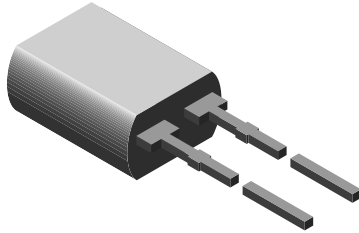


## Silicon PIN Photodiode, RoHS Compliant



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	$t \leq 5$ 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

<b>BASIC CHARACTERISTICS</b>						
PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Breakdown voltage	$I_R = 100 \mu\text{A}, E = 0$	$V_{(BR)}$	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	$E_A = 1 \text{ klx}$	$I_k$		70		$\mu\text{A}$
	$E_e = 1 \text{ mW/cm}^2, \lambda = 950 \text{ nm}$	$I_k$		47		$\mu\text{A}$
Temperature coefficient of $V_k$	$E_e = 1 \text{ mW/cm}^2, \lambda = 950 \text{ nm}$	$TK_{V_k}$		0.1		%/K
Reverse light current	$E_A = 1 \text{ klx}, V_R = 5 \text{ V}$	$I_{ra}$		75		$\mu\text{A}$
	$E_e = 1 \text{ mW/cm}^2, \lambda = 950 \text{ nm}, V_R = 5 \text{ V}$	$I_{ra}$	40	50		$\mu\text{A}$
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	$V_R = 10 \text{ V}, \lambda = 950 \text{ nm}$	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

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

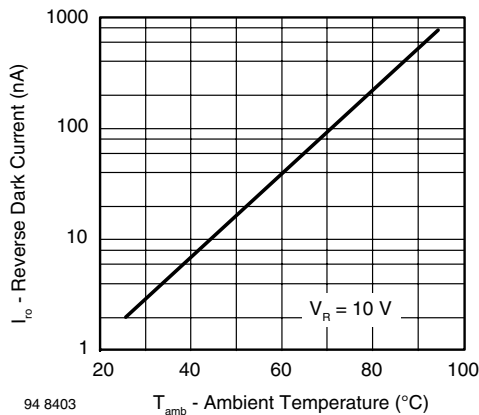
**BASIC CHARACTERISTICS**
 $T_{amb} = 25 \text{ }^\circ\text{C}$ , unless otherwise specified


