

## Silicon PIN Photodiode, RoHS Compliant



### 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 radiant sensitivity
- Daylight blocking filter matched with 870 nm to 950 nm emitters
- 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

### DESCRIPTION

BPW83 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 870 nm to 950 nm IR emitters.

### APPLICATIONS

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

### PRODUCT SUMMARY

COMPONENT	$I_{ra}$ ( $\mu A$ )	$\varphi$ (deg)	$\lambda_{0.5}$ (nm)
BPW83	45	$\pm 65$	790 to 1050

**Note**

Test condition see table “Basic Characteristics”

### ORDERING INFORMATION

ORDERING CODE	PACKAGING	REMARKS	PACKAGE FORM
BPW83	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	$T_{amb} \leq 25^\circ C$	$P_V$	215	mW
Junction temperature		$T_j$	100	$^\circ C$
Operating temperature range		$T_{amb}$	- 40 to + 100	$^\circ C$
Storage temperature range		$T_{stg}$	- 40 to + 100	$^\circ C$
Soldering temperature	$t \leq 5$ s	$T_{sd}$	260	$^\circ C$
Thermal resistance junction/ambient	Connected with Cu wire, 0.14 mm <sup>2</sup>	$R_{thJA}$	350	K/W

**Note**

$T_{amb} = 25^\circ C$ , 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			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	$E_e = 1 mW/cm^2, \lambda = 870 nm$	$V_o$		350		mV
Short circuit current	$E_e = 1 mW/cm^2, \lambda = 870 nm$	$I_k$		38		$\mu A$
Reverse light current	$E_e = 1 mW/cm^2, \lambda = 870 nm, V_R = 5 V$	$I_{ra}$	43	45		$\mu A$
Angle of half sensitivity		$\varphi$		$\pm 65$		deg
Wavelength of peak sensitivity		$\lambda_p$		950		nm
Range of spectral bandwidth		$\lambda_{0.5}$		790 to 1050		nm
Noise equivalent power	$V_R = 10 V, \lambda = 870 nm$	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**

