PIN Silicon Photodiode

OP950 Series



Features:

- Epoxy package
- Linear response vs. irradiance
- Fast switching time
- Choice of wide or extra wide receiving angle
- Side-looker package
- Small package style ideal for space-limited applications

Description:

Each **OP950**, **OP954** and **OP955** device consists of a PIN silicon photodiode molded in an epoxy packge that allows spectral response from visible to infrared light wavelengths. The side-looking package is designed for easy PCBoard mounting and space-limited applications.

The **OP950** has a 95° *wide* receiving angle that provides relatively even reception over a large area and is mechanically and spectrally matched to OPTEK's GaAs and GaAiAs series of infrared emitting diodes.

The **OP954** has a 128° *very wide* receiving angle that provides relatively even reception over a large area.

The **OP955** has a 95° *wide* receiving angle with a recessed lens, which allows an acceptance half-angle of 45° when measured from the optical axis to the half power point.

Both **OP954** and **OP955** components are 100% production tested, using infrared light for close correlation with OPTEK's GaAs and GaAlAs emitters.

Please refer to Application Bulletins 208 and 210 for additional design information and reliability (degradation) data.

Applications:

- Non-contact reflective object sensor
- Assembly line automation
- Machine automation
- Machine safety
- End of travel sensor
- Door sensor

Ordering Information			
Part Number	**Sensor**	**Viewing Angle**	**Lead Length**
OP950	Photodiode	95°	50"
OP954		128°	
OP955		95°	

RoHS

General Note
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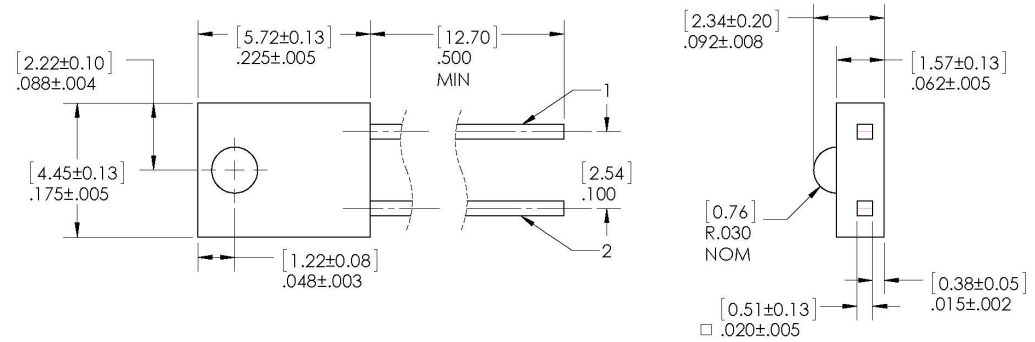
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PIN Silicon Photodiode

