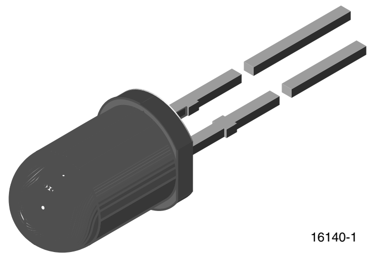
Silicon PIN Photodiode



16140-1

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: leaded
- Package form: T-1¾
- Dimensions (in mm): Ø 5
- Radiant sensitive area (in mm^2): 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_R = 12 V
- Fast response times
- Angle of half sensitivity: φ = ± 20°
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

Pb-free
e4
RoHS
COMPLIANT

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)	$\lambda_{0.5}$ (nm)
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	$T_{amb} \leq 25$ °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 ≤ 5 s, 2 mm from body	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		1.0	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 mW/cm², λ = 870 nm	V_O		450		mV
Short circuit current	E_e = 1 mW/cm², λ = 870 nm	I_K		50		μA
Reverse light current	E_e = 1 mW/cm², λ = 870 nm, V_R = 5 V	I_{ra}		55		μA
	E_e = 1 mW/cm², λ = 950 nm, V_R = 5 V	I_{ra}	30	60		μA
Temperature coefficient of I_{ra}	E_e = 1 mW/cm², λ = 870 nm, V_R = 5 V	TK_{Ira}		-0.1		%/K
Absolute spectral sensitivity	V_R = 5 V, λ = 870 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		$\lambda_{0.5}$		790 to 1050		nm
Quantum efficiency	λ = 950 nm	η		70		%
Noise equivalent power	V_R = 20 V, λ = 950 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 V, R_L = 50 Ω, λ = 820 nm	t_r		2.5		ns
Fall time	V_R = 50 V, R_L = 50 Ω, λ = 820 nm	t_f		2.5		ns

