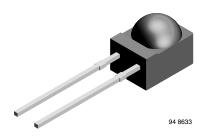
BPV23F, BPV23FL

Vishay Semiconductors



Silicon PIN Photodiode



DESCRIPTION

BPV23F 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 900 nm to 950 nm IR emitters. The lens achieves 80 % of sensitivity improvement in comparison with flat package. BPV23FL has long leads, other specifications like BPV23F.

FEATURES

- Package type: leaded
- · Package form: side view
- Dimensions (in mm): 4.5 x 5 x 6
- Radiant sensitive area (in mm²): 4.4
- High radiant sensitivity
- Daylight blocking filter matched with 940 nm emitters
- Fast response times
- Angle of half sensitivity: $\varphi = \pm 60^{\circ}$
- · Compliant to PoHS 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 TSALxxxx series IR emitters

PRODUCT SUMMARY				
COMPONENT	I _{ra} (μΑ)	φ (deg)	λ _{0.5} (nm)	
BPV23F	63	± 60	870 to 1050	
BPV23FL	63	± 60	870 to 1050	

ORDERING INFORMATION				
ORDERING CODE	PACKAGING	REMARKS PACKAGE FO		
BPV23F	Bulk	MOQ: 4000 pcs, 4000 pcs/bulk	Side view	
BPV23FL	Bulk	MOQ: 4000 pcs, 4000 pcs/bulk	Side view, long leads	

ABSOLUTE MAXIMUM RATINGS ($T_{amb} = 25 \degree C$, unless otherwise specified)					
PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT	
Reverse voltage		V _R	60	V	
Power dissipation	T _{amb} ≤ 25 °C	Pv	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	



RoHS

COMPLIANT

GREEN (5-2008)**

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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	$V_{R} = 0 V, f = 1 MHz, E = 0$	CD		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		60		μA
Reverse light current	$E_e = 1 \text{ mW/cm}^2, \lambda = 950 \text{ nm}, V_R = 5 \text{ V}$	I _{ra}	45	63		μA
Temperature coefficient of Ira	$E_e = 1 \text{ mW/cm}^2, \lambda = 950 \text{ nm}, \\ V_R = 10 \text{ V}$	TK _{Ira}		0.2		%/K
Absolute spectral sensitivity	$V_R = 5 V$, $\lambda = 870 nm$	s(λ)		0.35		A/W
	$V_R = 5 V$, $\lambda = 950 nm$	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		λ _{0.5}		870 to 1050		nm
Quantum efficiency	$\lambda = 950 \text{ nm}$	η		90		%
Noise equivalent power	$V_{\rm R} = 10 \text{ V}, \lambda = 950 \text{ nm}$	NEP		4 x 10 ⁻¹⁴		W/√ Hz
Detectivity	$V_{\rm R} = 10 \text{ V}, \lambda = 950 \text{ nm}$	D*		5 x 10 ¹²		cm√Hz/W
Rise time	$V_R = 10 \text{ V}, \text{ R}_L = 1 \text{ k}\Omega, \lambda = 820 \text{ nm}$	tr		70		ns
Fall time	$V_R = 10 \text{ V}, \text{ R}_L = 1 \text{ k}\Omega, \lambda = 820 \text{ nm}$	t _f		70		ns
Cut-off frequency	V_R = 12 V, R_L = 1 k Ω , λ = 870 nm	f _c		4		MHz
	$V_{\rm R} = 12 \text{ V}, \text{ R}_{\rm L} = 1 \text{ k}\Omega, \lambda = 950 \text{ nm}$	f _c		1		MHz

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

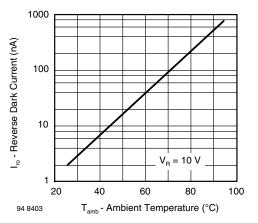


Fig. 1 - Reverse Dark Current vs. Ambient Temperature

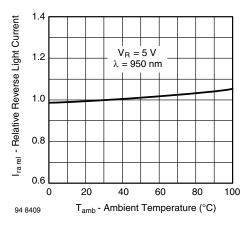


Fig. 2 - Relative Reverse Light Current vs. Ambient Temperature



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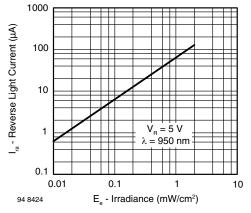


Fig. 3 - Reverse Light Current vs. Irradiance

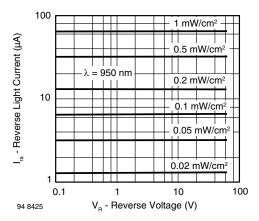


Fig. 4 - Reverse Light Current vs. Reverse Voltage

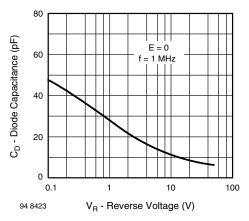


Fig. 5 - Diode Capacitance vs. Reverse Voltage

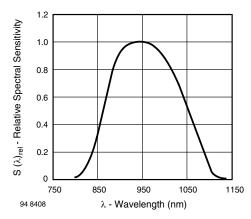


Fig. 6 - Relative Spectral Sensitivity vs. Wavelength

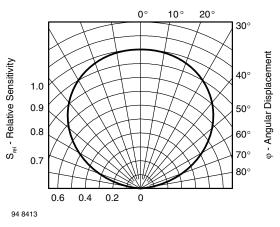
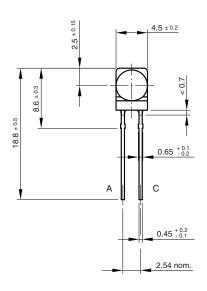


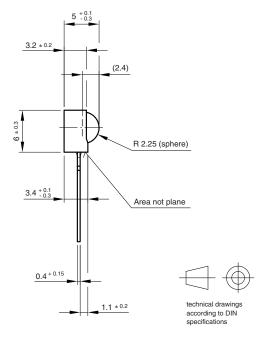
Fig. 7 - Relative Radiant Sensitivity vs. Angular Displacement



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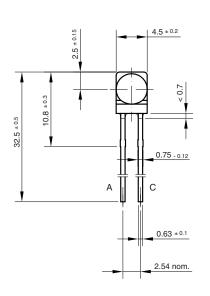
PACKAGE DIMENSIONS in millimeters: BPV23F

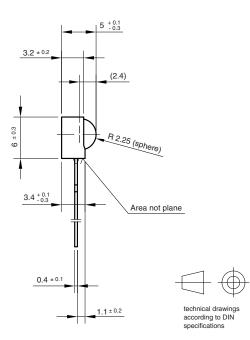




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PACKAGE DIMENSIONS in millimeters: BPV23FL





Drawing-No.: 6.544-5236.01-4 Issue: 2; 07.07.97 96 12205

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For technical questions, contact: <u>detectortechsupport@vishay.com</u>

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