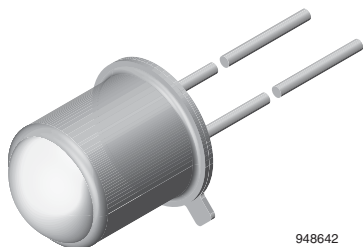


## Silicon PIN Photodiode, RoHS Compliant



### FEATURES

- Package type: leaded
- Package form: TO-18
- Dimensions (in mm):  $\varnothing$  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
- Compliant to RoHS Directive 2002/95/EC and in accordance with WEEE 2002/96/EC


**RoHS**  
COMPLIANT

### 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.

### APPLICATIONS

- High speed photo detector

### PRODUCT SUMMARY

COMPONENT	$I_{ra}$ (A)	$\varphi$ (deg)	$\lambda_{0.1}$ (nm)
BPW24R	60	$\pm 12$	400 to 1100

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

PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
Reverse voltage		$V_R$	60	V
Power dissipation	$T_{amb} \leq 25^\circ\text{C}$	$P_V$	210	mW
Junction temperature		$T_j$	125	$^\circ\text{C}$
Operating temperature range		$T_{amb}$	- 40 to + 125	$^\circ\text{C}$
Storage temperature range		$T_{stg}$	- 40 to + 125	$^\circ\text{C}$
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	200		V
Reverse dark current	$V_R = 50\text{ V}$ , $E = 0$	$I_{ro}$		2	10	nA
Diode capacitance	$V_R = 0\text{ V}$ , $f = 1\text{ MHz}$ , $E = 0$	$C_D$		11		pF
	$V_R = 5\text{ V}$ , $f = 1\text{ MHz}$ , $E = 0$	$C_D$		3.8		pF
	$V_R = 20\text{ V}$ , $f = 1\text{ MHz}$ , $E = 0$	$C_D$		2.5		pF
Open circuit voltage	$E_e = 1\text{ mW/cm}^2$ , $\lambda = 950\text{ nm}$	$V_o$		450		mV
Temperature coefficient of $V_o$	$E_e = 1\text{ mW/cm}^2$ , $\lambda = 950\text{ nm}$	$TK_{V_o}$		- 2		mV/K
Short circuit current	$E_e = 1\text{ mW/cm}^2$ , $\lambda = 950\text{ nm}$	$I_k$		55		$\mu\text{A}$
Temperature coefficient of $I_k$	$E_A = 1\text{ klx}$	$TK_{I_k}$		0.1		%/K
Reverse light current	$E_e = 1\text{ mW/cm}^2$ , $\lambda = 950\text{ nm}$ , $V_R = 20\text{ V}$	$I_{ra}$	45	60		$\mu\text{A}$
Absolute Spectral Sensitivity	$V_R = 5\text{ V}$ , $\lambda = 870\text{ nm}$	$s(\lambda)$		0.60		A/W
	$V_R = 5\text{ V}$ , $\lambda = 900\text{ nm}$	$s(\lambda)$		0.55		A/W
Angle of half sensitivity		$\varphi$		$\pm 12$		deg
Wavelength of peak sensitivity		$\lambda_p$		900		nm
Range of spectral bandwidth		$\lambda_{0.1}$	400		1100	nm
Rise time	$V_R = 20\text{ V}$ , $R_L = 50\text{ }\Omega$ , $\lambda = 820\text{ nm}$	$t_r$		7		ns
Fall time	$V_R = 20\text{ V}$ , $R_L = 50\text{ }\Omega$ , $\lambda = 820\text{ nm}$	$t_f$		7		ns

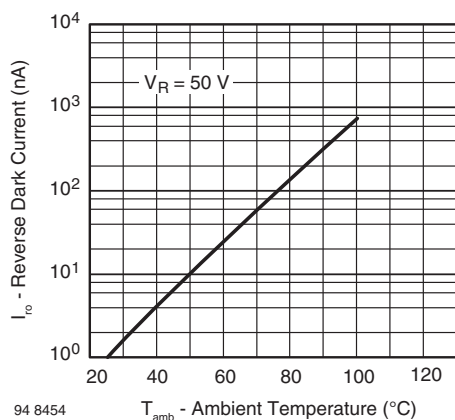
**BASIC CHARACTERISTICS** ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)


