

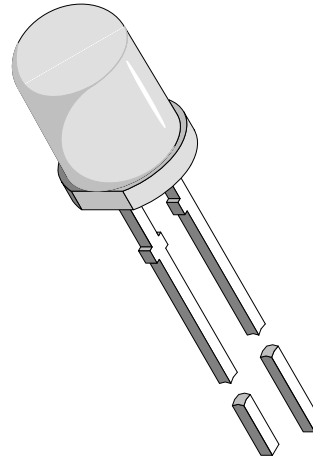
Silicon PIN Photodiode

Description

BPV10F is a very high speed and high sensitive PIN photodiode in a standard T-1 $\frac{3}{4}$ plastic package. The epoxy package itself is an IR filter, spectrally matched to GaAs or GaAs on GaAlAs IR emitters ($\lambda_p=950\text{nm}$).

Features

- Extra fast response times
- High bandwidth $B = 250 \text{ MHz}$ at $V_R=12 \text{ V}$
- High radiant sensitivity
- Radiant sensitive area $A=0.78\text{mm}^2$
- Standard T-1 $\frac{3}{4}$ ($\phi 5 \text{ mm}$) with IR filter for GaAs IR emitters (950 nm)
- Angle of half sensitivity $\phi = \pm 15^\circ$

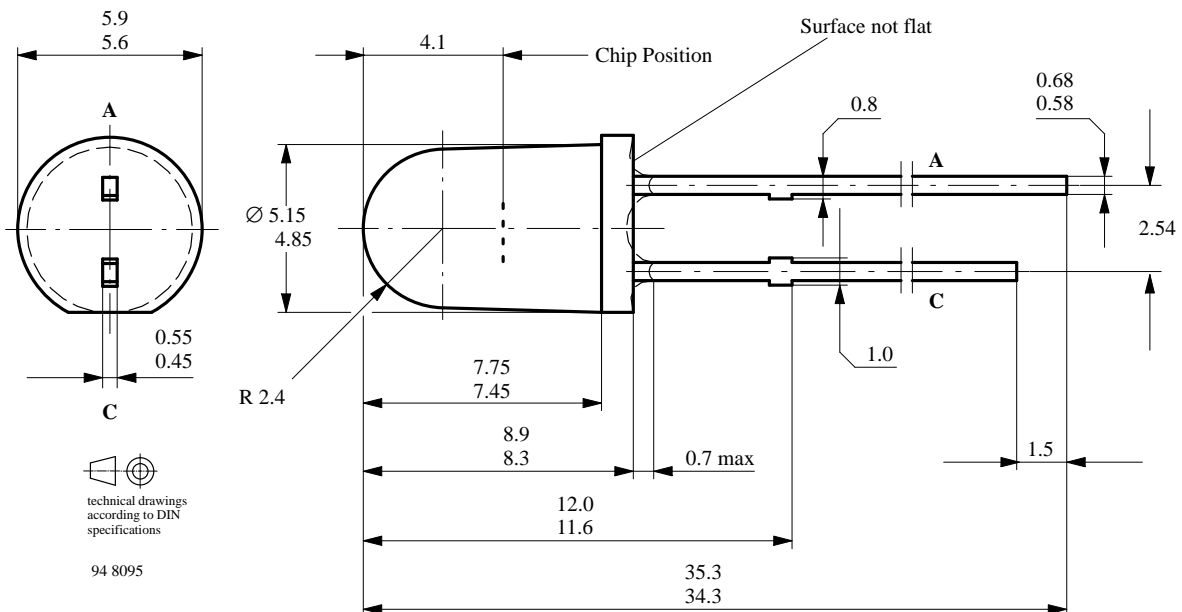


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Applications

Wide band detector for demodulation of fast signals, industrial electronics, measurement, control circuits and fast interrupters

Dimensions in mm



Absolute Maximum Ratings

 $T_{amb} = 25^{\circ}\text{C}$

Parameter	Test Conditions	Symbol	Value	Unit
Reverse Voltage		V_R	60	V
Power Dissipation	$T_{amb} \leq 25^{\circ}\text{C}$	P_V	215	mW
Junction Temperature		T_j	100	$^{\circ}\text{C}$
Storage Temperature Range		T_{stg}	-55...+100	$^{\circ}\text{C}$
Soldering Temperature	2 mm from body, $t \leq 5$ s	T_{sd}	260	$^{\circ}\text{C}$
Thermal Resistance Junction/Ambient		R_{thJA}	350	K/W

