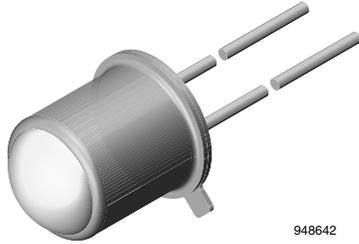


Silicon PIN Photodiode, RoHS-Compliant



FEATURES

- Package type: leaded
- Package form: TO-18
- Dimensions (in mm): \varnothing 4.7
- Radiant sensitive area (in mm²): 0.88
- High photo sensitivity
- High 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
- Material categorization: for definitions of compliance please see 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} (μ A)	φ ($^\circ$)	$\lambda_{0.5}$ (nm)
BPW24R	60	± 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	$t \leq 5$ s	T_{sd}	260	$^\circ\text{C}$
Thermal resistance junction to ambient	Connected with Cu wire, 0.14 mm ²	R_{thJA}	350	K/W

BASIC CHARACTERISTICS ($T_{amb} = 25\text{ }^{\circ}\text{C}$, 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	-	μA
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	-	μA
Angle of half sensitivity		φ	-	± 12	-	$^{\circ}$
Wavelength of peak sensitivity		λ_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

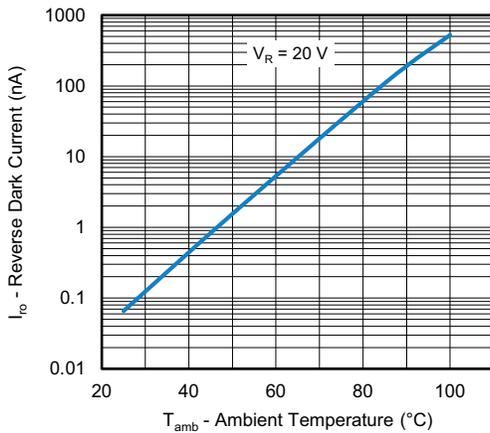
BASIC CHARACTERISTICS ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified)