Fig. 1 - Reverse Dark Current vs. Ambient Temperature

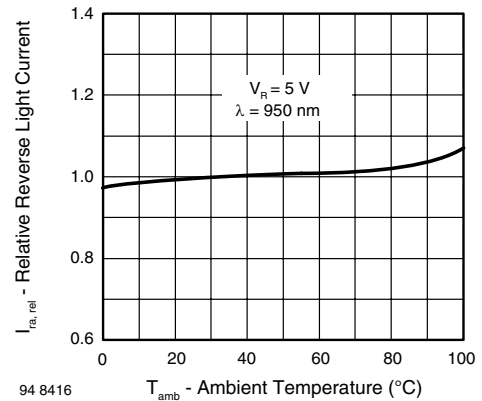


Fig. 2 - Relative Reverse Light Current vs. Ambient Temperature

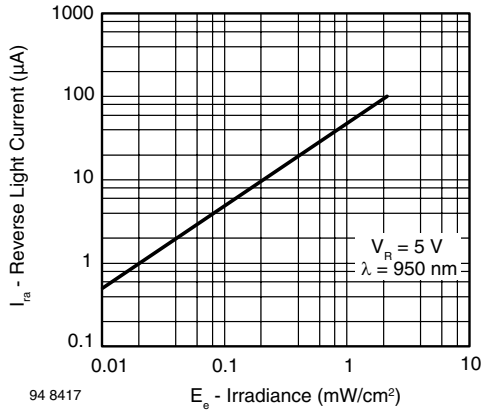


Fig. 3 - Reverse Light Current vs. Irradiance

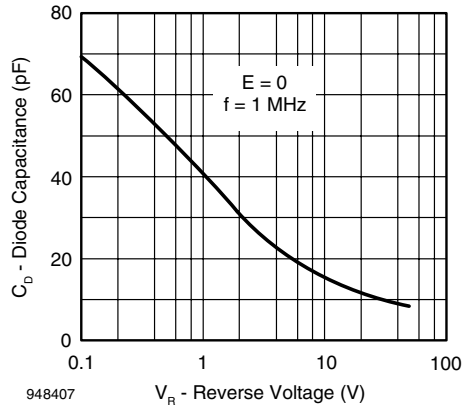


Fig. 6 - Diode Capacitance vs. Reverse Voltage

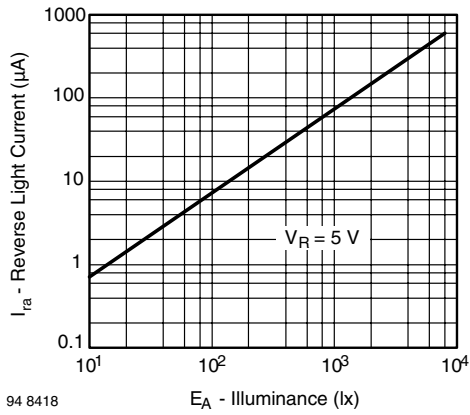


Fig. 4 - Reverse Light Current vs. Illuminance

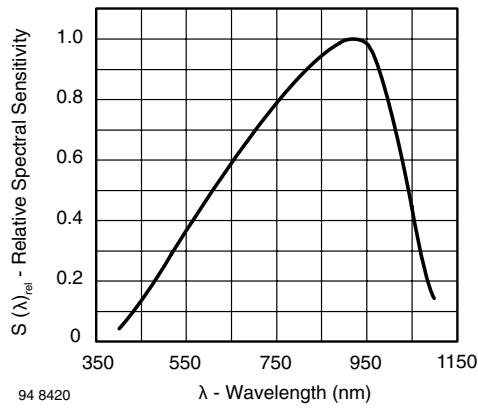


Fig. 7 - Relative Spectral Sensitivity vs. Wavelength

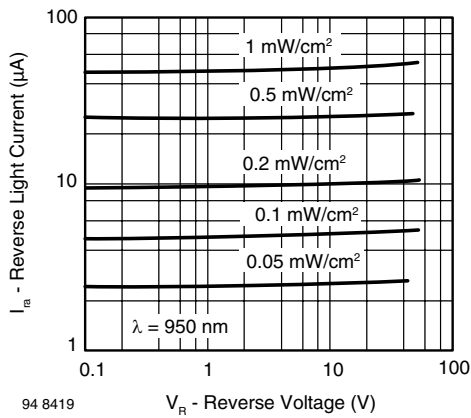


Fig. 5 - Reverse Light Current vs. Reverse Voltage

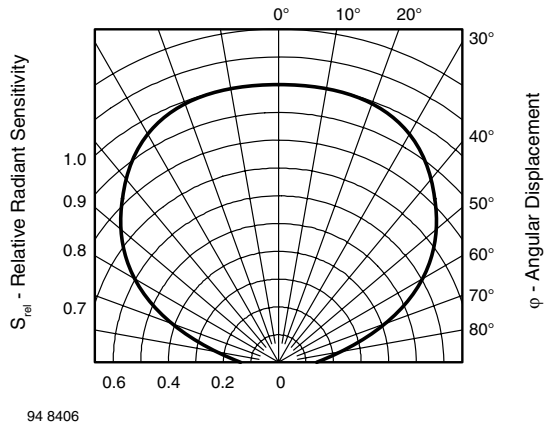
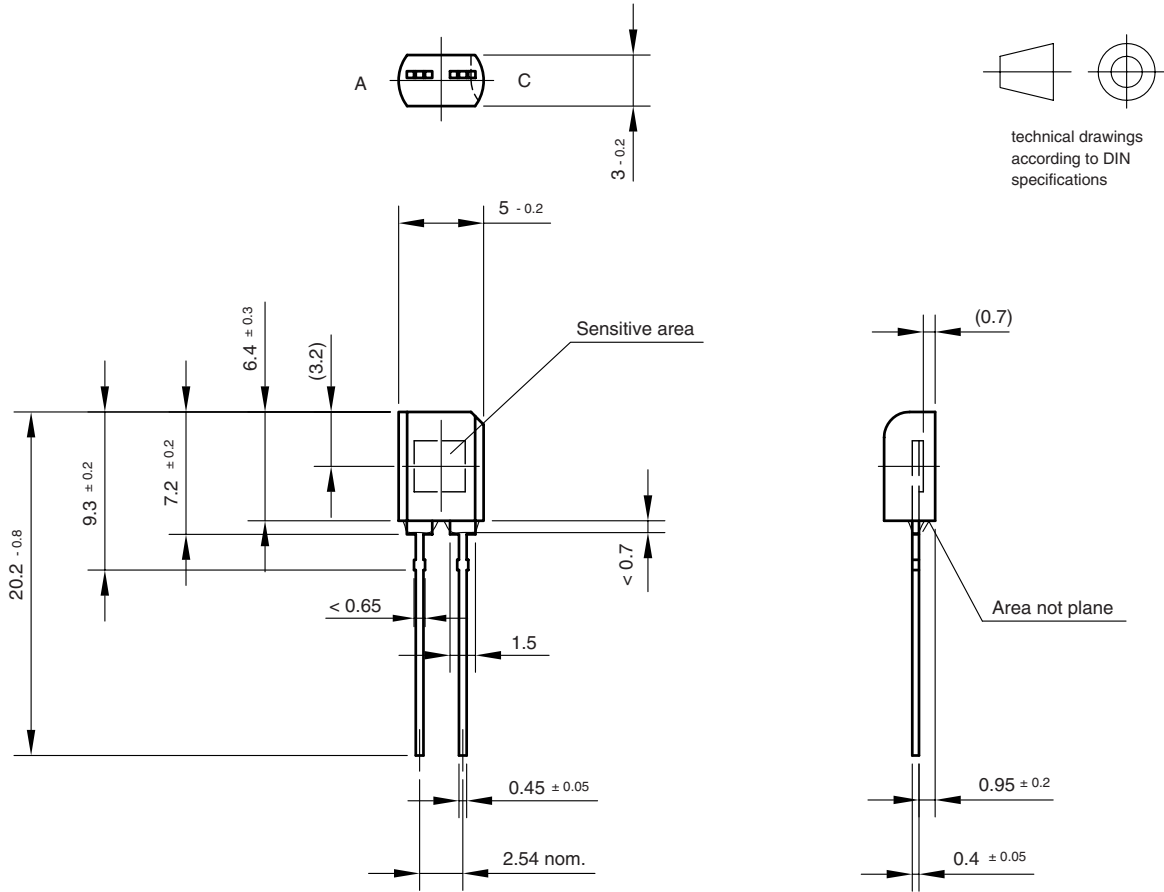


Fig. 8 - Relative Radiant Sensitivity vs. Angular Displacement



**PACKAGE DIMENSIONS** in millimeters



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