Basic Characteristics

 $T_{amb} = 25^{\circ}\text{C}$

Parameter	Test Conditions	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
Diode Capacitance	$V_R = 5$ V, $f = 1$ MHz, $E = 0$	C_D		3.8		pF
Open Circuit Voltage	$E_e = 1$ mW/cm ² , $\lambda = 950$ nm	V_o		450		mV
Short Circuit Current	$E_e = 1$ mW/cm ² , $\lambda = 950$ nm	I_k		55		μA
Reverse Light Current	$E_e = 1$ mW/cm ² , $\lambda = 950$ nm, $V_R = 5$ V	I_{ra}	30	60		μA
Absolute Spectral Sensitivity	$V_R = 5$ V, $\lambda = 950$ nm	$s(\lambda)$		0.5		A/W
Angle of Half Sensitivity		φ		± 15		deg
Wavelength of Peak Sensitivity		λ_p		950		nm
Range of Spectral Bandwidth		$\lambda_{0.5}$		850...1050		nm
Quantum efficiency	$\lambda = 950$ nm	η		65		%
Noise Equivalent Power	$V_R = 20$ V, $\lambda = 950$ nm	NEP		3×10^{-14}		W/ $\sqrt{\text{Hz}}$
Detectivity	$V_R = 20$ V, $\lambda = 950$ nm	D^*		3×10^{12}		cm $\sqrt{\text{Hz}}$ / W
Rise Time	$V_R = 50$ V, $R_L = 50$ Ω , $\lambda = 820$ nm	t_r		2.5		ns
Fall Time	$V_R = 50$ V, $R_L = 50$ Ω , $\lambda = 820$ nm	t_f		2.5		ns

Typical Characteristics ($T_{amb} = 25^{\circ}\text{C}$ unless otherwise specified)

