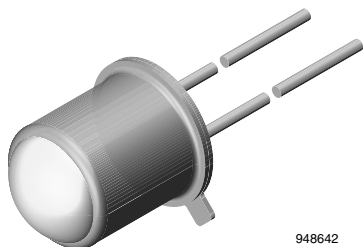


## Silicon PIN Photodiode, RoHS-Compliant



### FEATURES

- Package type: leaded
- Package form: TO-18
- Dimensions (in mm): Ø 4.7
- Radiant sensitive area (in mm<sup>2</sup>): 0.88
- High photo sensitivity
- High sensitivity
- Suitable for visible and near infrared radiation
- Fast response times
- Angle of half sensitivity:  $\phi = \pm 12^\circ$
- Hermetically sealed package
- Cathode connected to package
- Central chip alignment
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)


**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	$I_{ra}$ (μA)	$\phi$ (°)	$\lambda_{0.5}$ (nm)
BPW24R	60	$\pm 12$	610 to 1040

#### 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	$t \leq 5\text{ s}$	$T_{sd}$	260	$^\circ\text{C}$
Thermal resistance junction to 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	$V_R = 20\text{ V}$ , $E = 0$	$I_{ro}$	-	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 $I_k$	$E_v = 1\text{ klx}$	$TK_{I_k}$	-	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	-	$\mu\text{A}$
Angle of half sensitivity		$\varphi$	-	$\pm 12$	-	$^{\circ}$
Wavelength of peak sensitivity		$\lambda_p$	-	940	-	nm
Range of spectral bandwidth		$\lambda_{0.5}$	610	-	1040	nm
Rise time	$V_R = 10\text{ V}$ , $R_L = 50\text{ }\Omega$ , $\lambda = 830\text{ nm}$	$t_r$	-	80	-	ns
Fall time	$V_R = 10\text{ V}$ , $R_L = 50\text{ }\Omega$ , $\lambda = 830\text{ nm}$	$t_f$	-	60	-	ns

