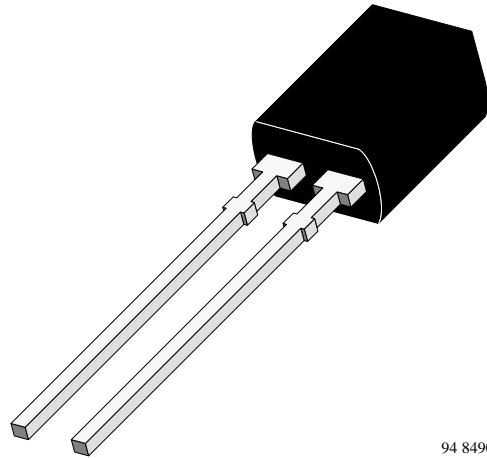

Silicon PIN Photodiode

Description

S186P is a high speed and high sensitive PIN photodiode in a flat side view plastic package.

The epoxy package itself is an IR filter, spectrally matched to GaAs or GaAs on GaAlAs IR emitters ($\lambda_p \geq 900$ nm).

The large active area combined with a flat case gives a high sensitivity at a wide viewing angle



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Features

- Fast response times
- Small junction capacitance
- High radiant sensitivity
- Large radiant sensitive area $A=7.5$ mm²
- Wide angle of half sensitivity $\varphi = \pm 65^\circ$
- Plastic case with IR filter (950 nm)
- Suitable for near infrared radiation

Applications

High speed photo detector

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	$t \leq 5\text{ s}$	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
Breakdown Voltage	$I_R = 100\ \mu\text{A}, E = 0$	$V_{(BR)}$	60			V
Reverse Dark Current	$V_R = 10\ \text{V}, E = 0$	I_{ro}		2	30	nA
Diode Capacitance	$V_R = 0\ \text{V}, f = 1\ \text{MHz}, E = 0$	C_D		70		pF
Diode Capacitance	$V_R = 3\ \text{V}, f = 1\ \text{MHz}, E = 0$	C_D		25	40	pF
Open Circuit Voltage	$E_e = 1\ \text{mW}/\text{cm}^2, \lambda = 950\ \text{nm}$	V_o		350		mV
Short Circuit Current	$E_e = 1\ \text{mW}/\text{cm}^2, \lambda = 950\ \text{nm}$	I_k		38		μA
Reverse Light Current	$E_e = 1\ \text{mW}/\text{cm}^2, \lambda = 950\ \text{nm}, V_R = 5\ \text{V}$	I_{ra}	43	45		μA
Angle of Half Sensitivity		φ		± 65		deg
Wavelength of Peak Sensitivity		λ_p		950		nm
Range of Spectral Bandwidth		$\lambda_{0.5}$		870...1050		nm
Noise Equivalent Power	$V_R = 20\ \text{V}, \lambda = 950\ \text{nm}$	NEP		4×10^{-14}		$\text{W}/\sqrt{\text{Hz}}$
Rise Time	$V_R = 10\ \text{V}, R_L = 1\ \text{k}\Omega, \lambda = 820\ \text{nm}$	t_r		100		ns
Fall Time	$V_R = 10\ \text{V}, R_L = 1\ \text{k}\Omega, \lambda = 820\ \text{nm}$	t_f		100		ns