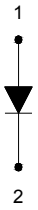
OP950 Series

OP950
Sidelooker Lens



DIMENSIONS ARE IN: **[MILLIMETERS]**
INCHES

OP950

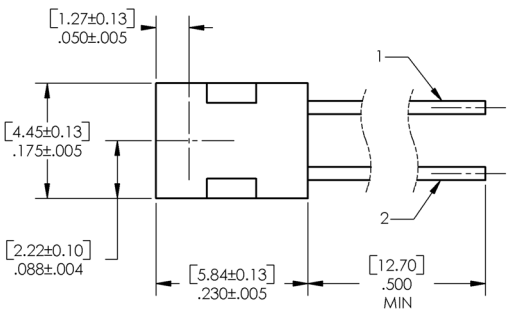


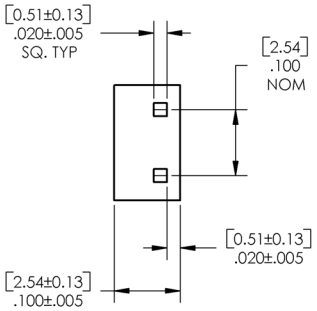
Pin #	Diode
1	Anode
2	Cathode

OP954
Sidelooker Lens

OP954







DIMENSIONS ARE IN: **[MILLIMETERS]**
INCHES

Pin #	Diode
1	Cathode
2	Anode

OP954 - CONTAINS POLYSULFONE

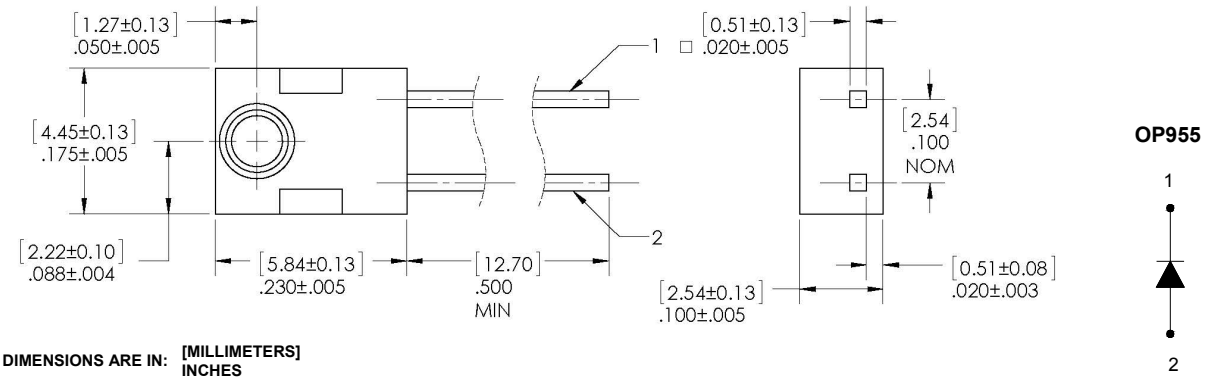
To avoid stress cracking, we suggest using
ND Industries' **Vibra-Tite** for thread-locking.
Vibra-Tite evaporates fast without causing structural failure in
OPTEK'S molded plastics.

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OP955
Sidelooker Recessed Lens



DIMENSIONS ARE IN: **[MILLIMETERS]**
INCHES

Pin #	Diode
1	Cathode
2	Anode

OP955 - CONTAINS POLYSULFONE

To avoid stress cracking, we suggest using
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Electrical Specifications

Absolute Maximum Ratings (T_A = 25° C unless otherwise noted)	
Reverse Breakdown Voltage	60 V
Storage & Operating Temperature Range	-40° C to +100° C
Lead Soldering Temperature [1/16 inch (1.6 mm) from the case for 5 sec. with soldering iron]	260° C(1)
Reverse Breakdown Voltage	60 V
Power Dissipation	100 mW(2)

Electrical Characteristics (T_A = 25° C unless otherwise noted)

SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS	TEST CONDITIONS
I_L	Reverse Light Current OP950, OP955 OP954	 8 3.5	 - -	 18 8	µA	V_R = 5 V, E_E = 1 mW/cm^2 (3)
I_D	Reverse Dark Current	-	1	60	nA	V_R = 30 V, E_E = 0(4)
$V_{(BR)}$	Reverse Breakdown Voltage	60	-	-	V	I_R = 100 µA
V_F	Forward Voltage	-	-	1.2	V	I_F = 1 mA
C_T	Total Capacitance	-	4	-	pF	V_R = 20 V, E_E = 0, f = 1.0 MHz
t_r	Rise Time	-	5	-	ns	V_R = 20 V, λ = 850 nm, R_L = 50 Ω
t_f	Fall Time	-	5	-		

Notes:

(1) RMA flux is recommended. Duration can be extended to 10 seconds maximum when flow soldering. A maximum of 20 grams force may be applied to leads when soldering.

(2) Derate linearly 1.67 mW/° C above 25° C.

(3) The light source is an unfiltered GaAs LED with a peak emission wavelength of 935 nm and a radiometric intensity level which varies less than 10% over the entire lens surface of the photodiode being tested.

(4) Calculate the typical dark current in nA using the formula $I_D = 10^{(0.042T_A - 1.5)}$ where T_A is ambient temperature in °C.

