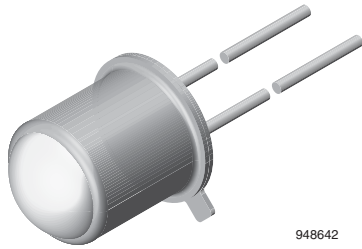




THE DATASHEET OF BPW24R



Silicon PIN Photodiode, RoHS Compliant



948642

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.

FEATURES

- Package type: leaded
- Package form: TO-18
- Dimensions (in mm): \varnothing 4.7
- Radiant sensitive area (in mm²): 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

APPLICATIONS

- High speed photo detector

PRODUCT SUMMARY

COMPONENT	I_{ra} (A)	φ (deg)	$\lambda_{0.1}$ (nm)
BPW24R	60	± 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 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	$V_R = 50\text{ V}$, $E = 0$	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		μA
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		μA
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		φ		± 12		deg
Wavelength of peak sensitivity		λ_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

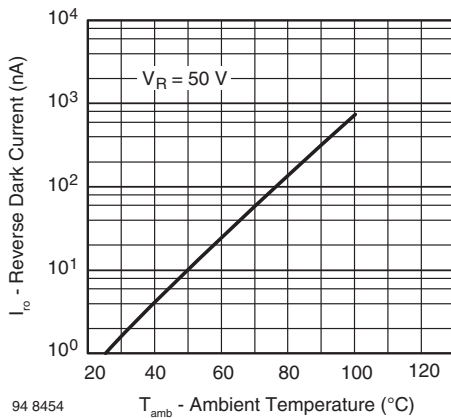
BASIC CHARACTERISTICS ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified)


