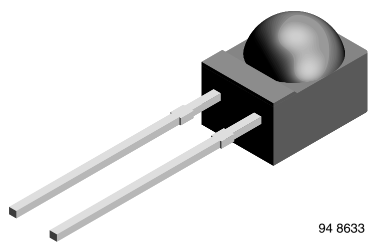
Silicon PIN Photodiode



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FEATURES

- Package type: leaded
- Package form: side view
- Dimensions (in mm): 4.5 x 5 x 6
- Radiant sensitive area (in mm^2): 7.5
- High radiant sensitivity
- Daylight blocking filter matched with 940 nm emitters
- Fast response times
- Angle of half sensitivity: $\varphi = \pm 60°$
- Compliant to RoHS Directive 2002/95/EC and in accordance to WEEE 2002/96/EC

Pb-free
e4
RoHS COMPLIANT
GREEN (5-2008)**

Note

** Please see document “Vishay Material Category Policy”: www.vishay.com/doc?99902

DESCRIPTION

BPV22F is a PIN photodiode with high speed and high radiant sensitivity in a black, plastic package with side view lens and daylight blocking filter. Filter bandwdith is matched with 900 nm to 950 nm IR emitters. The lens achieves 80 % of sensitivity improvement in comparison with flat package.

APPLICATIONS

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

PRODUCT SUMMARY			
COMPONENT	I_{ra} (μA)	φ (deg)	$\lambda_{0.5}$ (nm)
BPV22F	80	± 60	870 to 1050

Note

- Test condition see table “Basic Characteristics”

ORDERING INFORMATION			
ORDERING CODE	PACKAGING	REMARKS	PACKAGE FORM
BPV22F	Bulk	MOQ: 4000 pcs, 4000 pcs/bulk	Side view

Note

- MOQ: minimum order quantity

ABSOLUTE MAXIMUM RATINGS (T_{amb} = 25 °C, unless otherwise specified)				
PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
Reverse voltage		V_R	60	V
Power dissipation	$T_{amb} \leq 25$ °C	P_V	215	mW
Junction temperature		T_j	100	°C
Operating temperature range		T_{amb}	- 40 to + 100	°C
Storage temperature range		T_{stg}	- 40 to + 100	°C
Soldering temperature	$t \leq 5$ s	T_{sd}	260	°C
Thermal resistance junction/ambient	Connected with Cu wire, 0.14 mm^2	R_{thJA}	350	K/W

BASIC CHARACTERISTICS (T_{amb} = 25 °C, unless otherwise specified)						
PARAMETER	**TEST CONDITION**	**SYMBOL**	**MIN.**	**TYP.**	**MAX.**	**UNIT**
Forward voltage	I_F = 50 mA	V_F		1	1.3	V
Breakdown voltage	I_R = 100 μA, 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
Serial resistance	V_R= 12 V, f = 1 MHz	R_S		400		Ω
Open circuit voltage	E_e = 1 mW/cm², λ = 950 nm	V_o		370		mV
Temperature coefficient of V_o	E_e = 1 mW/cm², λ = 950 nm	TK_{Vo}		- 2.6		mV/K
Short circuit current	E_e = 1 mW/cm², λ = 950 nm	I_k		75		μA
Reverse light current	E_e = 1 mW/cm², λ = 950 nm, V_R = 5 V	I_{ra}	55	80		μA
Temperature coefficient of I_{ra}	E_e = 1 mW/cm², λ = 950 nm, V_R = 10 V	TK_{Ira}		0.1		%/K
Absolute spectral sensitivity	V_R = 5 V, λ = 870 nm	s(λ)		0.35		A/W
	V_R = 5 V, λ = 950 nm	s(λ)		0.6		A/W
Angle of half sensitivity		φ		± 60		deg
Wavelength of peak sensitivity		λ_p		950		nm
Range of spectral bandwidth		$\lambda_{0.5}$		870 to 1050		nm
Quantum efficiency	λ = 950 nm	η		90		%
Noise equivalent power	V_R = 10 V, λ = 950 nm	NEP		4×10^{-14}		W/√ Hz
Detectivity	V_R = 10 V, λ = 950 nm	D*		6×10^{12}		cm√Hz/W
Rise time	V_R = 10 V, R_L = 1 kΩ, λ = 820 nm	t_r		100		ns
Fall time	V_R = 10 V, R_L = 1 kΩ, λ = 820 nm	t_f		100		ns
Cut-off frequency	V_R = 12 V, R_L = 1 kΩ, λ = 870 nm	f_c		4		MHz
	V_R = 12 V, R_L = 1 kΩ, λ = 950 nm	f_c		1		MHz

