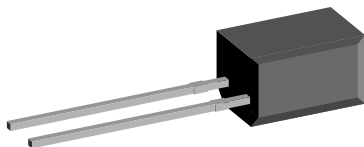


## Silicon PIN Photodiode



94 8480

### FEATURES

- Package type: leaded
- Package form: side view
- Dimensions (in mm): 5 x 4 x 6.8
- Radiant sensitive area (in mm<sup>2</sup>): 7.5
- High radiant sensitivity
- Daylight blocking filter matched with 940 nm emitters
- Fast response times
- Angle of half sensitivity:  $\phi = \pm 65^\circ$
- Compliant to RoHS Directive to 2002/95/EC and in accordance to WEEE 2002/96/EC



**RoHS**  
COMPLIANT  
**GREEN**  
(5-2008)\*\*

### Note

\*\* Please see document "Vishay Material Category Policy":  
[www.vishay.com/doc?99902](http://www.vishay.com/doc?99902)

### APPLICATIONS

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

### PRODUCT SUMMARY

| COMPONENT | $I_{ra}$ (μA) | $\phi$ (deg) | $\lambda_{0.5}$ (nm) |
|-----------|---------------|--------------|----------------------|
| BPW41N    | 45            | $\pm 65$     | 870 to 1050          |

### Note

- Test condition see table "Basic Characteristics"

### ORDERING INFORMATION

| ORDERING CODE | PACKAGING | REMARKS                      | PACKAGE FORM |
|---------------|-----------|------------------------------|--------------|
| BPW41N        | Bulk      | MOQ: 4000 pcs, 4000 pcs/bulk | Side view    |

### Note

- MOQ: minimum order quantity

### ABSOLUTE MAXIMUM RATINGS ( $T_{amb} = 25^\circ\text{C}$ , unless otherwise specified)

| 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              |

| <b>BASIC CHARACTERISTICS</b> ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified) |                                                                              |                 |      |                     |      |                             |
|-----------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------|-----------------|------|---------------------|------|-----------------------------|
| PARAMETER                                                                                           | TEST CONDITION                                                               | SYMBOL          | MIN. | TYP.                | MAX. | UNIT                        |
| Breakdown voltage                                                                                   | $I_R = 100\text{ }\mu\text{A}$ , $E = 0$                                     | $V_{(BR)}$      | 60   |                     |      | V                           |
| Reverse dark current                                                                                | $V_R = 10\text{ V}$ , $E = 0$                                                | $I_{ro}$        |      | 2                   | 30   | nA                          |
| Diode capacitance                                                                                   | $V_R = 0\text{ V}$ , $f = 1\text{ MHz}$ , $E = 0$                            | $C_D$           |      | 70                  |      | pF                          |
|                                                                                                     | $V_R = 3\text{ V}$ , $f = 1\text{ MHz}$ , $E = 0$                            | $C_D$           |      | 25                  | 40   | pF                          |
| Open circuit Voltage                                                                                | $E_e = 1\text{ mW/cm}^2$ , $\lambda = 950\text{ nm}$                         | $V_o$           |      | 350                 |      | mV                          |
| Temperature coefficient of $V_o$                                                                    | $E_e = 1\text{ mW/cm}^2$ , $\lambda = 950\text{ nm}$                         | $TK_{V_o}$      |      | - 2.6               |      | mV/K                        |
| Short circuit current                                                                               | $E_e = 1\text{ mW/cm}^2$ , $\lambda = 950\text{ nm}$                         | $I_k$           |      | 38                  |      | $\mu\text{A}$               |
| Temperature coefficient of $I_k$                                                                    | $E_e = 1\text{ mW/cm}^2$ , $\lambda = 950\text{ nm}$                         | $TK_{I_k}$      |      | 0.1                 |      | %/K                         |
| Reverse light current                                                                               | $E_e = 1\text{ mW/cm}^2$ , $\lambda = 950\text{ nm}$ ,<br>$V_R = 5\text{ V}$ | $I_{ra}$        | 43   | 45                  |      | $\mu\text{A}$               |
| Angle of half sensitivity                                                                           |                                                                              | $\phi$          |      | $\pm 65$            |      | deg                         |
| Wavelength of peak sensitivity                                                                      |                                                                              | $\lambda_p$     |      | 950                 |      | nm                          |
| Range of spectral bandwidth                                                                         |                                                                              | $\lambda_{0.5}$ |      | 870 to 1050         |      | nm                          |
| Noise equivalent power                                                                              | $V_R = 10\text{ V}$ , $\lambda = 950\text{ nm}$                              | NEP             |      | $4 \times 10^{-14}$ |      | $\text{W}/\sqrt{\text{Hz}}$ |
| Rise time                                                                                           | $V_R = 10\text{ V}$ , $R_L = 1\text{ k}\Omega$ , $\lambda = 820\text{ nm}$   | $t_r$           |      | 100                 |      | ns                          |
| Fall time                                                                                           | $V_R = 10\text{ V}$ , $R_L = 1\text{ k}\Omega$ , $\lambda = 820\text{ nm}$   | $t_f$           |      | 100                 |      | ns                          |

