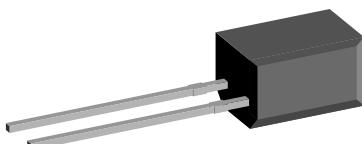


## Silicon PIN Photodiode



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**  
(S-2008) \*\*

### DESCRIPTION

BPW41N 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 900 nm to 950 nm IR emitters.

### 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 <sub>ra</sub> ( $\mu$ A)	$\phi$ (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 ( $T_{amb} = 25^\circ C$ , unless otherwise specified)

PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
Reverse voltage		V <sub>R</sub>	60	V
Power dissipation	$T_{amb} \leq 25^\circ C$	P <sub>V</sub>	215	mW
Junction temperature		T <sub>j</sub>	100	°C
Operating temperature range		T <sub>amb</sub>	- 40 to + 100	°C
Storage temperature range		T <sub>stg</sub>	- 40 to + 100	°C
Soldering temperature	$t \leq 5$ s	T <sub>sd</sub>	260	°C
Thermal resistance junction/ambient	Connected with Cu wire, 0.14 mm <sup>2</sup>	R <sub>thJA</sub>	350	K/W

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

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 $V_o$	$E_e = 1 mW/cm^2, \lambda = 950 nm$	$TK_{Vo}$		- 2.6		mV/K
Short circuit current	$E_e = 1 mW/cm^2, \lambda = 950 nm$	$I_k$		38		$\mu A$
Temperature coefficient of $I_k$	$E_e = 1 mW/cm^2, \lambda = 950 nm$	$TK_{Ik}$		0.1		%/K
Reverse light current	$E_e = 1 mW/cm^2, \lambda = 950 nm, V_R = 5 V$	$I_{ra}$	43	45		$\mu A$
Angle of half sensitivity		$\varphi$		$\pm 65$		deg
Wavelength of peak sensitivity		$\lambda_p$		950		nm
Range of spectral bandwidth		$\lambda_{0.5}$		870 to 1050		nm
Noise equivalent power	$V_R = 10 V, \lambda = 950 nm$	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

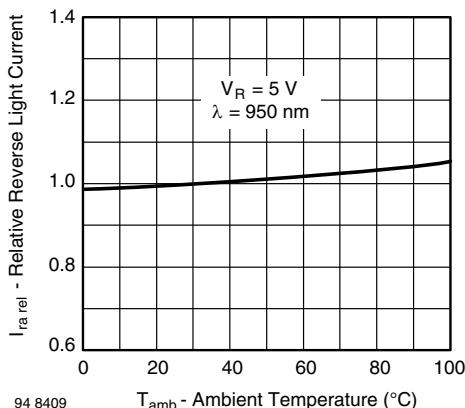
**BASIC CHARACTERISTICS** ( $T_{amb} = 25^\circ C$ , unless otherwise specified)