BASIC CHARACTERISTICS (T_{amb} = 25 °C, unless otherwise specified)

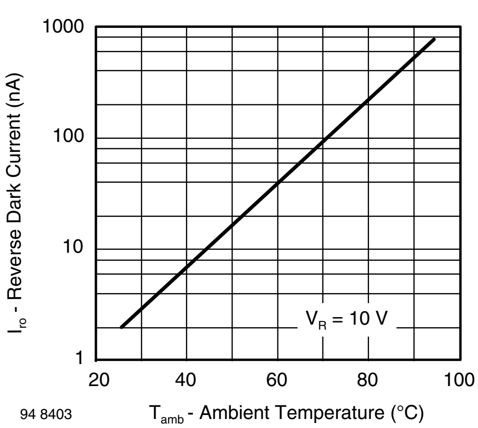


Fig. 1 - Reverse Dark Current vs. Ambient Temperature

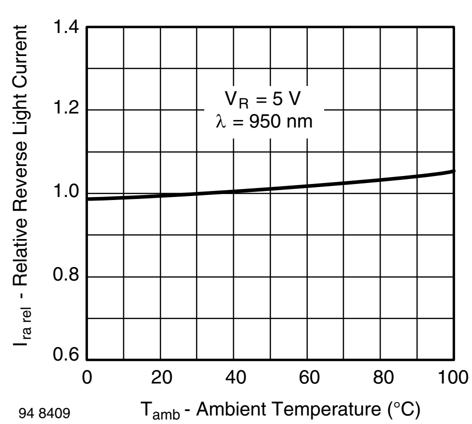


Fig. 2 - Relative Reverse Light Current vs. Ambient Temperature

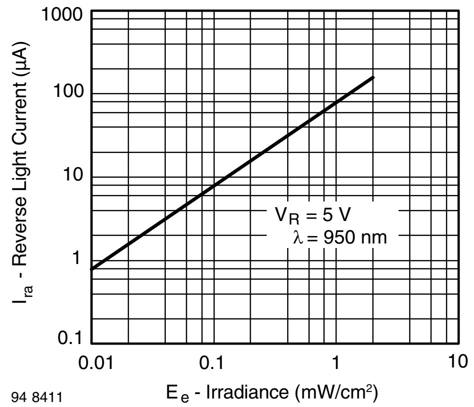


Fig. 3 - Reverse Light Current vs. Irradiance

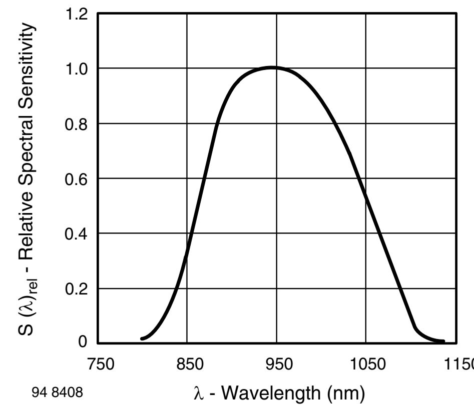


Fig. 6 - Relative Spectral Sensitivity vs. Wavelength

