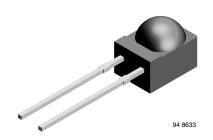


GREEN (5-2008)**

Silicon PIN Photodiode



BPV23NF is a PIN photodiode with high speed and high

radiant sensitivity in a black, plastic package with side view

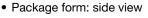
lens and daylight blocking filter. Filter bandwidth is matched with 870 nm to 950 nm IR emitters. The lens achieves 80 %

of sensitivity improvement in comparison with flat package.

BPV23NFL has long leads, other specifications like

FEATURES

Package type: leaded



• Dimensions (in mm): 4.5 x 5 x 6

• Radiant sensitive area (in mm²): 4.4

· High radiant sensitivity

 Daylight blocking filter matched with 870 nm to 950 nm emitters

Fast response times

• Angle of half sensitivity: $\varphi = \pm 60^{\circ}$

 Compliant to RoHS Directive 2002/95/EC and in accordance to WEEE 2002/96/EC

Note

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

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} (μA)	φ (deg)	λ _{0.5} (nm)	
BPV23NF	65	± 60	790 to 1050	
RDV/23NEI	65	+ 60	790 to 1050	

Note

DESCRIPTION

BPV23NF.

· Test condition see table "Basic Characteristics"

ORDERING INFORMATION					
ORDERING CODE	PACKAGING	REMARKS	PACKAGE FORM		
BPV23NF	Bulk	MOQ: 4000 pcs, 4000 pcs/bulk	Side view		
BPV23NFL	Bulk	MOQ: 4000 pcs, 4000 pcs/bulk	Side view, long leads		

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 ≤ 5 s	T _{sd}	260	°C	
Thermal resistance junction/ambient	Connected with Cu wire, 0.14 mm ²	R _{thJA}	350	K/W	



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		48		pF
Serial resistance	V _R = 12 V, f = 1 MHz	R _S		900		Ω
Open circuit voltage	$E_e = 1 \text{ mW/cm}^2, \lambda = 950 \text{ nm}$	Vo		390		mV
Temperature coefficient of Vo	$E_e = 1 \text{ mW/cm}^2, \lambda = 950 \text{ nm}$	TK _{Vo}		- 2.6		mV/K
Short circuit current	$E_e = 1 \text{ mW/cm}^2, \lambda = 950 \text{ nm}$	l _k		65		μΑ
Reverse light current	$E_e = 1 \text{ mW/cm}^2, \lambda = 950 \text{ nm},$ $V_R = 5 \text{ V}$	I _{ra}	45	65		μΑ
Temperature coefficient of I _{ra}	$E_e = 1 \text{ mW/cm}^2, \lambda = 950 \text{ nm}, \ V_R = 10 \text{ V}$	TK _{Ira}		0.1		%/K
Absolute spectral sensitivity	$V_R = 5 \text{ V}, \ \lambda = 870 \text{ nm}$	s(\lambda)		0.57		A/W
	$V_R = 5 \text{ V}, \ \lambda = 950 \text{ nm}$	s(\lambda)		0.60		A/W
Angle of half sensitivity		φ		± 60		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		90		%
Noise equivalent power	$V_R = 10 \text{ V}, \ \lambda = 950 \text{ nm}$	NEP		4 x 10 ⁻¹⁴		W/√ Hz
Detectivity	$V_R = 10 \text{ V}, \ \lambda = 950 \text{ nm}$	D*		5 x 10 ¹²		cm√Hz/W
Rise time	$V_R = 10 \text{ V}, R_L = 1 \text{ k}\Omega, \lambda = 820 \text{ nm}$	t _r		70		ns
Fall time	$V_R = 10 \text{ V}, R_L = 1 \text{ k}\Omega, \lambda = 820 \text{ nm}$	t _f		70		ns
Cut-off frequency	$V_R = 12 \text{ V}, R_L = 1 \text{ k}\Omega, \lambda = 870 \text{ nm}$	f _c		4		MHz
	$V_R = 12 \text{ V}, R_L = 1 \text{ k}\Omega, \lambda = 950 \text{ nm}$	f _c		1		MHz

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

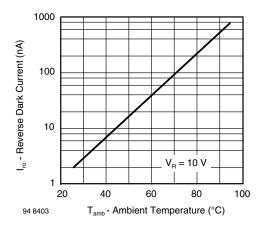


Fig. 1 - Reverse Dark Current vs. Ambient Temperature

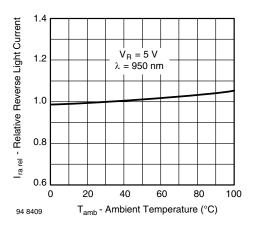


Fig. 2 - Relative Reverse Light Current vs. Ambient Temperature

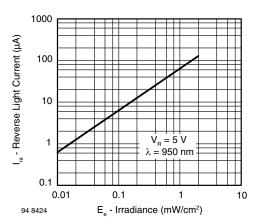


Fig. 3 - Reverse Light Current vs. Irradiance

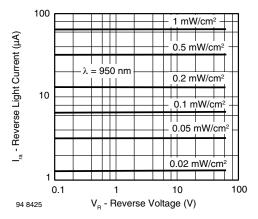


Fig. 4 - Reverse Light Current vs. Reverse Voltage

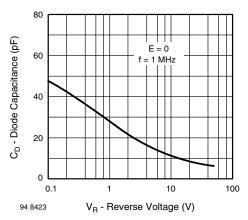


Fig. 5 - Diode Capacitance vs. Reverse Voltage

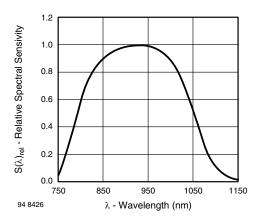


Fig. 6 - Relative Spectral Sensitivity vs. Wavelength

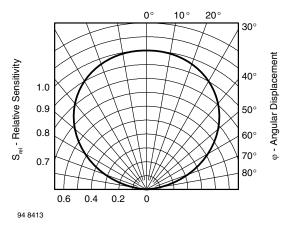
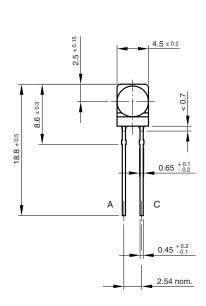


Fig. 7 - Relative Radiant Sensitivity vs. Angular Displacement

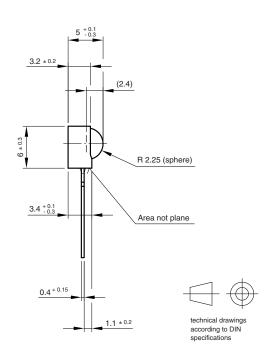
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PACKAGE DIMENSIONS in millimeters: BPV23NF

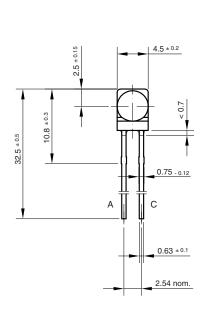


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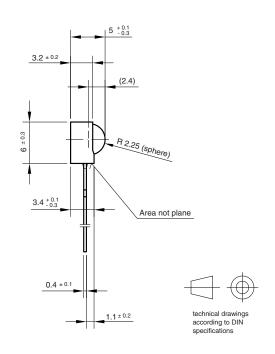


PACKAGE DIMENSIONS in millimeters: BPV23NFL



Drawing-No.: 6.544-5236.01-4 Issue: 2; 07.07.97

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