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

**BASIC CHARACTERISTICS**

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

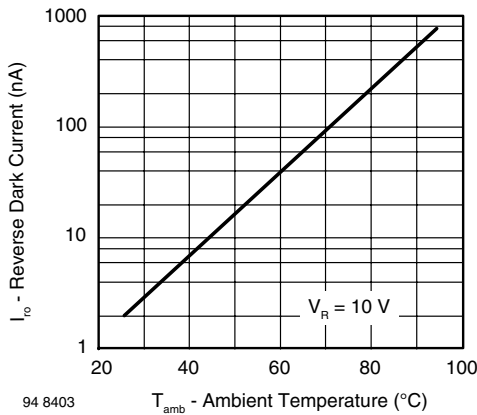


Fig. 1 - Reverse Dark Current vs. Ambient Temperature

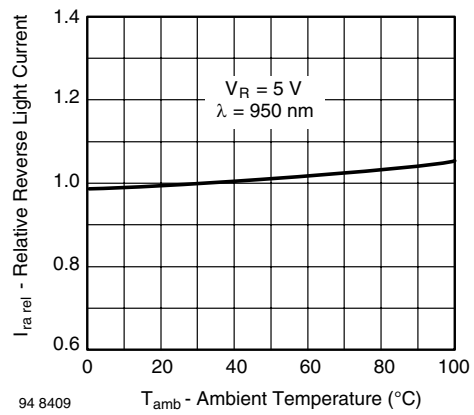


Fig. 2 - Relative Reverse Light Current vs. Ambient Temperature

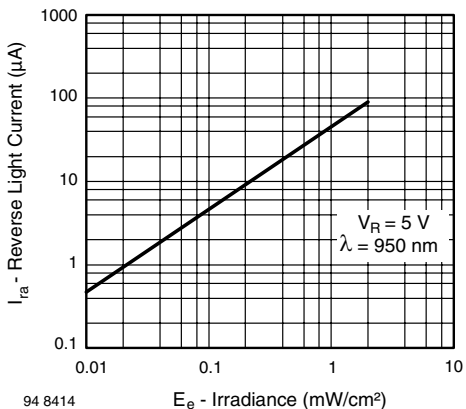


Fig. 3 - Reverse Light Current vs. Irradiance

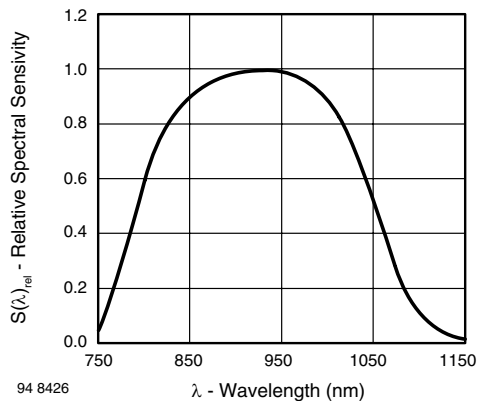


Fig. 6 - Relative Spectral Sensitivity vs. Wavelength

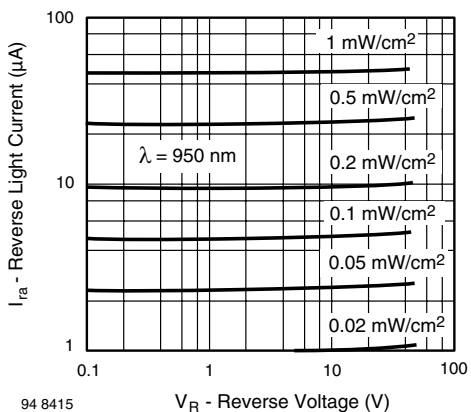


Fig. 4 - Reverse Light Current vs. Reverse Voltage

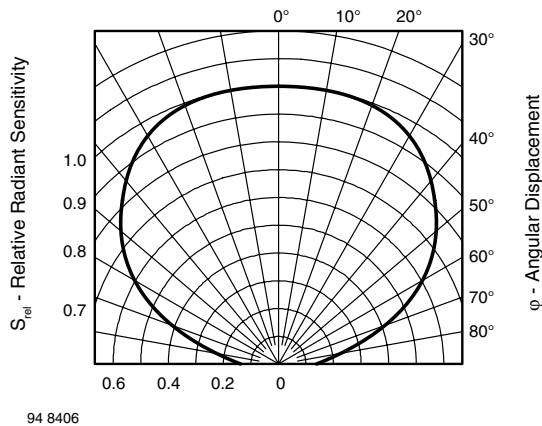


Fig. 7 - Relative Radiant Sensitivity vs. Angular Displacement

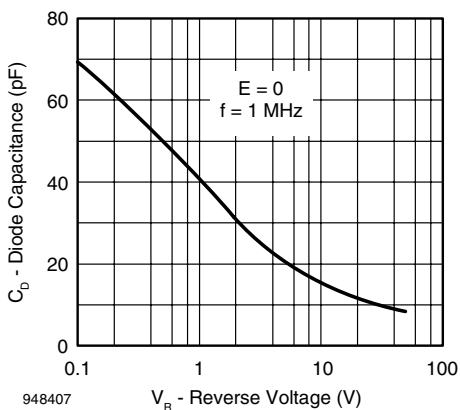


Fig. 5 - Diode Capacitance vs. Reverse Voltage



**PACKAGE DIMENSIONS** in millimeters



Drawing-No.: 6.544-5109.01-4  
Issue:1; 01.07.96  
96 12196



## Disclaimer

All product specifications and data are subject to change without notice.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "Vishay"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained herein or in any other disclosure relating to any product.

Vishay disclaims any and all liability arising out of the use or application of any product described herein or of any information provided herein to the maximum extent permitted by law. The product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein, which apply to these products.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications unless otherwise expressly indicated. Customers using or selling Vishay products not expressly indicated for use in such applications do so entirely at their own risk and agree to fully indemnify Vishay for any damages arising or resulting from such use or sale. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

Product names and markings noted herein may be trademarks of their respective owners.