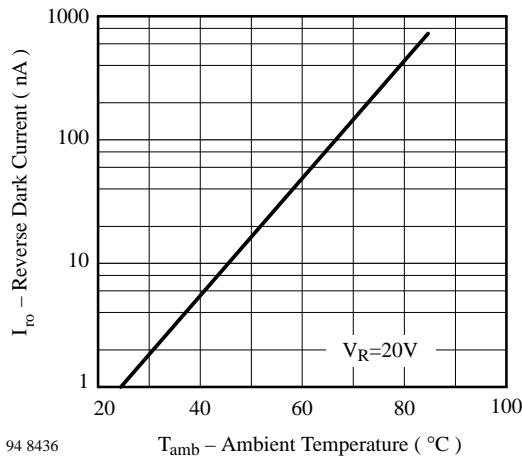


Figure 1 : Reverse Dark Current vs. Ambient Temperature

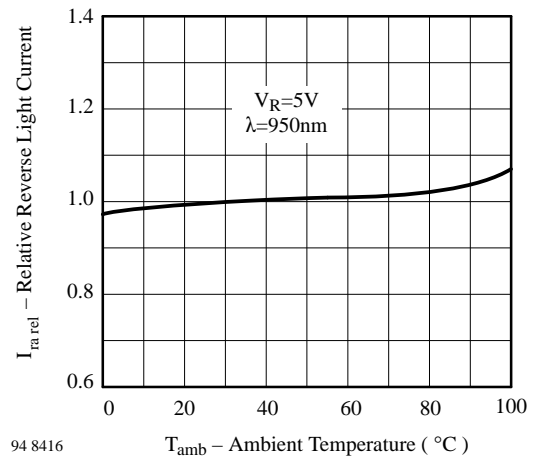


Figure 2 : Relative Reverse Light Current vs. Ambient Temperature

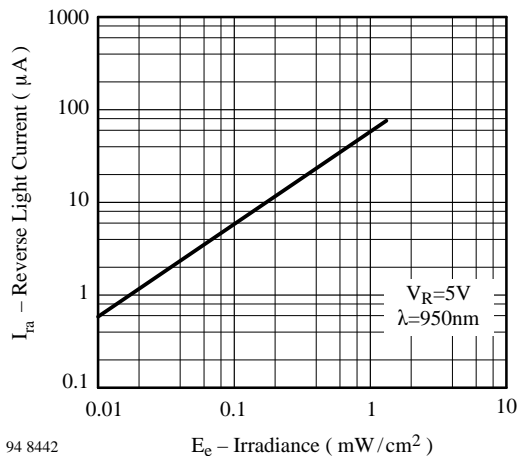


Figure 3 : Reverse Light Current vs. Irradiance

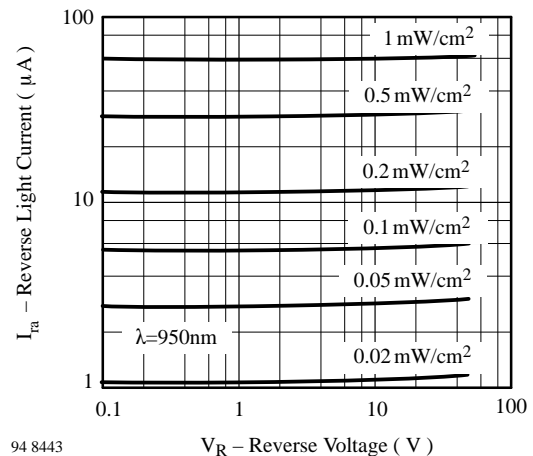


Figure 4 : Reverse Light Current vs. Reverse Voltage

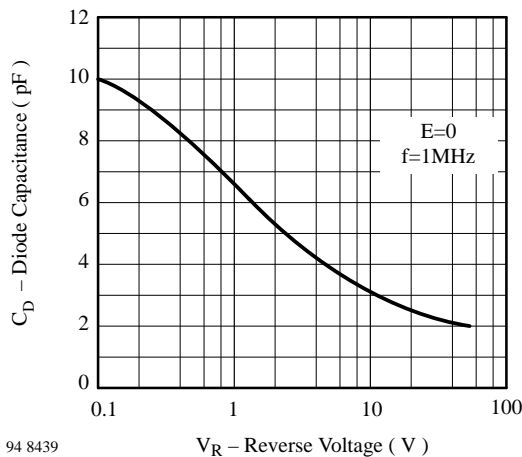


Figure 5 : Diode Capacitance vs. Reverse Voltage

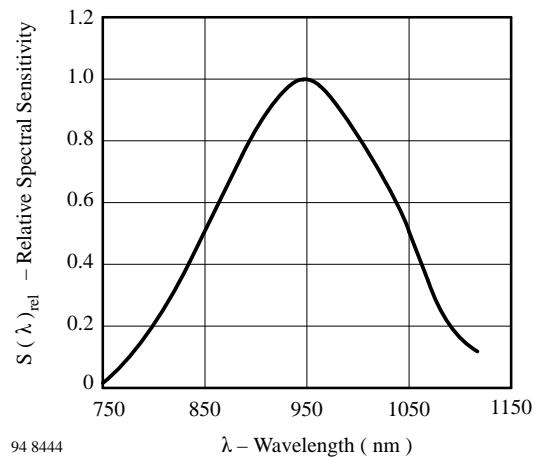
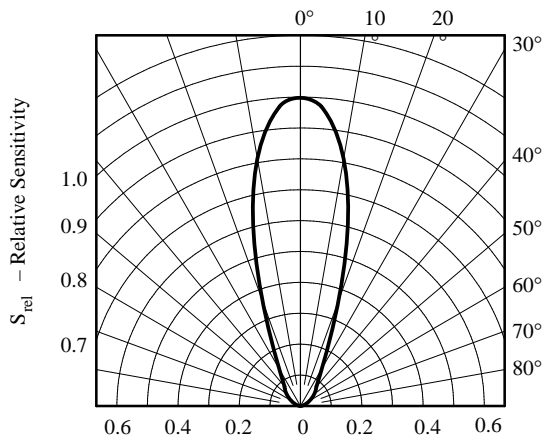


Figure 6 : Relative Spectral Sensitivity vs. Wavelength



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Figure 7 : Relative Radiant Sensitivity vs. Angular Displacement

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TEMIC TELEFUNKEN microelectronic GmbH, P.O.B. 3535, D-74025 Heilbronn, Germany
 Telephone: 49 (0)7131 67 2831, Fax Number: 49 (0)7131 67 2423