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

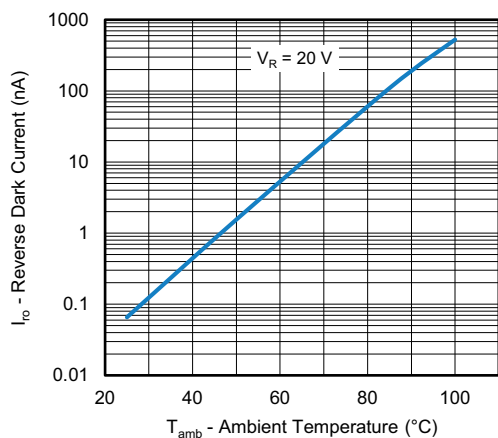


Fig. 1 - Reverse Dark Current vs. Ambient Temperature

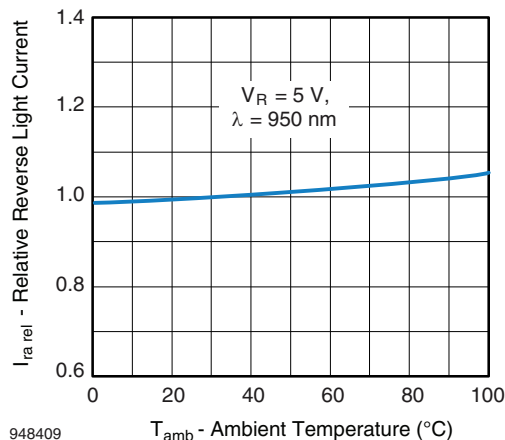


Fig. 2 - Relative Reverse Light Current vs. Ambient Temperature

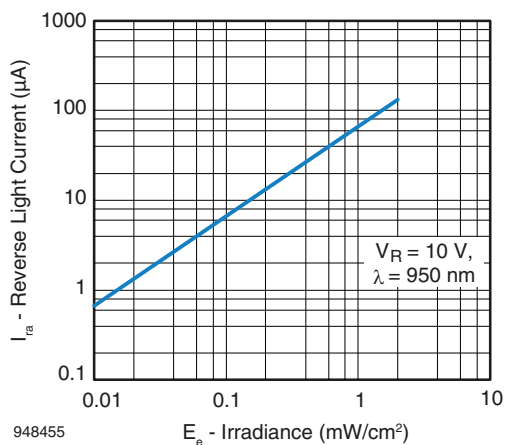


Fig. 3 - Reverse Light Current vs. Irradiance

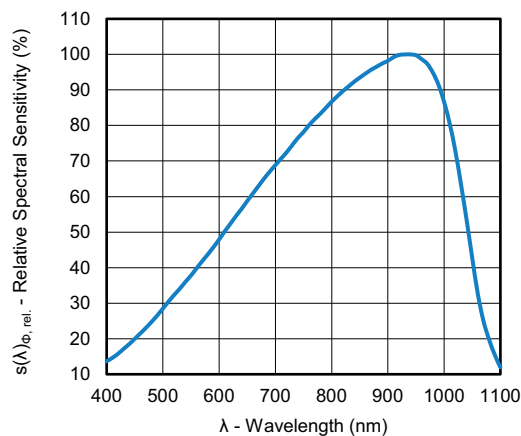


Fig. 6 - Relative Spectral Sensitivity vs. Wavelength

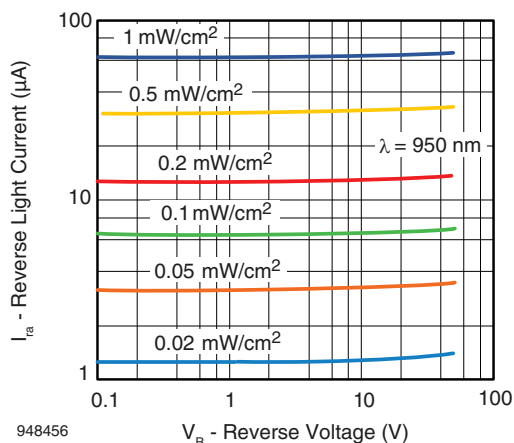


Fig. 4 - Reverse Light Current vs. Reverse Voltage

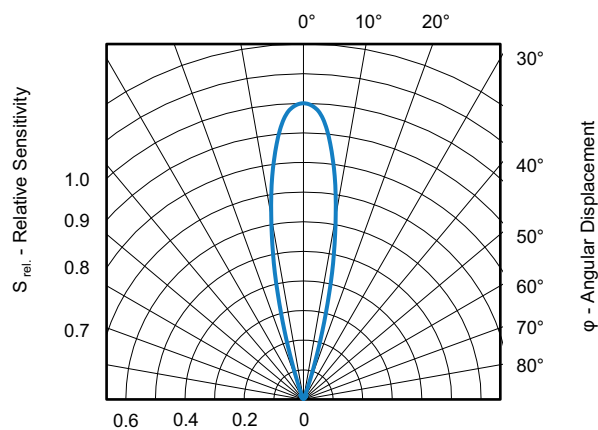


Fig. 7 - Relative Radiant Sensitivity vs. Angular Displacement

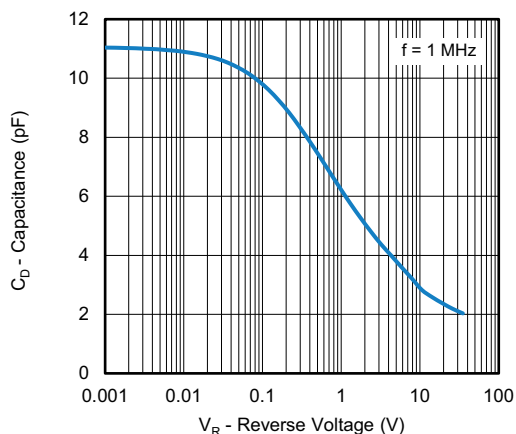
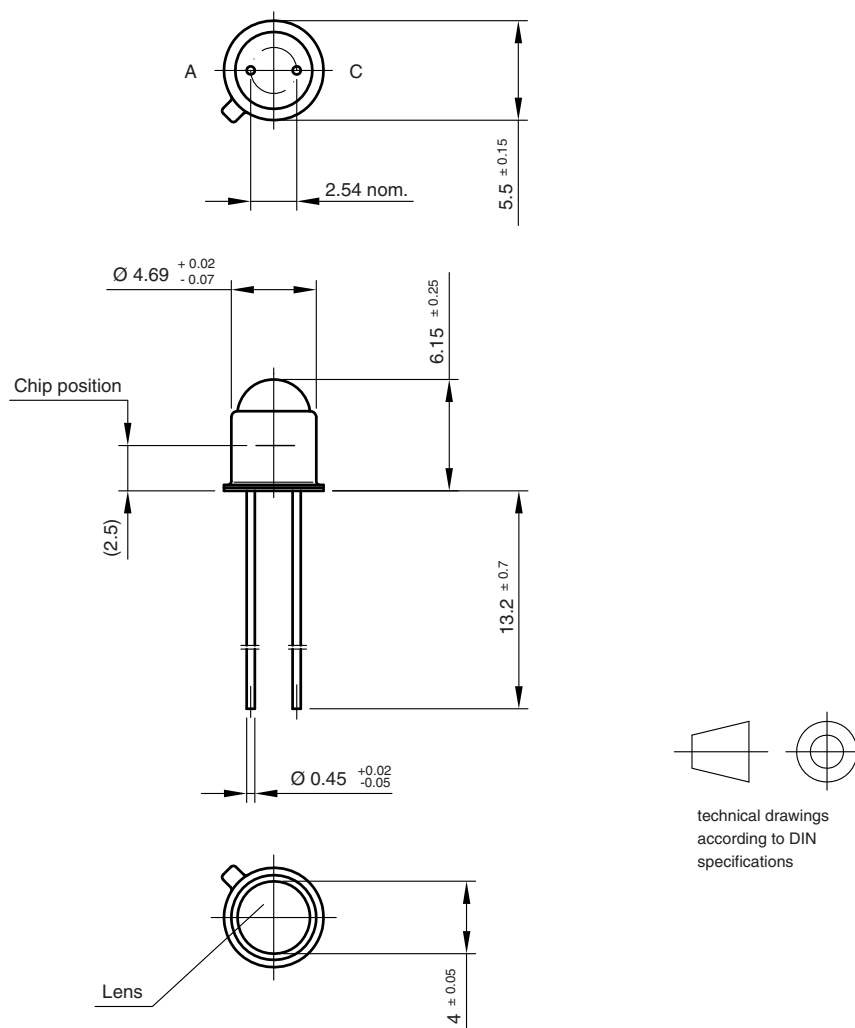


Fig. 5 - Diode Capacitance vs. Reverse Voltage



**PACKAGE DIMENSIONS** in millimeters



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