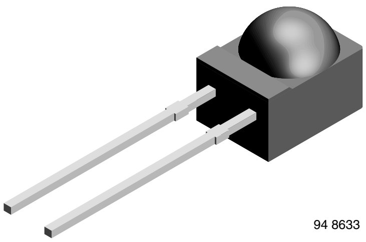
Silicon PIN Photodiode, RoHS Compliant



FEATURES

- Package type: leaded
- Package form: side view
- Dimensions (in mm): 4.5 x 5 x 6
- Radiant sensitive area (in mm^2): 4.4
- High radiant sensitivity
- Daylight blocking filter matched with 940 nm emitters
- Fast response times
- Angle of half sensitivity: $\varphi = \pm 60°$
- Lead (Pb)-free component in accordance with RoHS 2002/95/EC and WEEE 2002/96/EC

Pb-free
e4
RoHS COMPLIANT

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.

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)
BPV23F	63	± 60	870 to 1050
BPV23FL	63	± 60	870 to 1050

Note
Test condition see table “Basic Characteristics”

ORDERING INFORMATION

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

Note
MOQ: minimum order quantity

ABSOLUTE MAXIMUM RATINGS

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

Note
T_{amb} = 25 °C, unless otherwise specified

BASIC CHARACTERISTICS						
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	$E_e = 1$ mW/cm^2, λ = 950 nm	V_o		390		mV
Temperature coefficient of V_o	$E_e = 1$ mW/cm^2, λ = 950 nm	TK_{Vo}		- 2.6		mV/K
Short circuit current	$E_e = 1$ mW/cm^2, λ = 950 nm	I_k		60		µA
Reverse light current	$E_e = 1$ mW/cm^2, λ = 950 nm, $V_R = 5$ V	I_{ra}	45	63		µA
Temperature coefficient of I_{ra}	$E_e = 1$ mW/cm^2, λ = 950 nm, $V_R = 10$ V	TK_{Ira}		0.2		%/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*		5×10^{12}		cm√Hz/W
Rise time	$V_R = 10$ V, $R_L = 1$ kΩ, λ = 820 nm	t_r		70		ns
Fall time	$V_R = 10$ V, $R_L = 1$ kΩ, λ = 820 nm	t_f		70		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