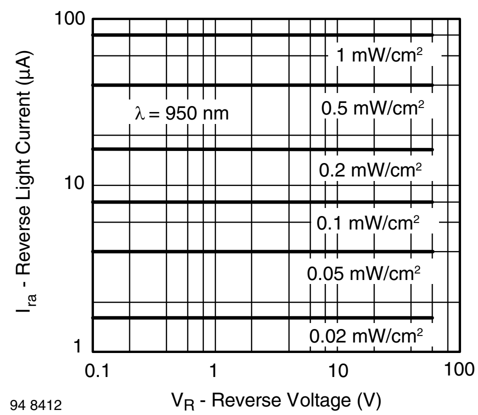


Fig. 4 - Reverse Light Current vs. Reverse Voltage

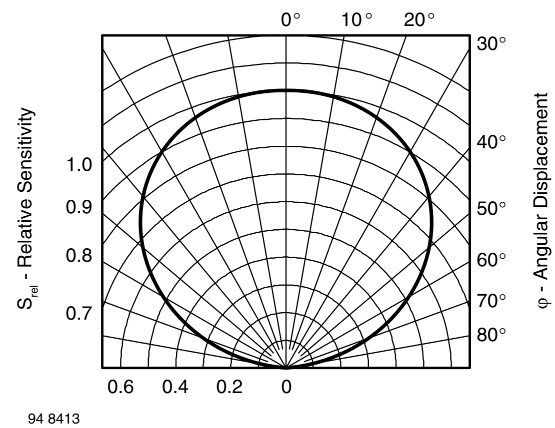


Fig. 7 - Relative Radiant Sensitivity vs. Angular Displacement

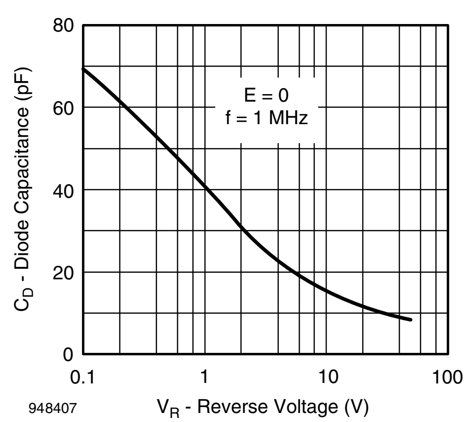
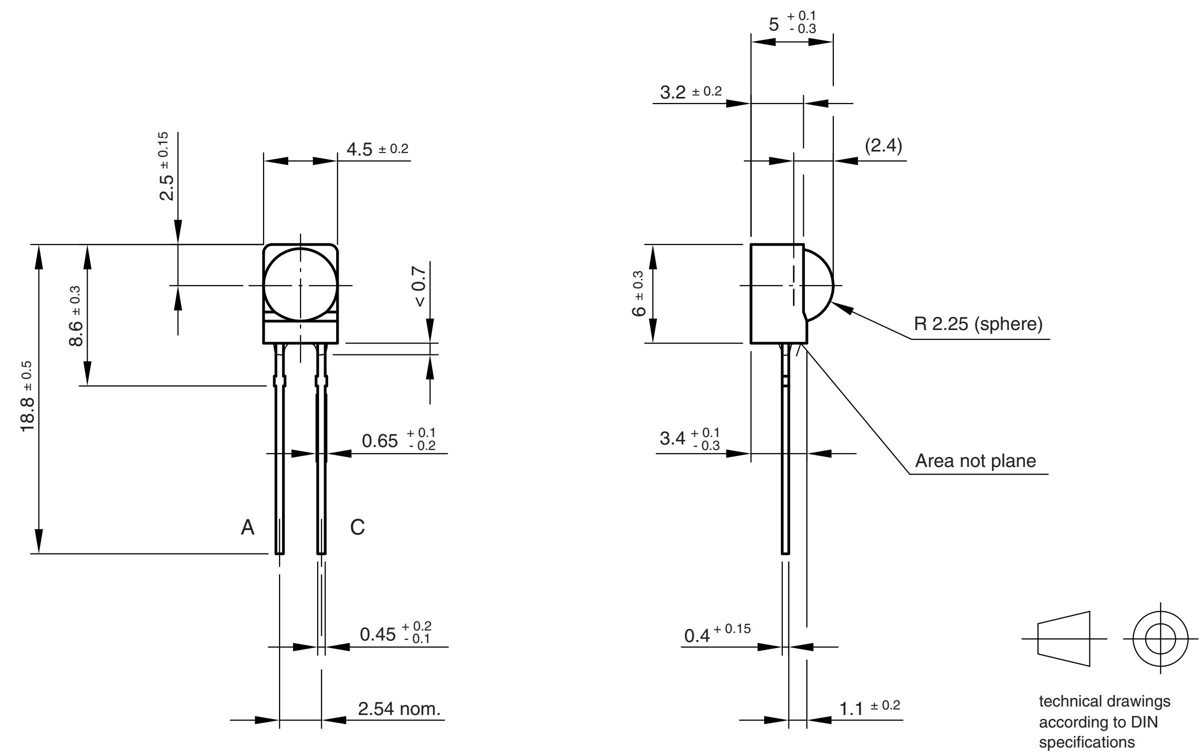


Fig. 5 - Diode Capacitance vs. Reverse Voltage

PACKAGE DIMENSIONS in millimeters



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