

# 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 package 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 GaAlAs 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
<b>OP950</b>	Photodiode	95°	.500 min
<b>OP954</b>		128°	
<b>OP955</b>		95°	



RoHS

General Note  
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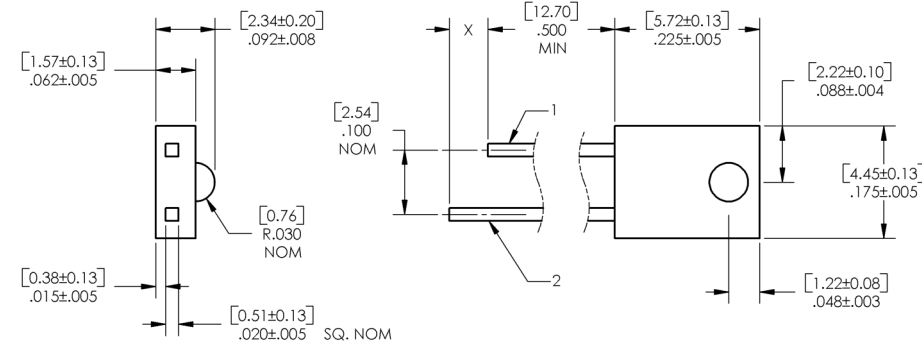
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# PIN Silicon Photodiode

## OP950 Series



### OP950 Sidelooker Lens



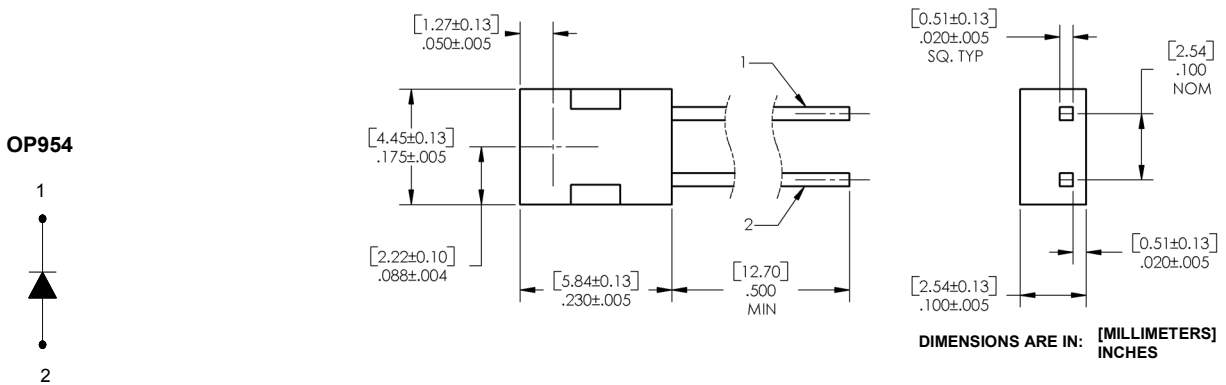
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INCHES

Pin #	Diode
1	Anode
2	Cathode

OP950



### 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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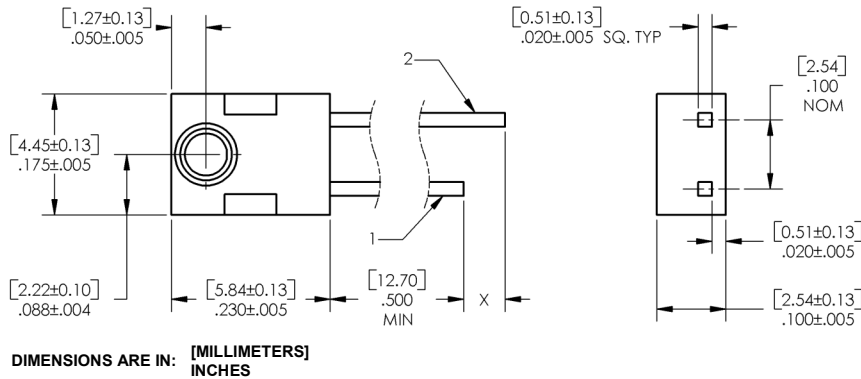
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# PIN Silicon Photodiode

## OP950 Series



### OP955 Sideloooker Recessed Lens



Pin #	Diode
1	Cathode
2	Anode

**OP955 - 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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# PIN Silicon Photodiode

## OP950 Series



### Electrical Specifications

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

Electrical Characteristics ( $T_A = 25^\circ\text{C}$ unless otherwise noted)						
SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS	TEST CONDITIONS
$I_L$	Reverse Light Current OP950, OP955 OP954	8 3.5	- -	18 8	$\mu\text{A}$	$V_R = 5\text{ V}$ , $E_E = 1\text{ mW/cm}^2^{(3)}$
$I_D$	Reverse Dark Current	-	1	60	nA	$V_R = 30\text{ V}$ , $E_E = 0^{(4)}$
$V_{(BR)}$	Reverse Breakdown Voltage	60	-	-	V	$I_R = 100\ \mu\text{A}$
$V_F$	Forward Voltage	-	-	1.2	V	$I_F = 1\text{ mA}$
$C_T$	Total Capacitance	-	4	-	pF	$V_R = 20\text{ V}$ , $E_E = 0$ , $f = 1.0\text{ MHz}$
$t_r$	Rise Time	-	5	-	ns	$V_R = 20\text{ V}$ , $\lambda = 850\text{ nm}$ , $R_L = 50\ \Omega$
$t_f$	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  $1.67\text{ mW}/^\circ\text{C}$  above  $25^\circ\text{C}$ .
- (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  $^\circ\text{C}$ .