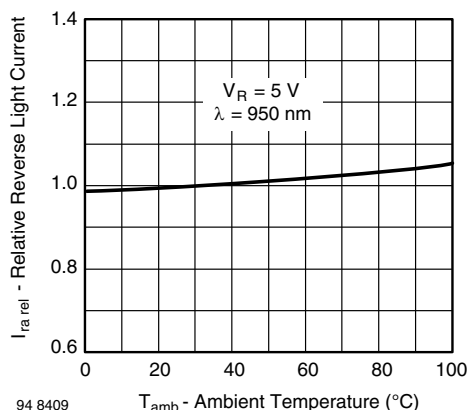
**BASIC CHARACTERISTICS** ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)


Fig. 1 - Relative Reverse Light Current vs. Ambient Temperature

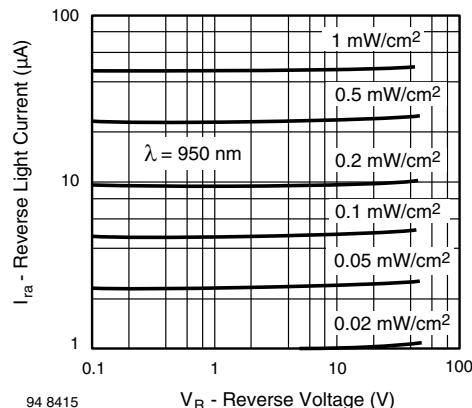


Fig. 3 - Reverse Light Current vs. Reverse Voltage

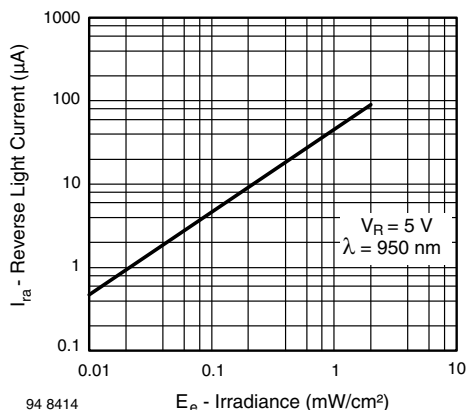


Fig. 2 - Reverse Light Current vs. Irradiance

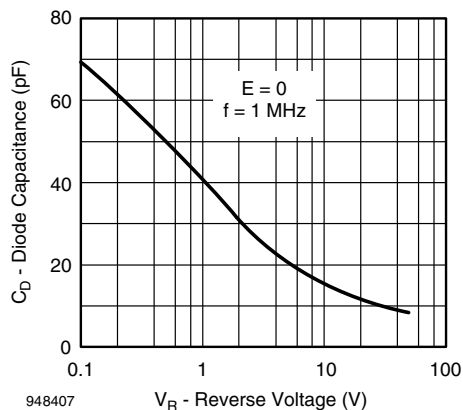


Fig. 4 - Diode Capacitance vs. Reverse Voltage

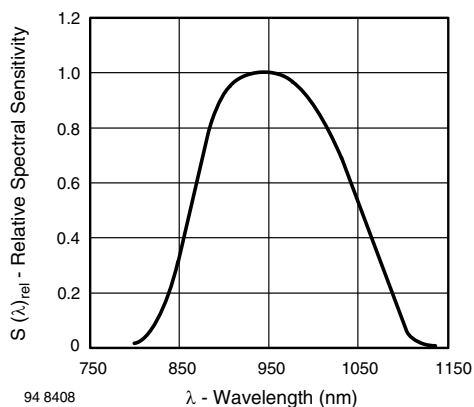


Fig. 5 - Relative Spectral Sensitivity vs. Wavelength

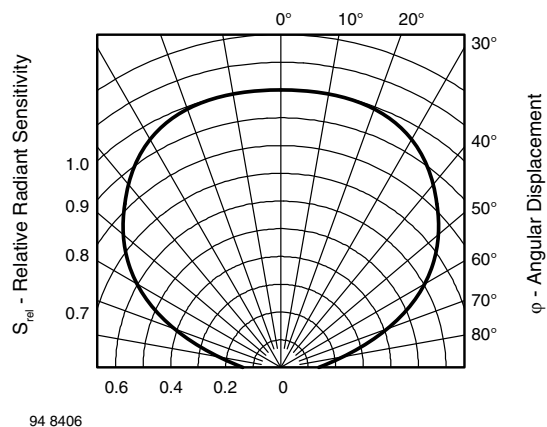