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

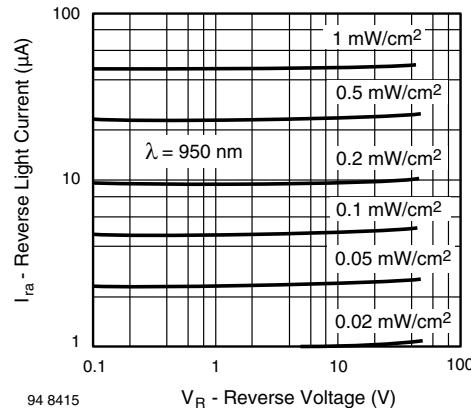


Fig. 3 - Reverse Light Current vs. Reverse Voltage

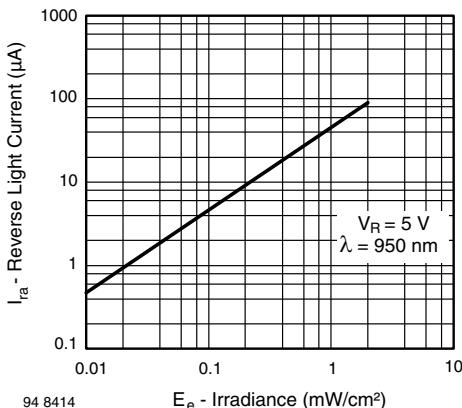


Fig. 2 - Reverse Light Current vs. Irradiance

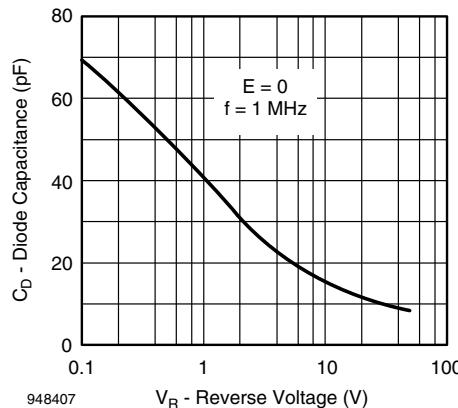


Fig. 4 - Diode Capacitance vs. Reverse Voltage

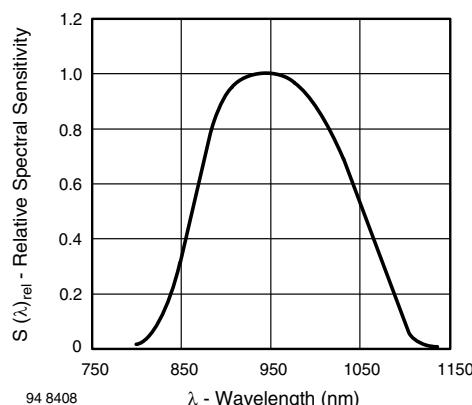


Fig. 5 - Relative Spectral Sensitivity vs. Wavelength

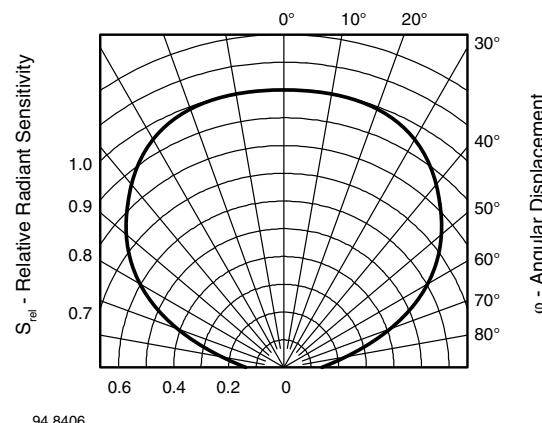
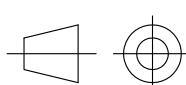
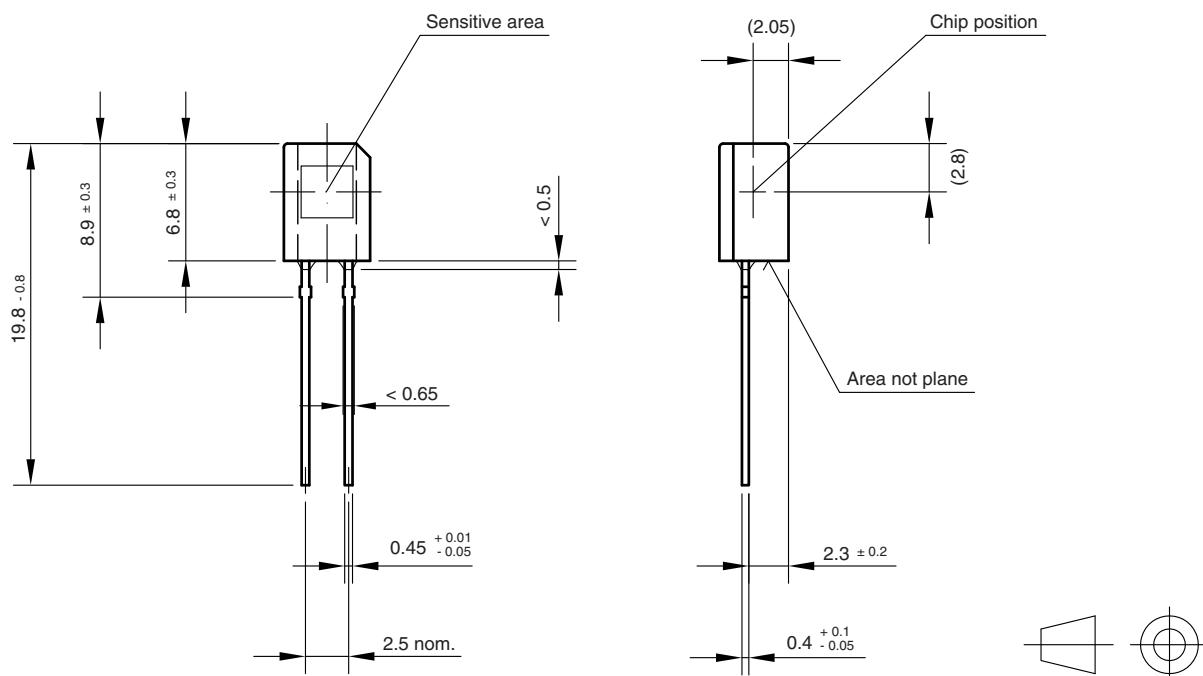
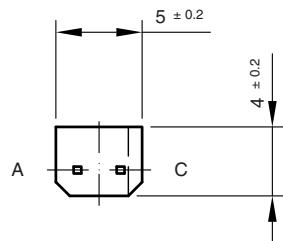


Fig. 6 - Relative Radiant Sensitivity vs. Angular Displacement

### PACKAGE DIMENSIONS in millimeters



technical drawings  
according to DIN  
specifications

Drawing-No.: 6.544-5108.01-4

Issue:1; 01.07.96

96 12195



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