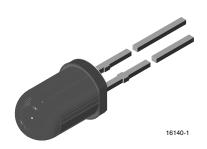


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Silicon PIN Photodiode

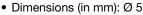


DESCRIPTION

BPV10NF is a PIN photodiode with high speed and high radiant sensitivity in black, T-1¾ plastic package with daylight blocking filter. Filter bandwidth is matched with 870 nm to 950 nm IR emitters.

FEATURES

Package type: leadedPackage form: T-1¾



• Radiant sensitive area (in mm²): 0.78

· Leads with stand-off

· High radiant sensitivity

 Daylight blocking filter matched with 870 nm to 950 nm emitters

• High bandwidth: > 100 MHz at V_B = 12 V

• Fast response times

• Angle of half sensitivity: $\varphi = \pm 20^{\circ}$

 Material categorization: for definitions of compliance please see <u>www.vishay.com/doc?99912</u>

APPLICATIONS

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

PRODUCT SUMMARY				
COMPONENT	I _{ra} (μΑ)	ϕ (deg) $\lambda_{0.5}$ (i		
BPV10NF	60	± 20	790 to 1050	

Note

· Test condition see table "Basic Characteristics"

ORDERING INFORMATION				
ORDERING CODE	PACKAGING	REMARKS	PACKAGE FORM	
BPV10NF	Bulk	MOQ: 4000 pcs, 4000 pcs/bulk	T-1¾	
BPV10NF-CS21	Reel	MOQ: 5000 pcs, 1000 pcs/reel	T-1¾	

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} ≤ 25 °C	P _V	215	mW	
Junction temperature		Tj	100	°C	
Operating temperature range		T _{amb}	-40 to +100	°C	
Storage temperature range		T _{stg}	-40 to +100	°C	
Soldering temperature	$t \le 5 \text{ s, } 2 \text{ mm from body}$	T _{sd}	260	°C	
Thermal resistance junction / ambient	Connected with Cu wire, 0.14 mm ²	R _{thJA}	350	K/W	

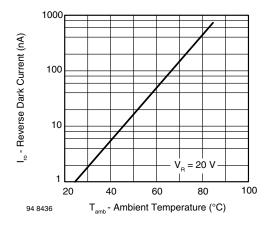
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www.vishay.com Vishay Semiconductors

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}		1.0	1.3	V
Breakdown voltage	I _R = 100 μA, E = 0	V _(BR)	60			V
Reverse dark current	V _R = 20 V, E = 0	I _{ro}		1	5	nA
Diode capacitance	V _R = 0 V, f = 1 MHz, E = 0	C_D		11		pF
Open circuit voltage	$E_e = 1 \text{ mW/cm}^2, \lambda = 870 \text{ nm}$	Vo		450		mV
Short circuit current	$E_e = 1 \text{ mW/cm}^2, \lambda = 870 \text{ nm}$	I _K		50		μA
Deverage light everyont	$E_e = 1 \text{ mW/cm}^2$, $\lambda = 870 \text{ nm}$, $V_R = 5 \text{ V}$	I _{ra}		55		μA
Reverse light current	$E_e = 1 \text{ mW/cm}^2$, $\lambda = 950 \text{ nm}$, $V_R = 5 \text{ V}$	I _{ra}	30	60		μA
Temperature coefficient of Ira	$E_e = 1 \text{ mW/cm}^2$, $\lambda = 870 \text{ nm}$, $V_R = 5 \text{ V}$	TK _{lra}		-0.1		%/K
Absolute spectral sensitivity	$V_R = 5 \text{ V}, \ \lambda = 870 \text{ nm}$	s(λ)		0.55		A/W
Angle of half sensitivity		φ		± 20		deg
Wavelength of peak sensitivity		λ_{p}		940		nm
Range of spectral bandwidth		λ _{0.5}		790 to 1050		nm
Quantum efficiency	$\lambda = 950 \text{ nm}$	η		70		%
Noise equivalent power	$V_R = 20 \text{ V}, \ \lambda = 950 \text{ nm}$	NEP		3 x 10 ⁻¹⁴		W/√Hz
Detectivity	V _R = 20 V, λ = 950 nm	D*		3 x 10 ¹²		cm√Hz/W
Rise time	$V_R = 50 \text{ V}, R_L = 50 \Omega, \lambda = 820 \text{ nm}$	t _r		2.5		ns
Fall time	$V_R = 50 \text{ V}, R_L = 50 \Omega, \lambda = 820 \text{ nm}$	t _f		2.5		ns

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





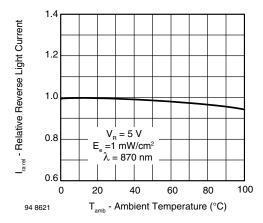


Fig. 2 - Relative Reverse Light Current vs. Ambient Temperature



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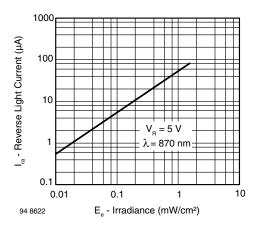


Fig. 3 - Reverse Light Current vs. Irradiance

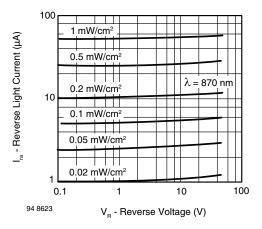


Fig. 4 - Reverse Light Current vs. Reverse Voltage

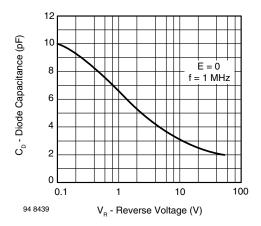


Fig. 5 - Diode Capacitance vs. Reverse Voltage

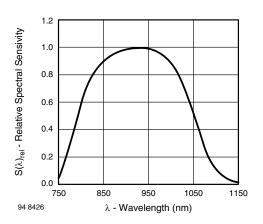


Fig. 6 - Relative Spectral Sensitivity vs. Wavelength

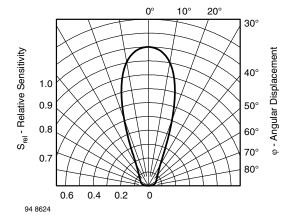
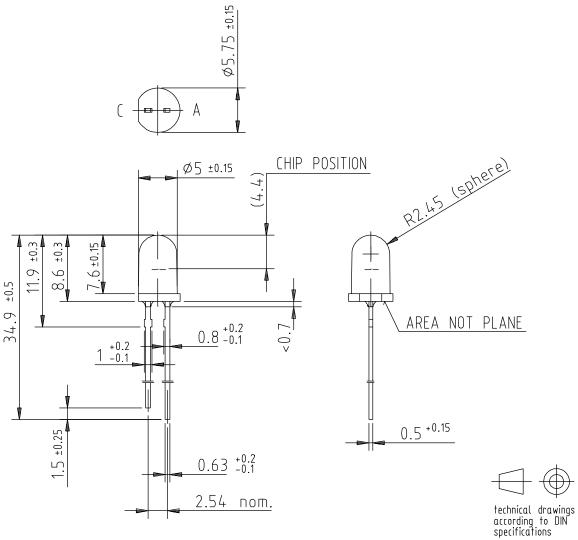


Fig. 7 - Relative Radiant Sensitivity vs. Angular Displacement

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PACKAGE DIMENSIONS in millimeters



Drawing-No.: 6.544-5185.01-4

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