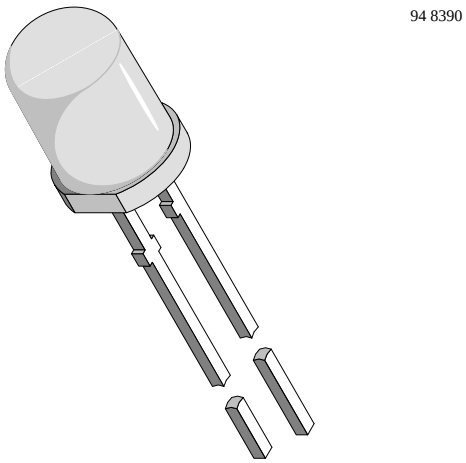
Silicon PIN Photodiode

Description

BPV10 is a very high speed and high sensitive PIN photodiode in a standard T–1¾ plastic package. Due to its waterclear epoxy the device is sensitive to visible and infrared radiation.



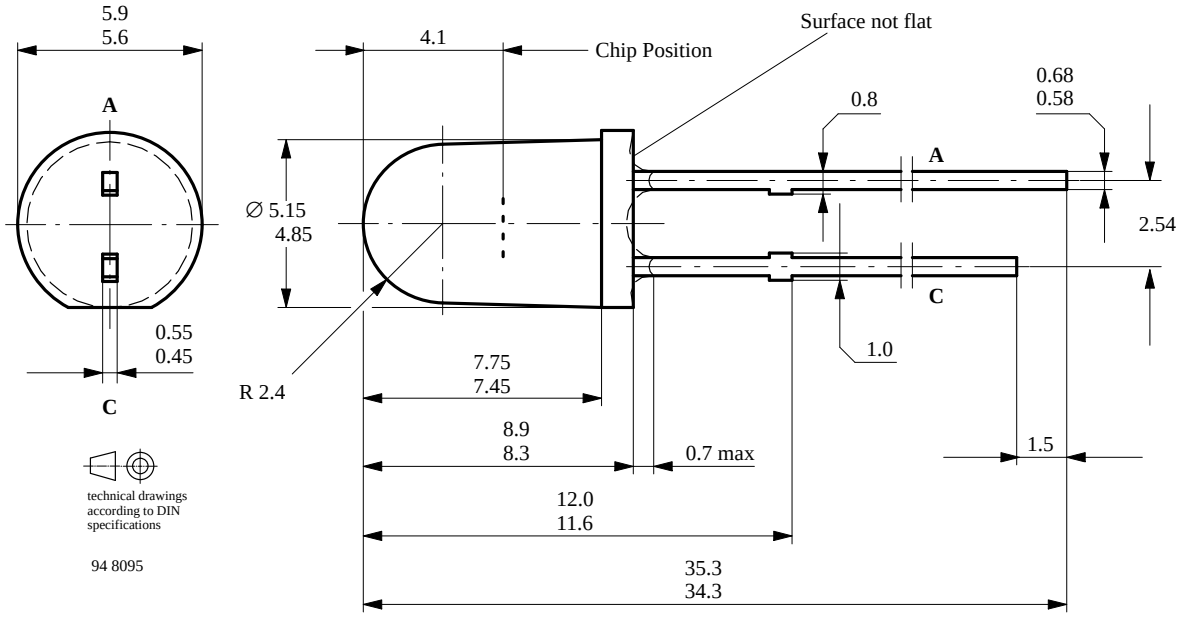
Features

- Extra fast response times
- High bandwidth B = 250 MHz at V_R=12 V
- High photo sensitivity
- Radiant sensitive area A=0.78mm^2
- Standard T–1¾ (ø 5 mm) package with clear lens
- Angle of half sensitivity φ = ± 15˚

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°C

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

Basic Characteristics

T_{amb} = 25°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_A = 1 klx	V_o		480		mV
Open Circuit Voltage	E_e = 1 mW/cm^2, λ = 950 nm	V_o		450		mV
Short Circuit Current	E_A = 1 klx	I_k		80		µA
Short Circuit Current	E_e = 1 mW/cm^2, λ = 950 nm	I_k		65		µA
Reverse Light Current	E_A = 1 klx, V_R = 5 V	I_{ra}		85		µA
Reverse Light Current	E_e = 1 mW/cm^2, λ = 950 nm, V_R = 5 V	I_{ra}	30	70		µA
Absolute Spectral Sensitivity	V_R = 5 V, λ = 950 nm	s(λ)		0.55		A/W
Angle of Half Sensitivity		φ		±15		deg
Wavelength of Peak Sensitivity		λ_p		920		nm
Range of Spectral Bandwidth		$\lambda_{0.5}$		570...1040		nm
Quantum efficiency	λ = 950 nm	η		72		%
Noise Equivalent Power	V_R=20V, λ=950nm	NEP		$3x10^{-14}$		W/√ Hz
Detectivity	V_R=20V, λ=950nm	D^*		$3x10^{12}$		cm√Hz/ W
Rise Time	V_R=50V, R_L=50Ω, λ=820nm	t_r		2.5		ns
Fall Time	V_R=50V, R_L=50Ω, λ=820nm	t_f		2.5		ns

Typical Characteristics (T_{amb} = 25°C unless otherwise specified)