Note

$T_{amb} = 25$ °C, unless otherwise specified

BASIC CHARACTERISTICS

$T_{amb} = 25$ °C, unless otherwise specified

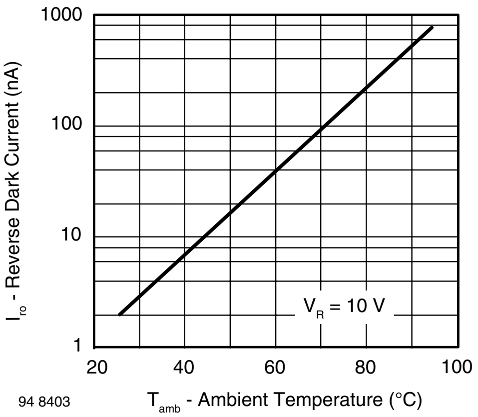


Fig. 1 - Reverse Dark Current vs. Ambient Temperature

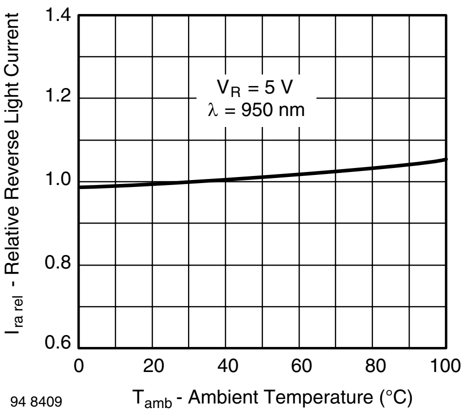


Fig. 2 - Relative Reverse Light Current vs. Ambient Temperature

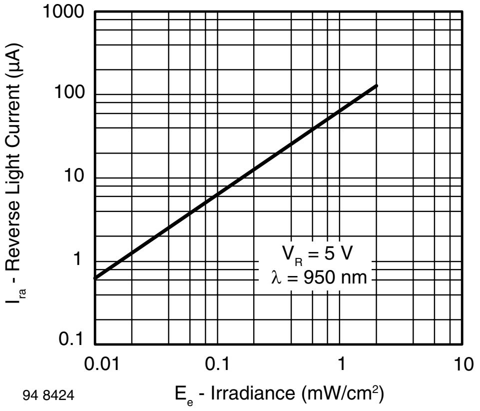


Fig. 3 - Reverse Light Current vs. Irradiance

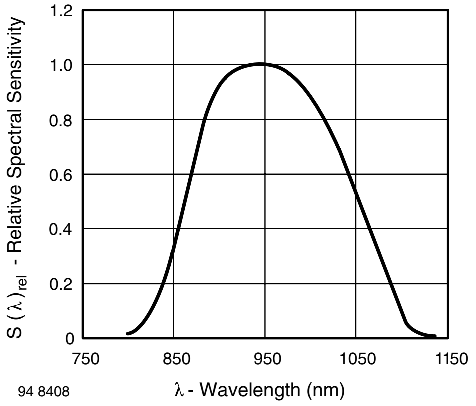


Fig. 6 - Relative Spectral Sensitivity vs. Wavelength

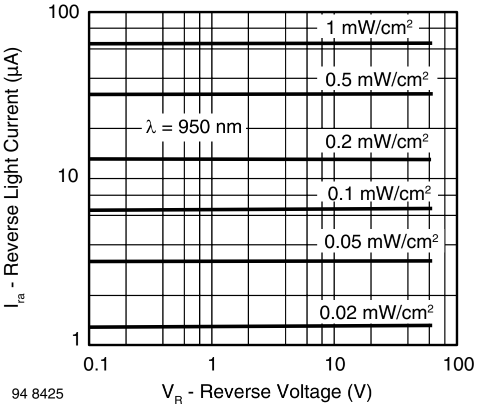


Fig. 4 - Reverse Light Current vs. Reverse Voltage