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

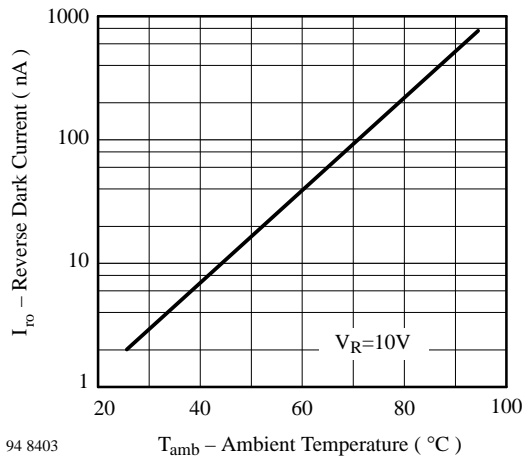


Figure 1 : Reverse Dark Current vs. Ambient Temperature

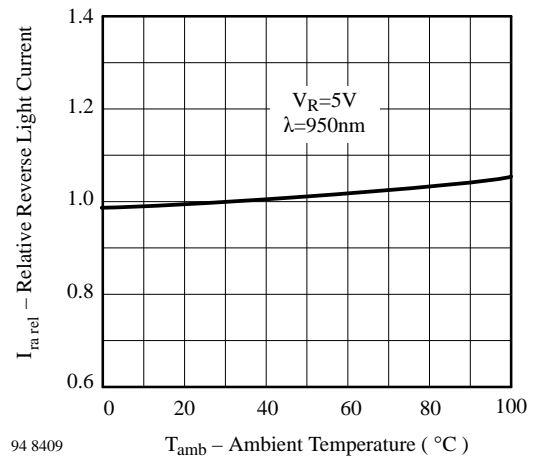


Figure 2 : Relative Reverse Light Current vs. Ambient Temperature

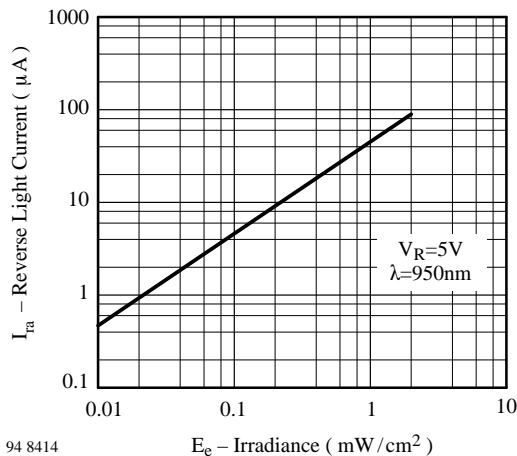


Figure 3 : Reverse Light Current vs. Irradiance

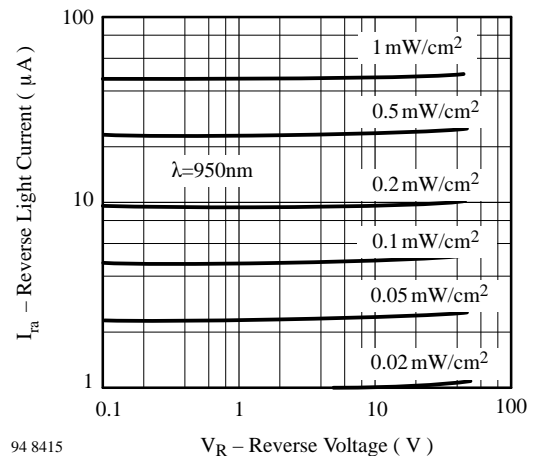


Figure 4 : Reverse Light Current vs. Reverse Voltage

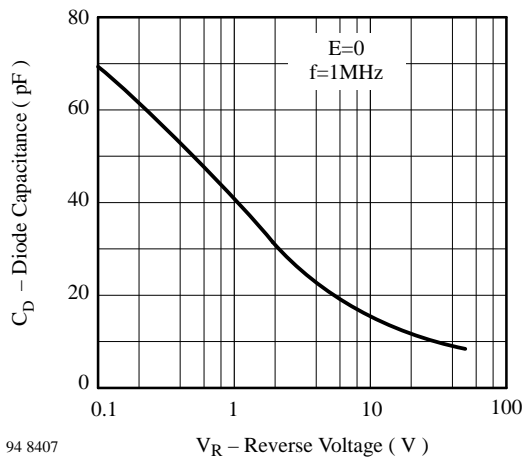


Figure 5 : Diode Capacitance vs. Reverse Voltage

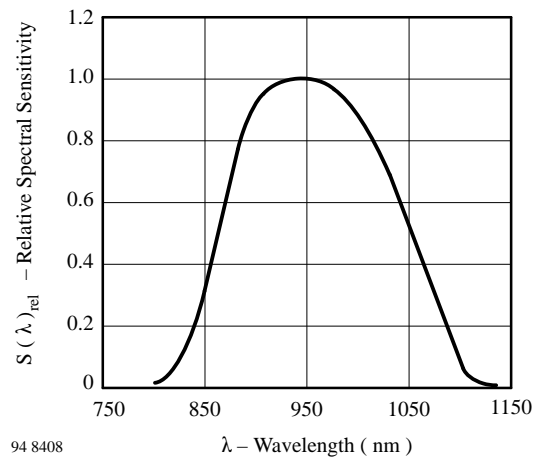
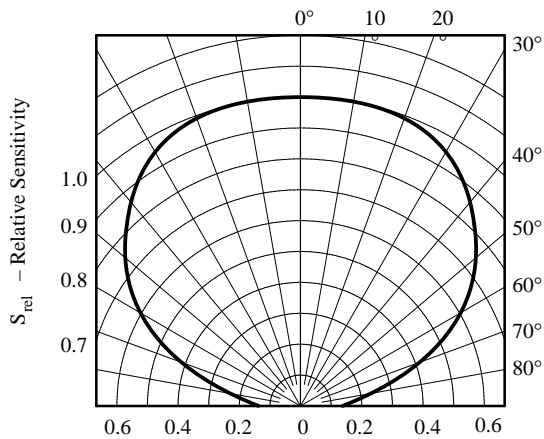