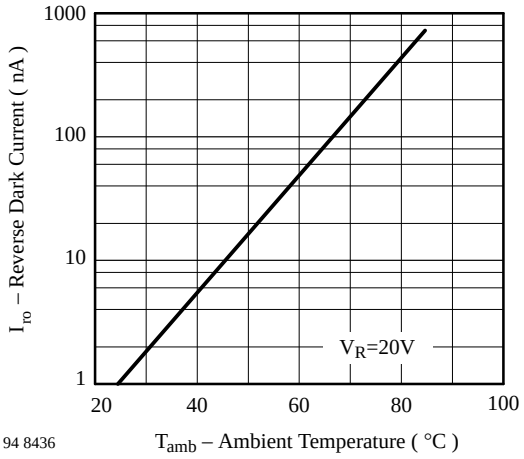


Figure 1 : Reverse Dark Current vs. Ambient Temperature

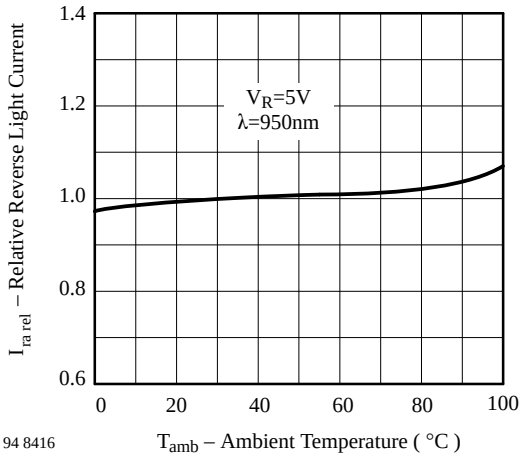


Figure 2 : Relative Reverse Light Current vs. Ambient Temperature

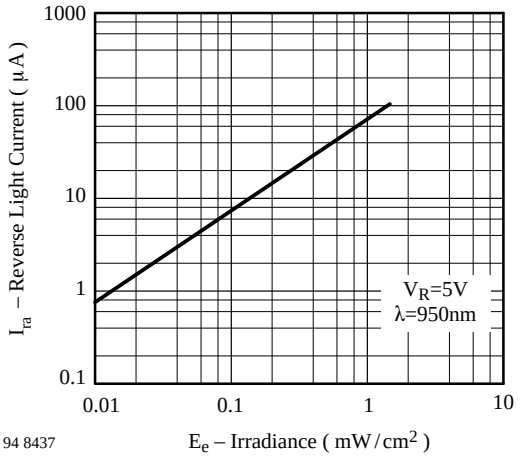


Figure 3 : Reverse Light Current vs. Irradiance

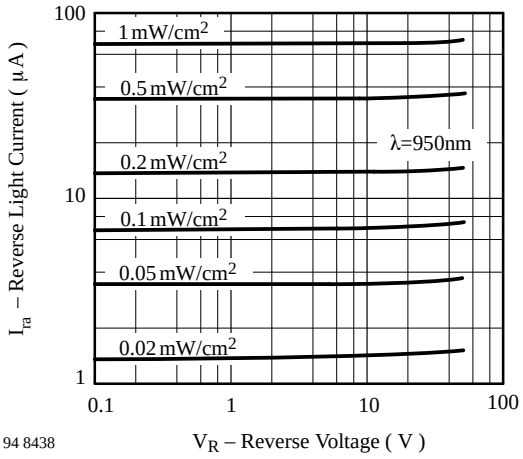


Figure 4 : Reverse Light Current vs. Reverse Voltage

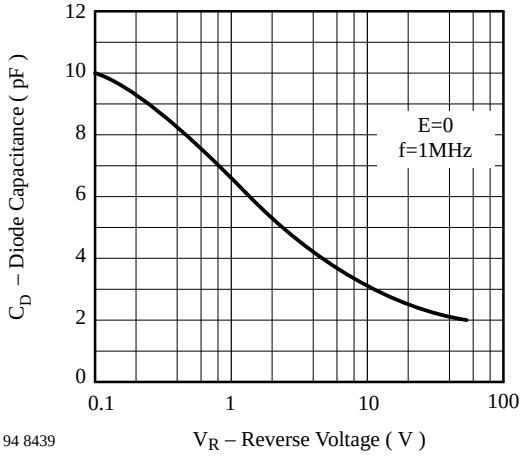


Figure 5 : Diode Capacitance vs. Reverse Voltage

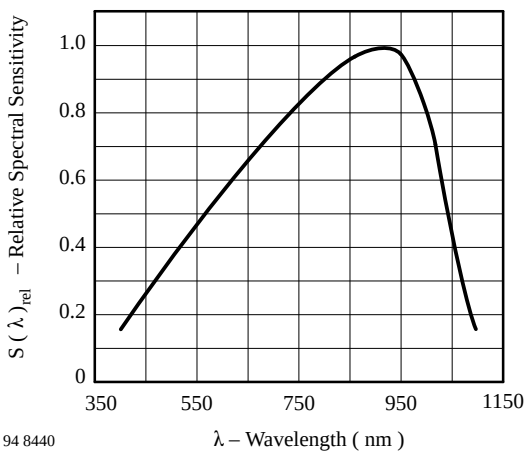


Figure 6 : Relative Spectral Sensitivity vs. Wavelength

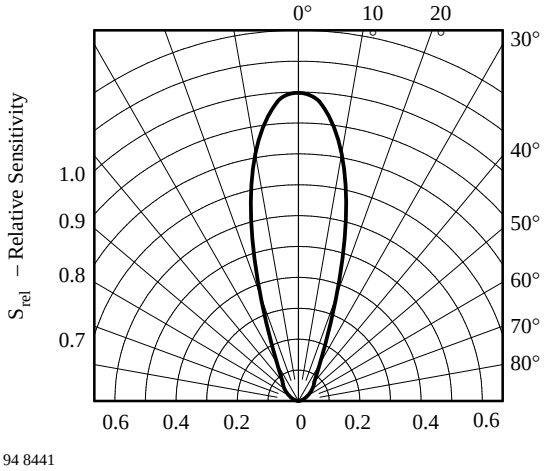


Figure 7 : Relative Radiant Sensitivity vs. Angular Displacement

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