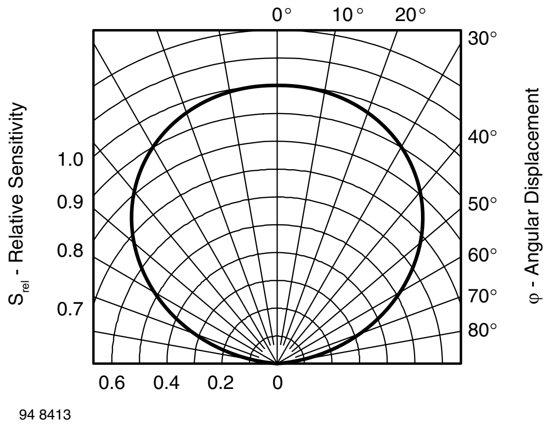


Fig. 7 - Relative Radiant Sensitivity vs. Angular Displacement

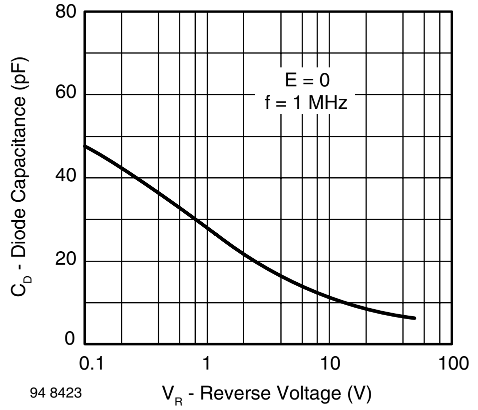
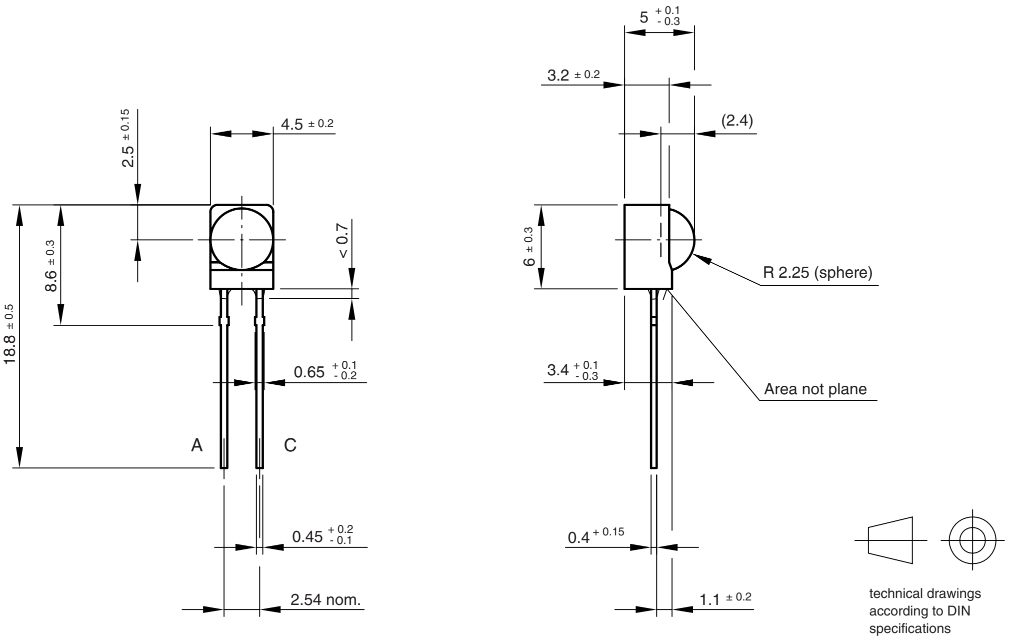


Fig. 5 - Diode Capacitance vs. Reverse Voltage

PACKAGE DIMENSIONS in millimeters: **BPV23F**



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Issue: 2; 19.06.01
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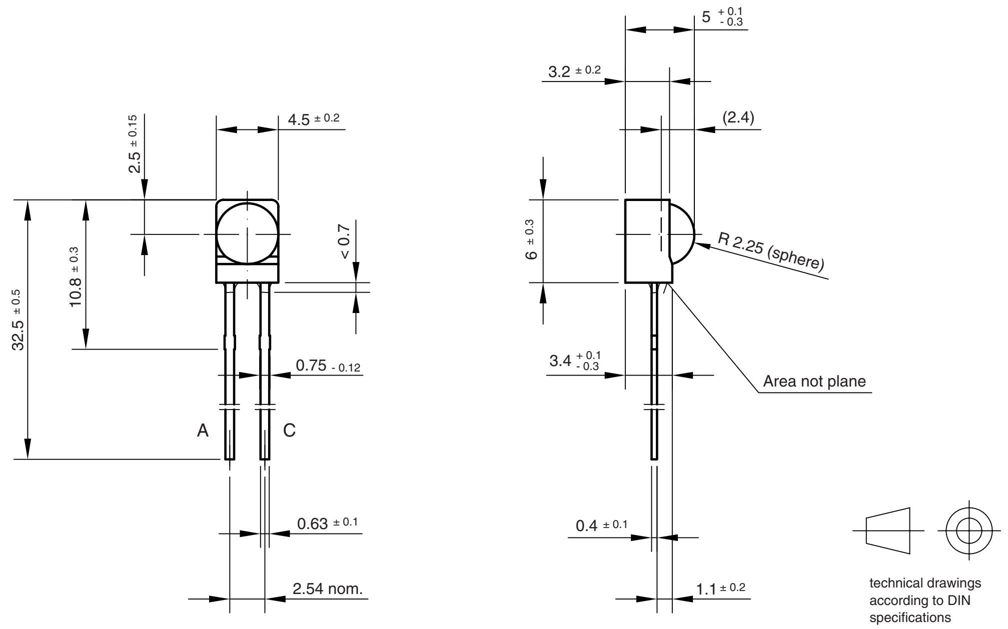
PACKAGE DIMENSIONS in millimeters: **BPV23FL**



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Issue: 2; 07.07.97
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