Figure 6 : Relative Spectral Sensitivity vs. Wavelength

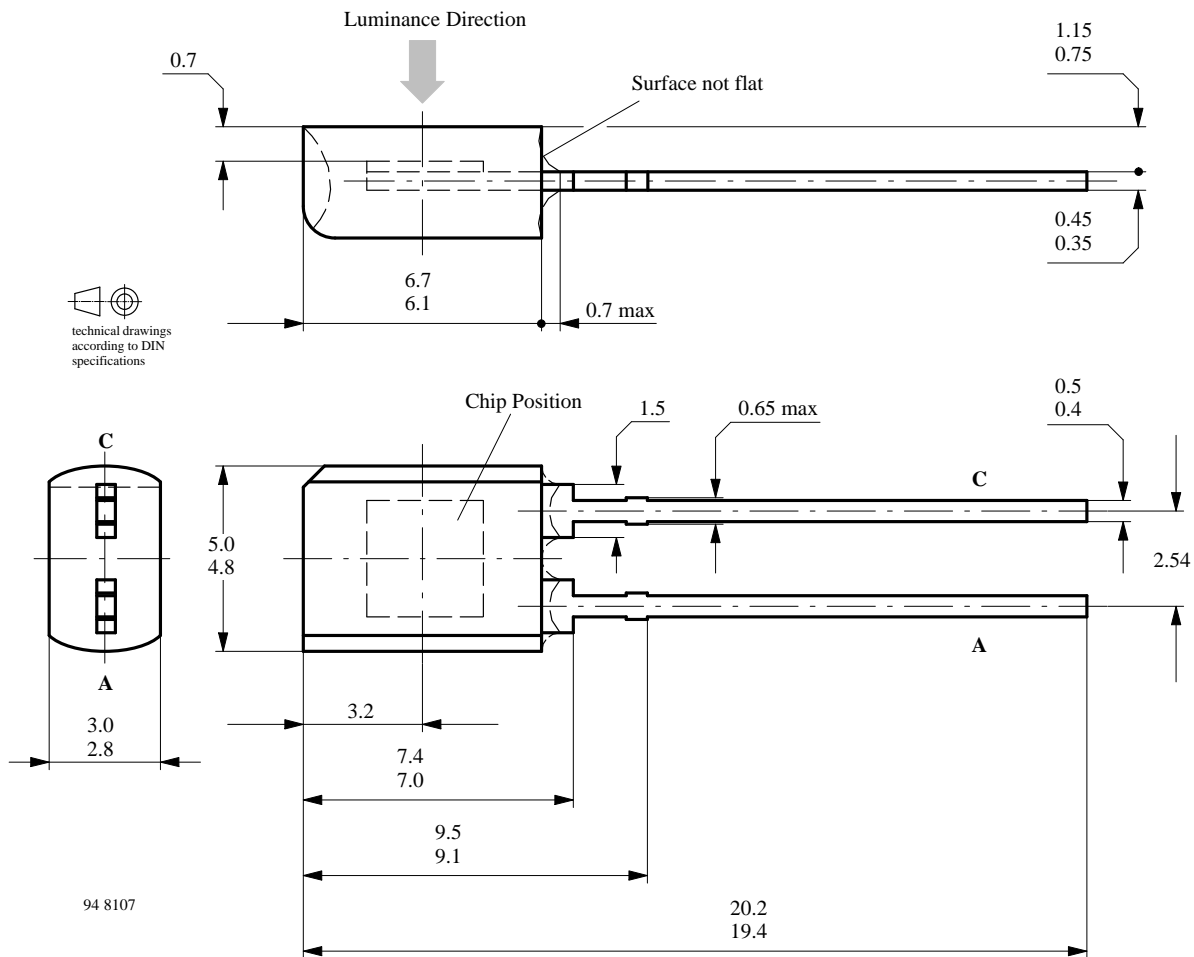
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Figure 7 : Relative Radiant Sensitivity vs. Angular Displacement

Dimensions in mm



We reserve the right to make changes to improve technical design without further notice.

Parameters can vary in different applications. All operating parameters must be validated for each customer application by the customer. Should the buyer use TEMIC products for any unintended or unauthorized application, the buyer shall indemnify TEMIC against all claims, costs, damages, and expenses, arising out of, directly or indirectly, any claim of personal damage, injury or death associated with such unintended or unauthorized use.

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