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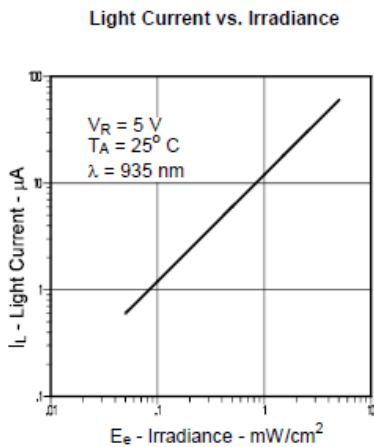
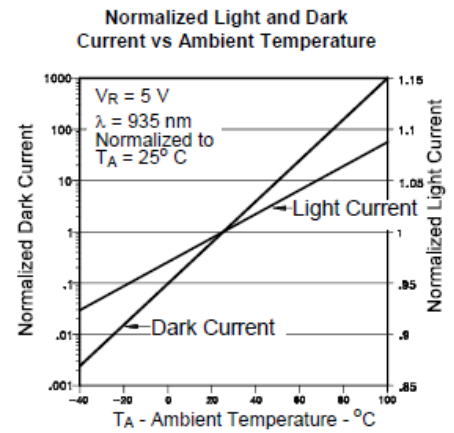
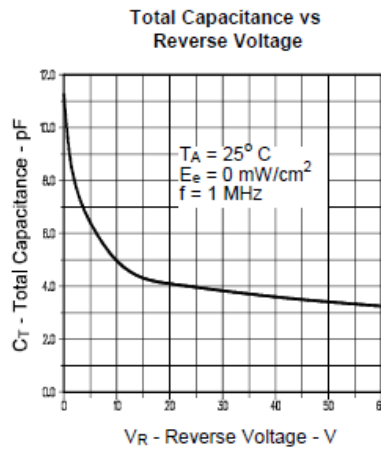
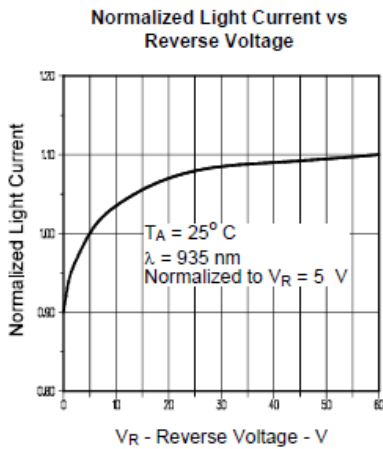
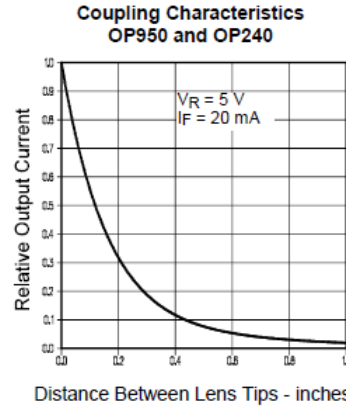
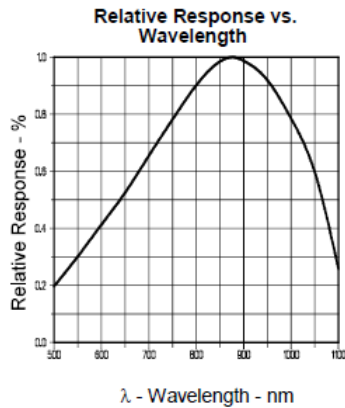
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## OP950 Series

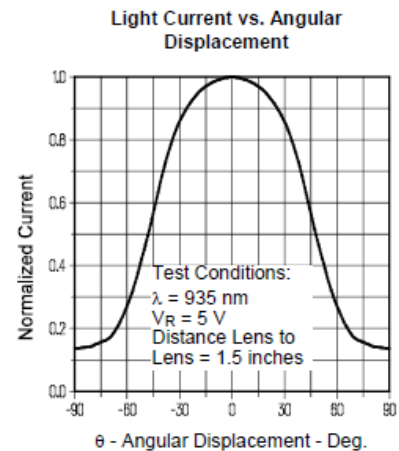
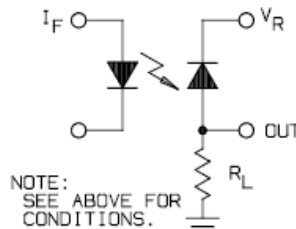


### Performance

#### OP950 Series



#### Switching Time Test Circuit



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