

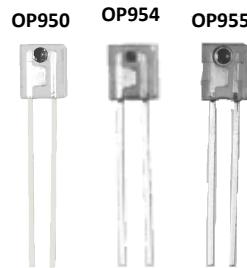
PIN Silicon Photodiode

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 PC Board 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 Bulletin 210 for additional thermal design information.](#)

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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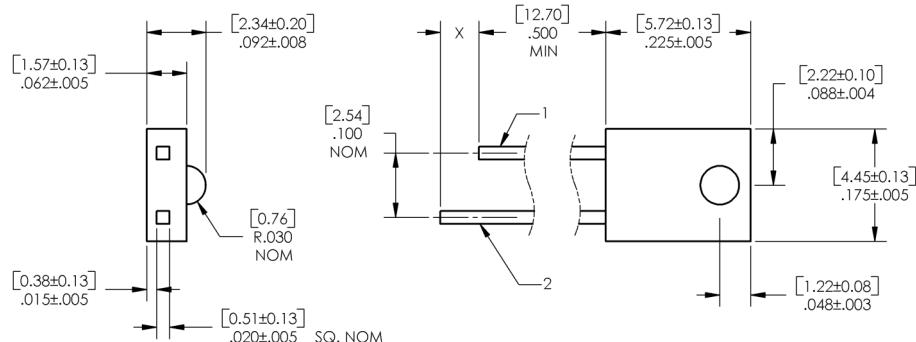
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PIN Silicon Photodiode

OP950 Series



OP950 Sidelooker Lens

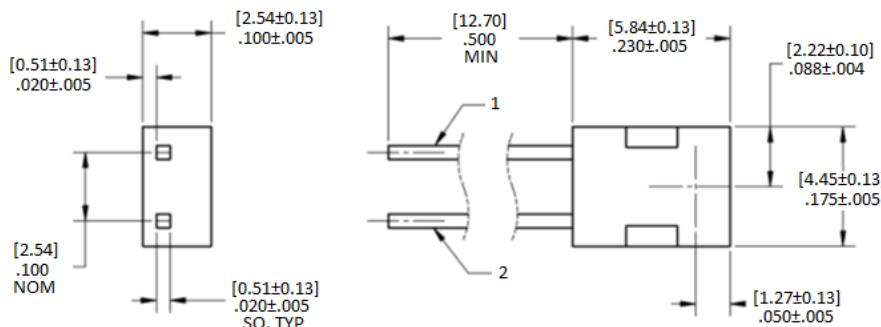


DIMENSIONS ARE IN: [MILLIMETERS]
INCHES

Pin #	Diode
1	Anode
2	Cathode



OP954 Sidelooker—Flat Surface—No Lens



DIMENSIONS ARE IN: [MILLIMETERS]
INCHES

Pin #	Diode
1	Anode
2	Cathode



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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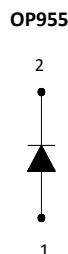
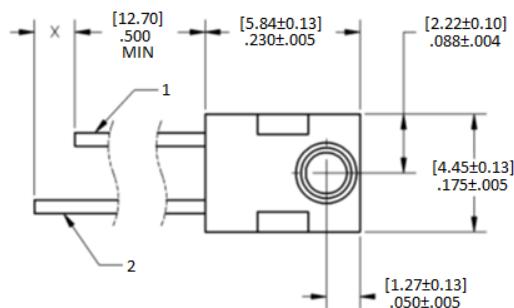
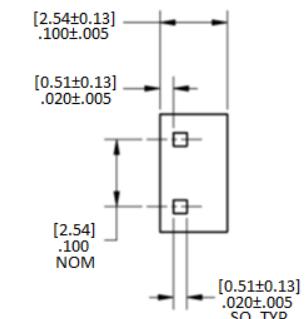
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PIN Silicon Photodiode

OP950 Series



OP955 Sidelooker Recessed Lens



DIMENSIONS ARE IN:

[MILLIMETERS]
INCHES

Pin #	Diode
1	Anode
2	Cathode

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 °C to +100 °C
Lead Soldering Temperature [1/16 inch (1.6 mm) from the case for 5 sec. with soldering iron] ⁽¹⁾	260 °C
Power Dissipation ⁽²⁾	100 mW

Electrical Characteristics ($T_A = 25^\circ\text{C}$ unless otherwise noted)

SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS	TEST CONDITIONS
I_L ⁽³⁾	Reverse Light Current OP950, OP955 OP954	8 3.5	- -	18 8	μA	$V_R = 5\text{ V}$, $E_E = 1\text{ mW/cm}^2$
I_D ⁽⁴⁾	Reverse Dark Current	-	1	60	nA	$V_R = 30\text{ V}$, $E_E = 0$
$V_{(BR)}$	Reverse Breakdown Voltage	60	-	-	V	$I_R = 100\text{ μA}$
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	$V_R = 20\text{ V}$, $\lambda = 850\text{ nm}$, $R_L = 50\text{ Ω}$
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 1.07 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.