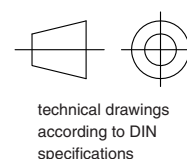
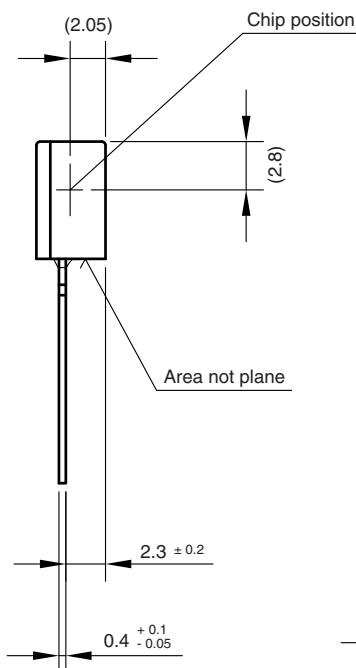
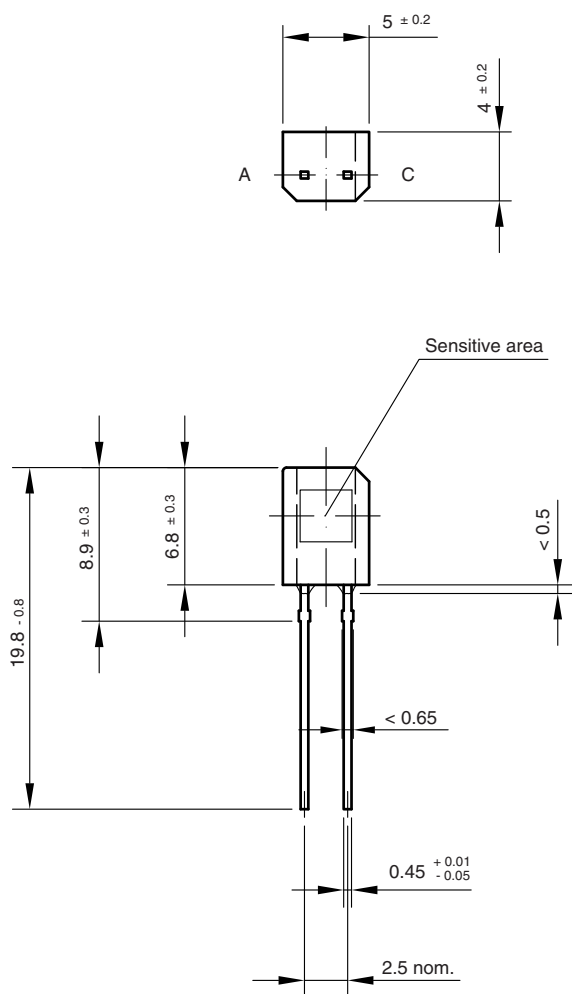


Fig. 6 - Relative Radiant Sensitivity vs. Angular Displacement

### PACKAGE DIMENSIONS in millimeters



Drawing-No.: 6.544-5108.01-4

Issue: 1; 01.07.96

96 12195



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**Please note that some Vishay documentation may still make reference to RoHS Directive 2002/95/EC. We confirm that all the products identified as being compliant to Directive 2002/95/EC conform to Directive 2011/65/EU.**

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