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

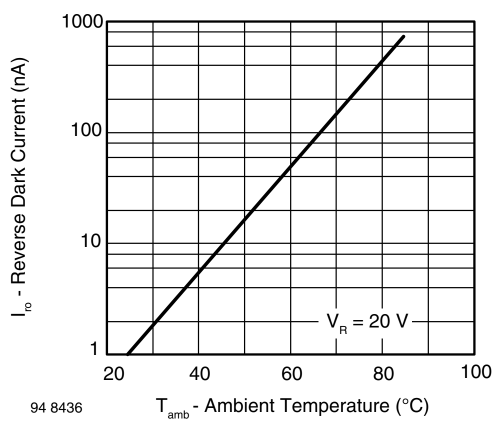


Fig. 1 - Reverse Dark Current vs. Ambient Temperature

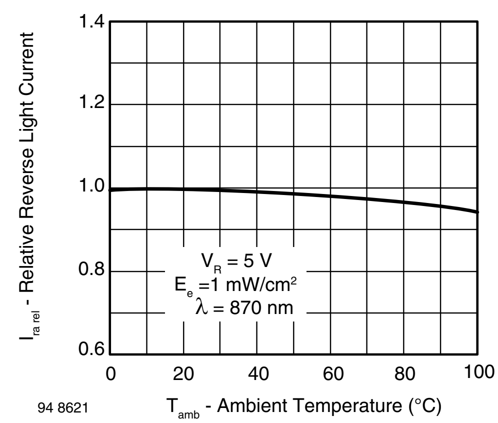


Fig. 2 - Relative Reverse Light Current vs. Ambient Temperature

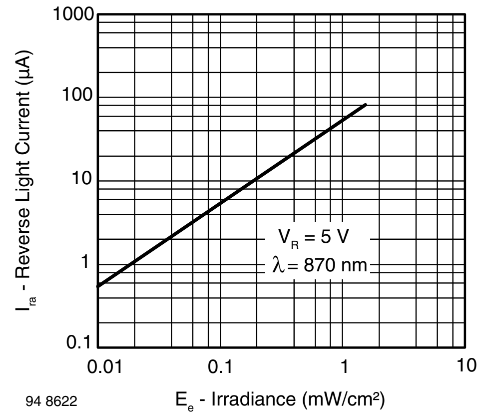


Fig. 3 - Reverse Light Current vs. Irradiance

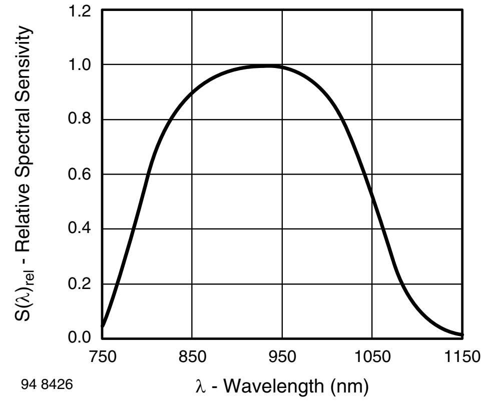


Fig. 6 - Relative Spectral Sensitivity vs. Wavelength

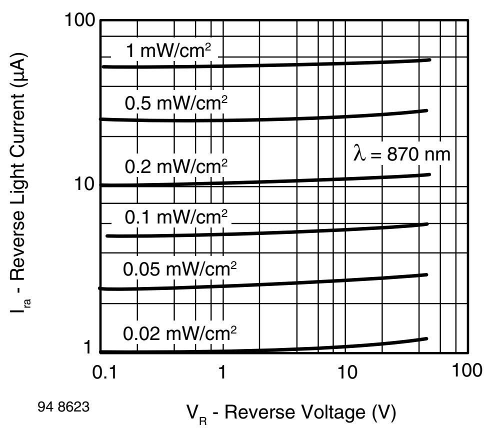


Fig. 4 - Reverse Light Current vs. Reverse Voltage

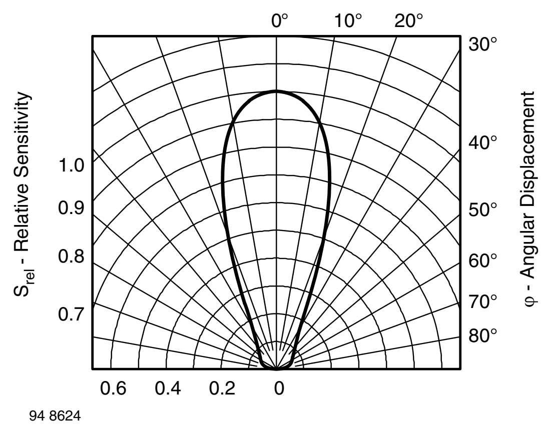


Fig. 7 - Relative Radiant Sensitivity vs. Angular Displacement

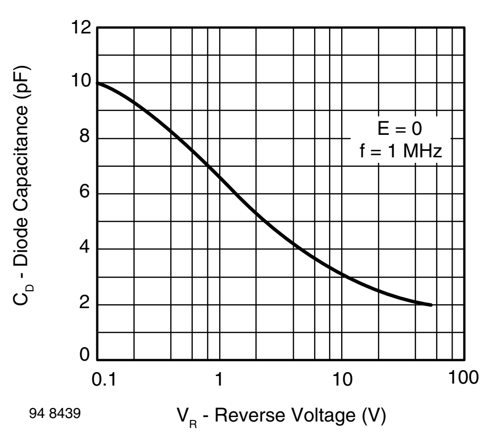
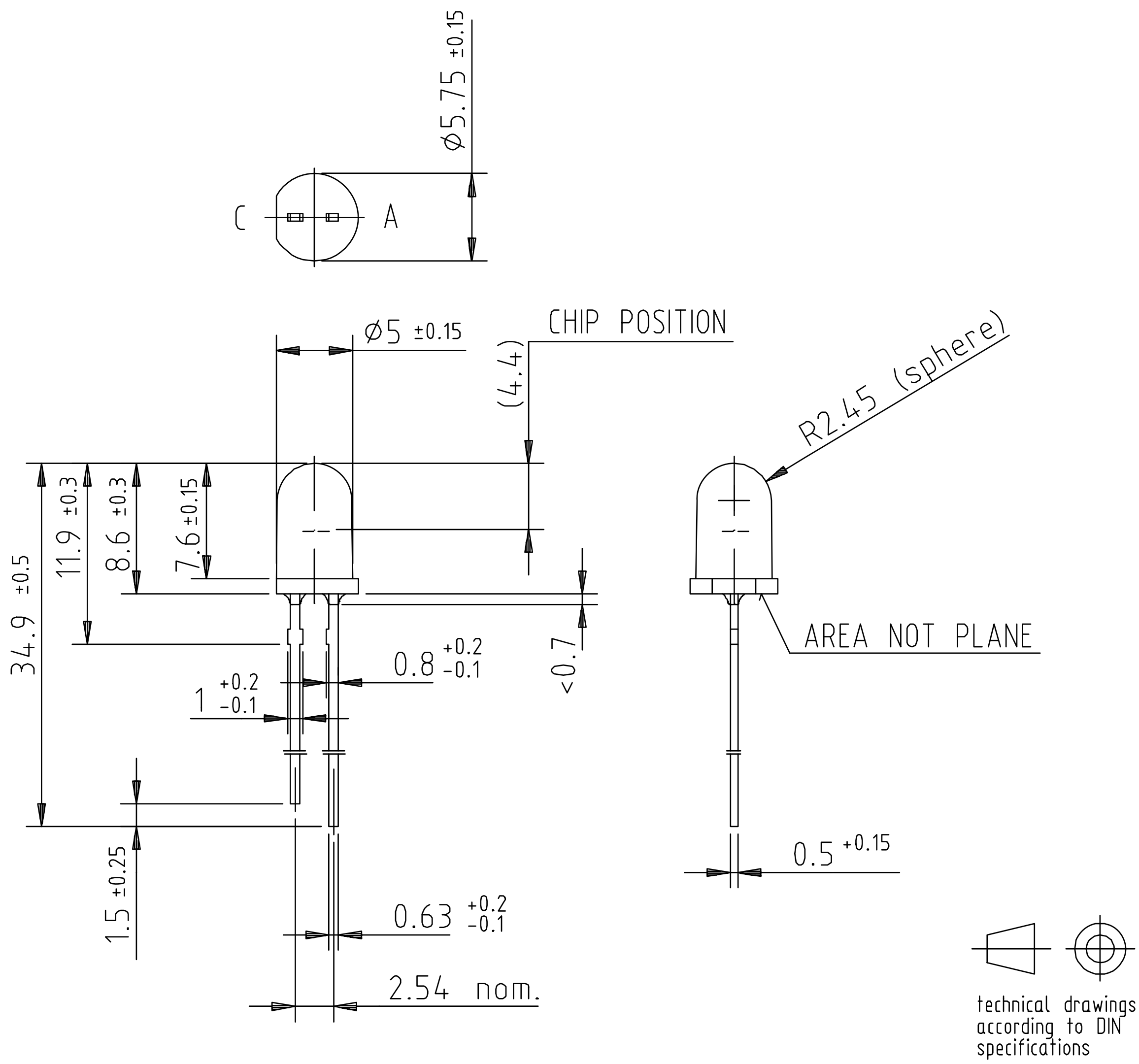


Fig. 5 - Diode Capacitance vs. Reverse Voltage

PACKAGE DIMENSIONS in millimeters



Drawing-No.: 6.544-5185.01-4

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For technical questions, contact: detectortechsupport@vishay.com

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