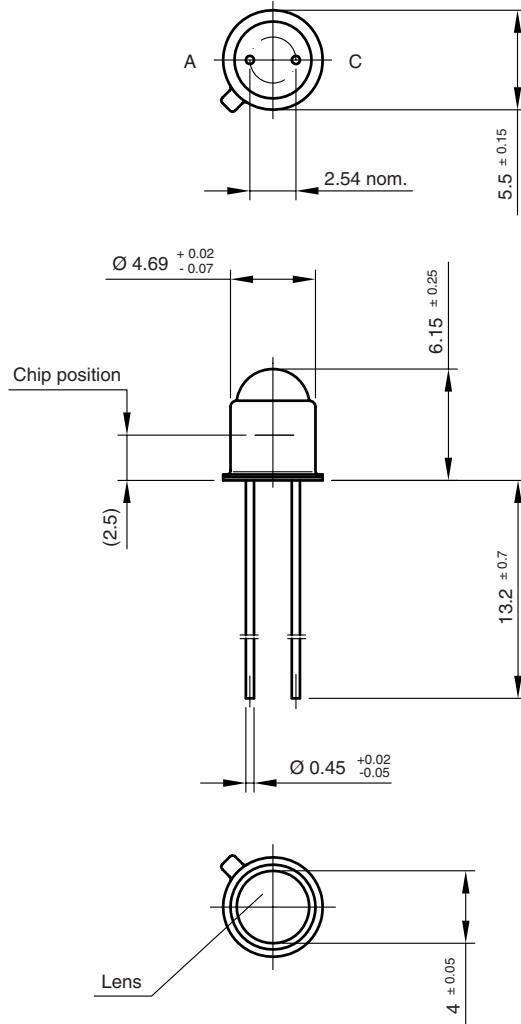


Fig. 5 - Diode Capacitance vs. Reverse Voltage



**PACKAGE DIMENSIONS** in millimeters



technical drawings  
according to DIN  
specifications

Drawing-No.: 6.503-5022.02-4

Issue: 1; 24.08.98

14487



## Disclaimer

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