Fig. 1 - Reverse Dark Current vs. Ambient Temperature

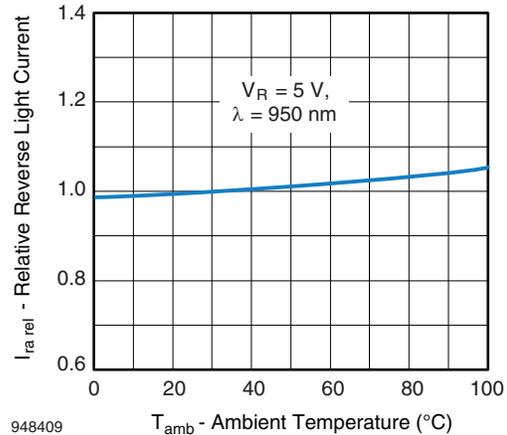


Fig. 2 - Relative Reverse Light Current vs. Ambient Temperature

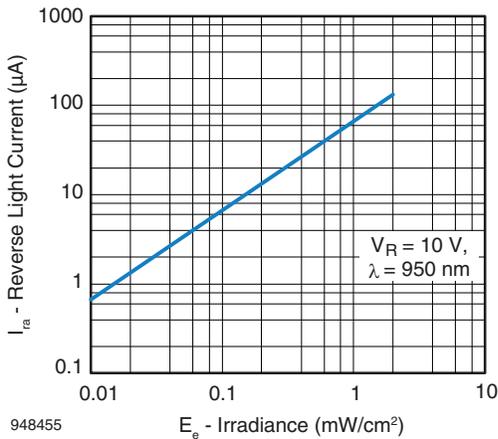


Fig. 3 - Reverse Light Current vs. Irradiance

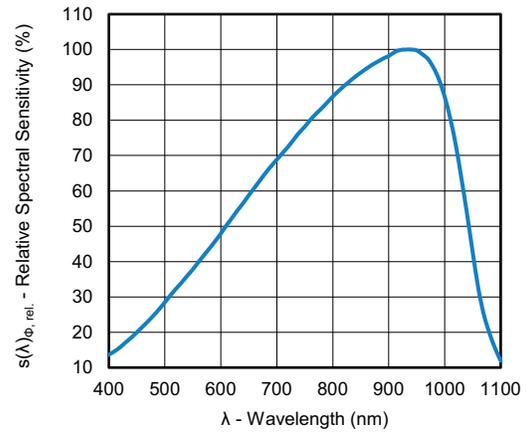


Fig. 6 - Relative Spectral Sensitivity vs. Wavelength

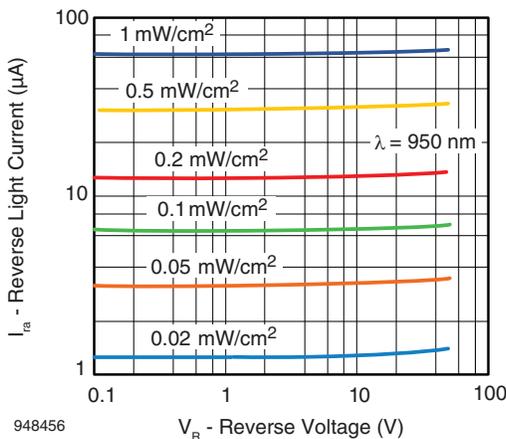


Fig. 4 - Reverse Light Current vs. Reverse Voltage

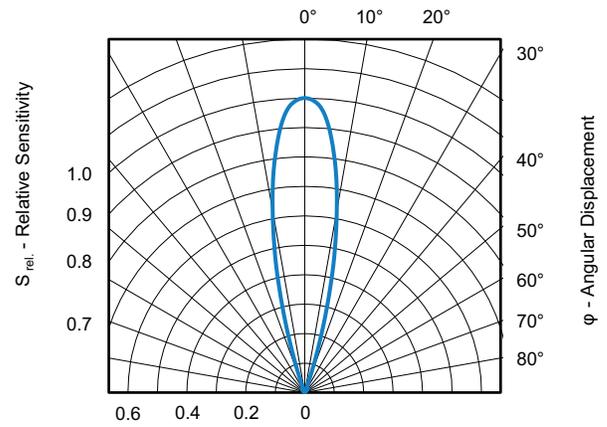


Fig. 7 - Relative Radiant Sensitivity vs. Angular Displacement

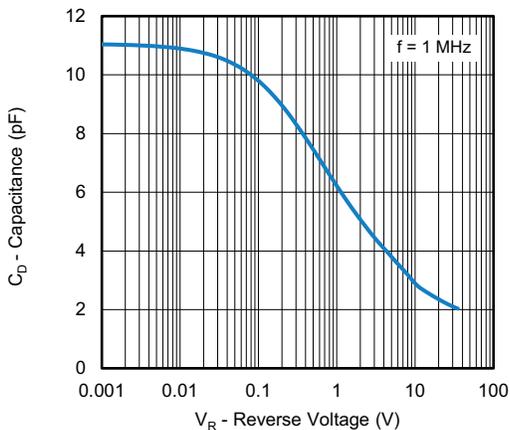
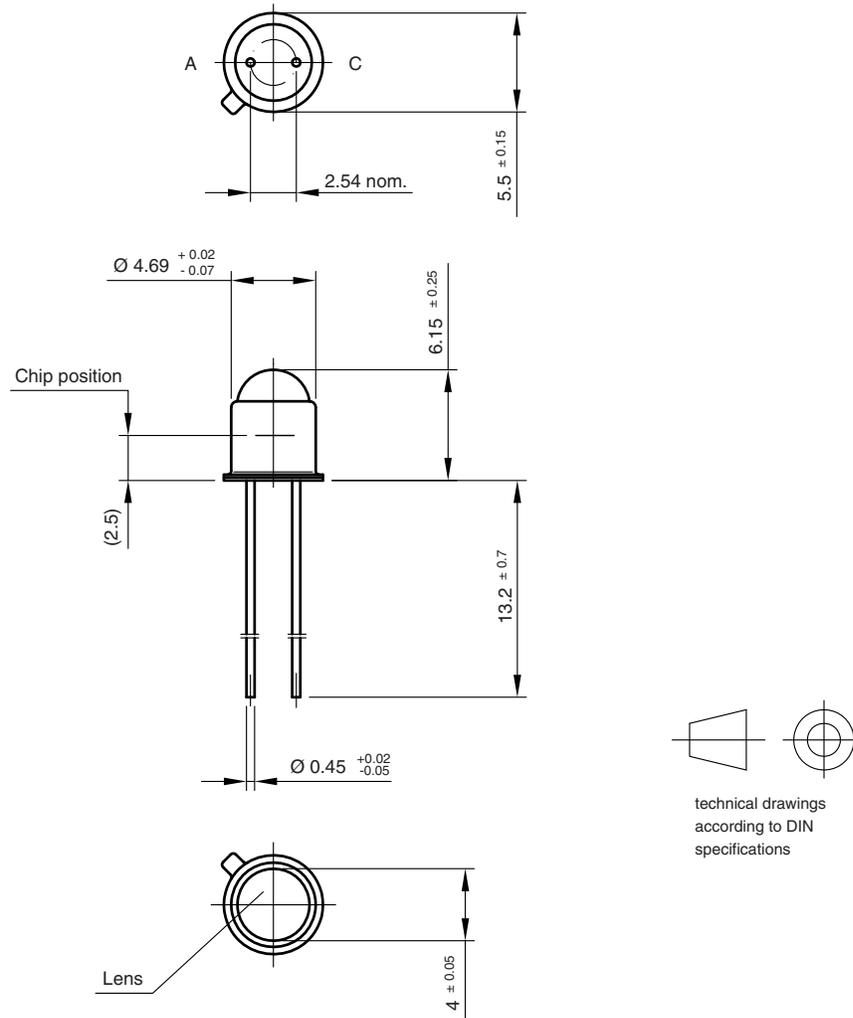


Fig. 5 - Diode Capacitance vs. Reverse Voltage



PACKAGE DIMENSIONS in millimeters



Drawing-No.: 6.503-5022.02-4

Issue: 1; 24.08.98

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