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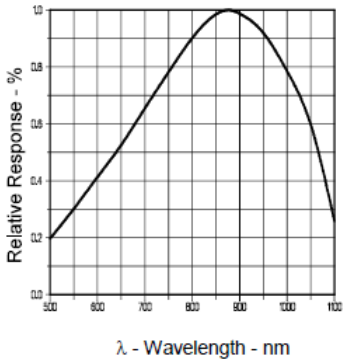
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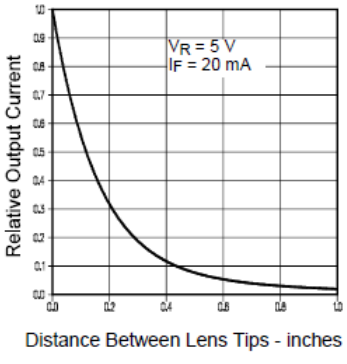
Performance

OP950 Series

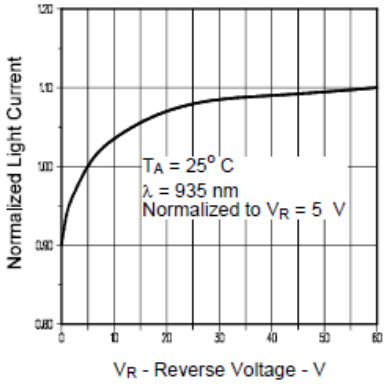
Relative Response vs. Wavelength



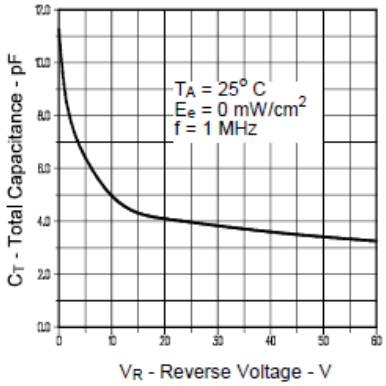
Coupling Characteristics OP950 and OP240



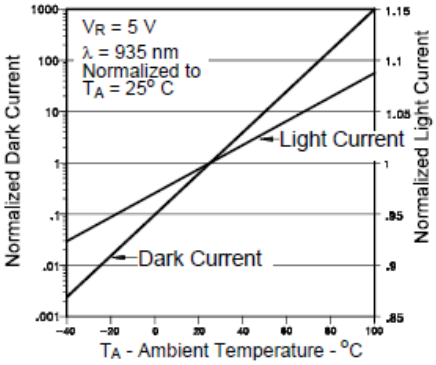
Normalized Light Current vs Reverse Voltage



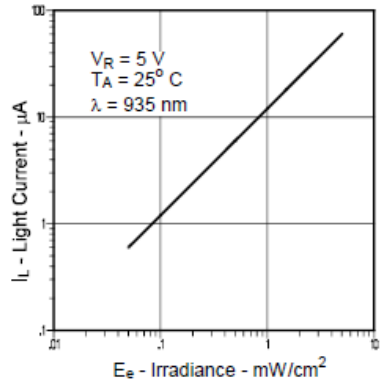
Total Capacitance vs Reverse Voltage



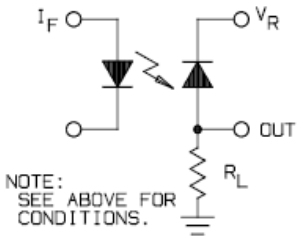
Normalized Light and Dark Current vs Ambient Temperature



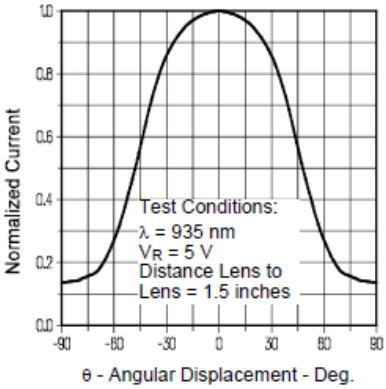
Light Current vs. Irradiance



Switching Time Test Circuit



Light Current vs. Angular Displacement



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