Fig. 1 - Reverse Dark Current vs. Ambient Temperature

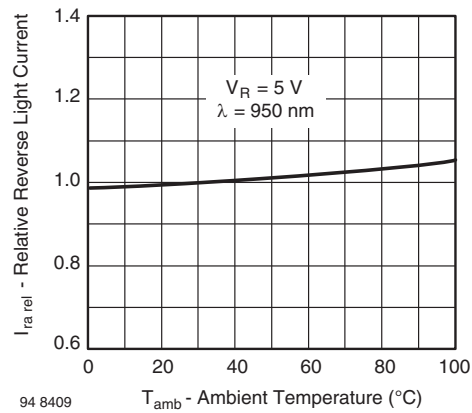


Fig. 2 - Relative Reverse Light Current vs. Ambient Temperature

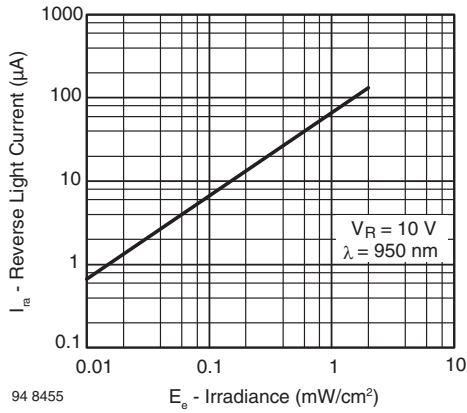


Fig. 3 - Reverse Light Current vs. Irradiance

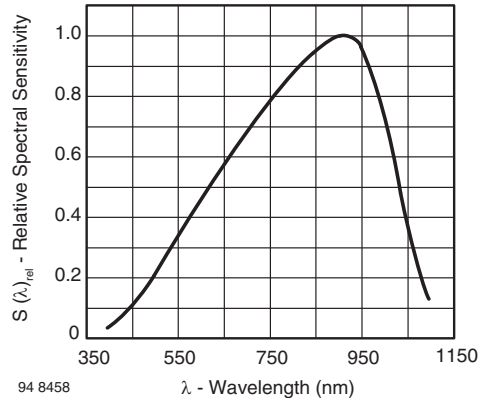


Fig. 6 - Relative Spectral Sensitivity vs. Wavelength

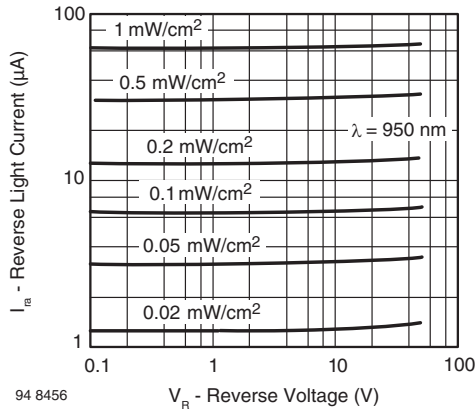


Fig. 4 - Reverse Light Current vs. Reverse Voltage

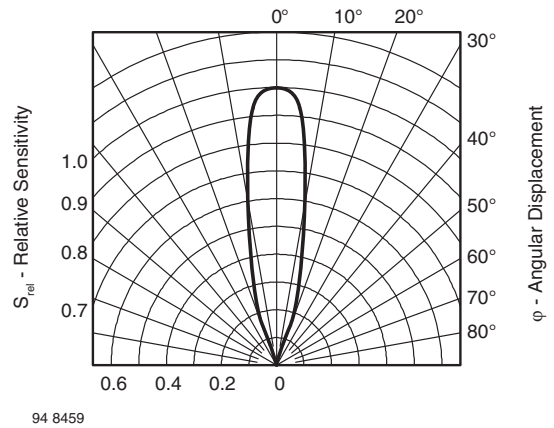


Fig. 7 - Relative Radiant Sensitivity vs. Angular Displacement

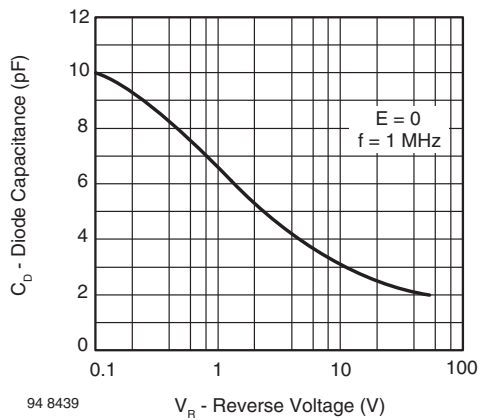
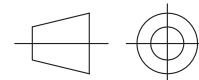
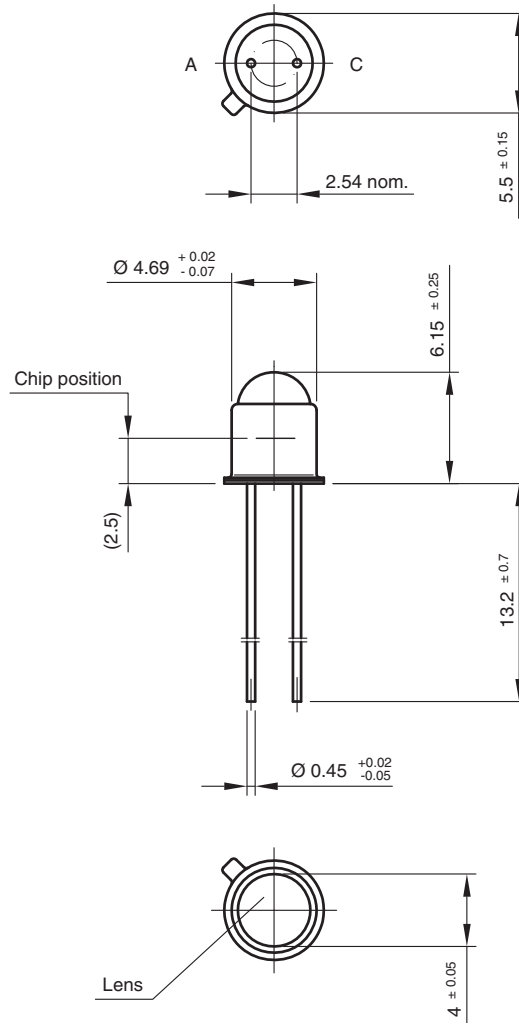


Fig. 5 - Diode Capacitance vs. Reverse Voltage



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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