Fig. 1 - Reverse Dark Current vs. Ambient Temperature

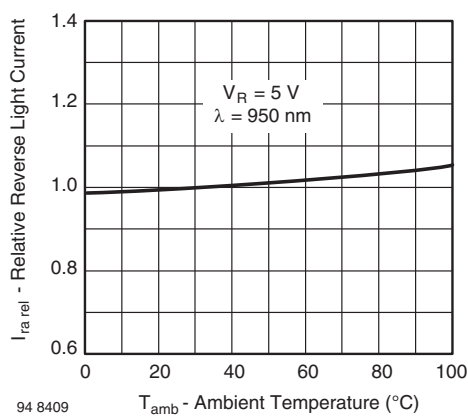


Fig. 2 - Relative Reverse Light Current vs. Ambient Temperature

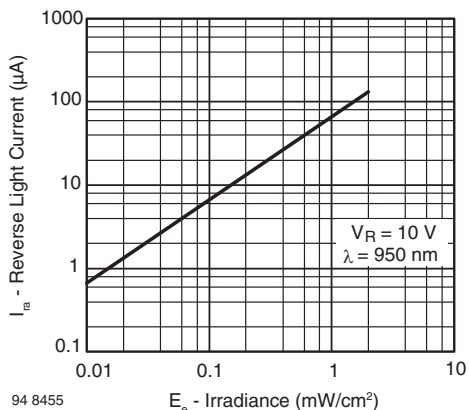


Fig. 3 - Reverse Light Current vs. Irradiance

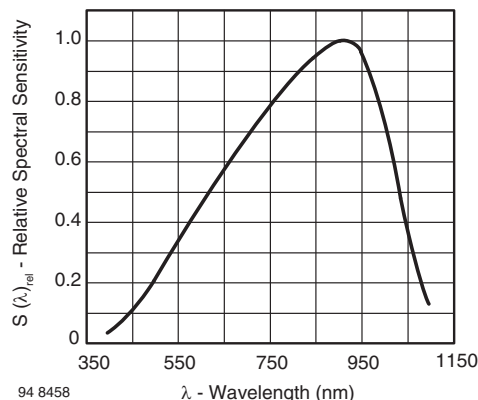


Fig. 6 - Relative Spectral Sensitivity vs. Wavelength

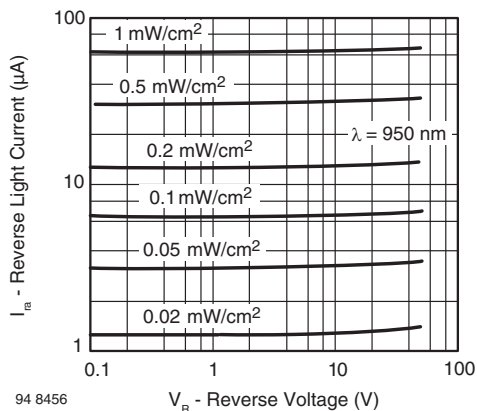


Fig. 4 - Reverse Light Current vs. Reverse Voltage

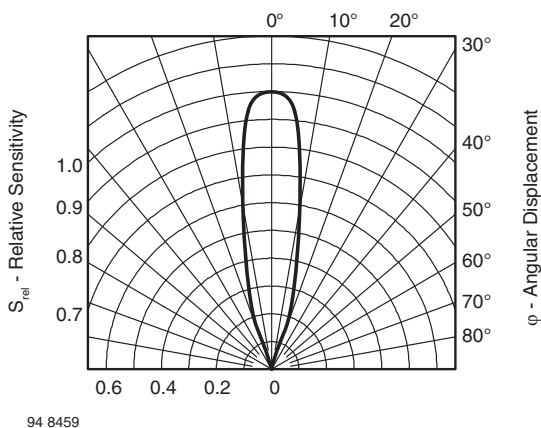


Fig. 7 - Relative Radiant Sensitivity vs. Angular Displacement

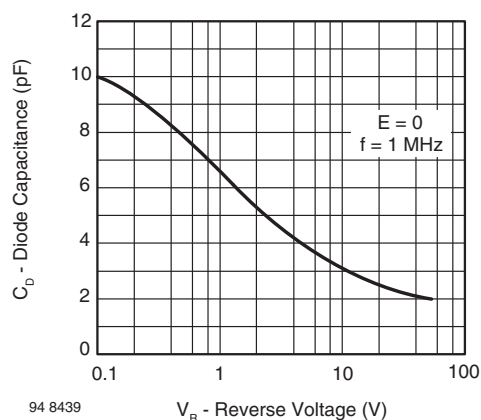
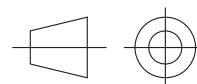
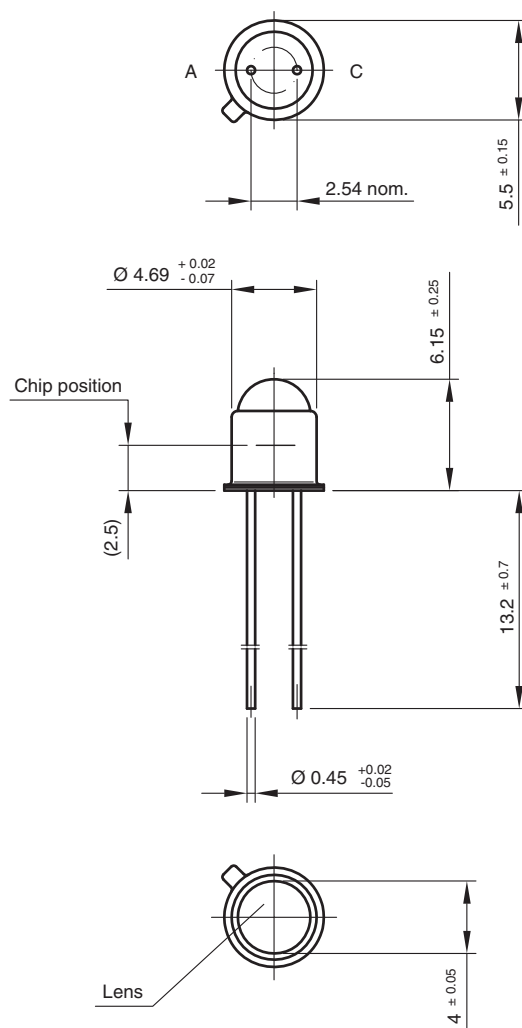


Fig. 5 - Diode Capacitance vs. Reverse Voltage



**PACKAGE DIMENSIONS** in millimeters



technical drawings  
according to DIN  
specifications

Drawing-No.: 6.503-5022.02-4

Issue: 1; 24.08.98

14487



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