PIN Silicon Photodiode

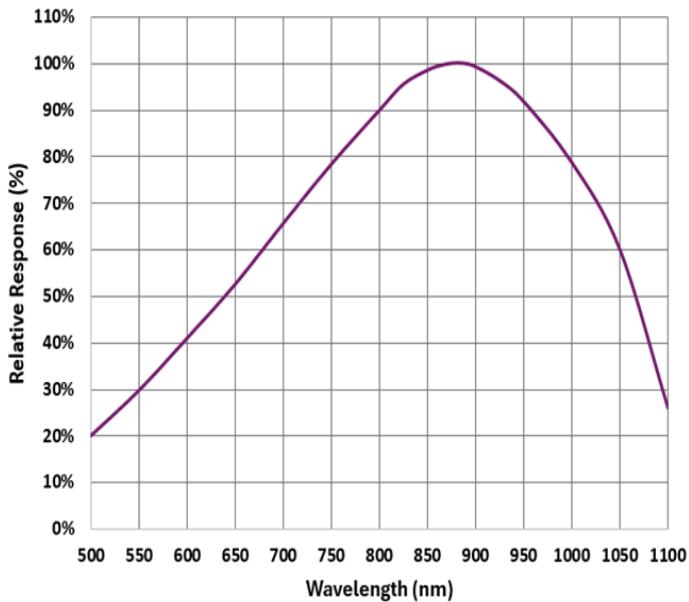
OP950 Series



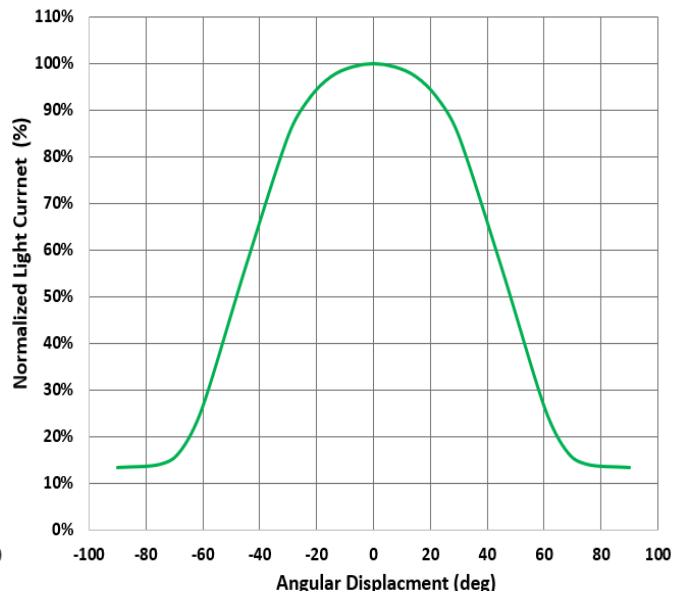
Typical Performance

OP950 and OP955

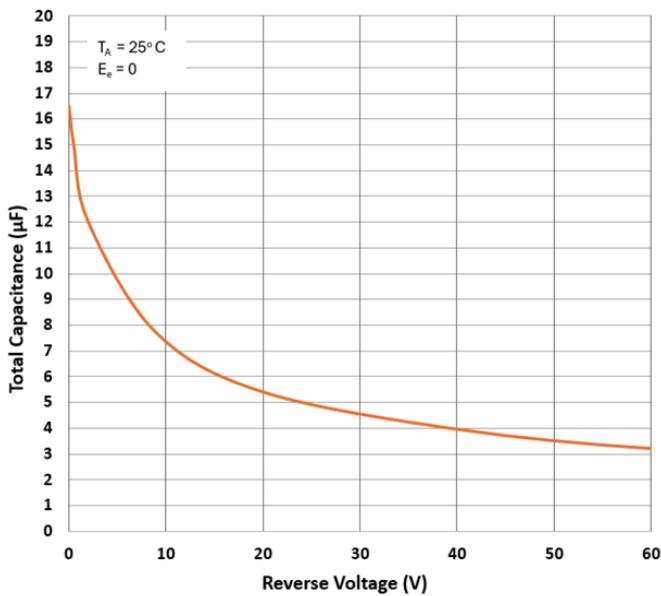
Typical Spectral Response



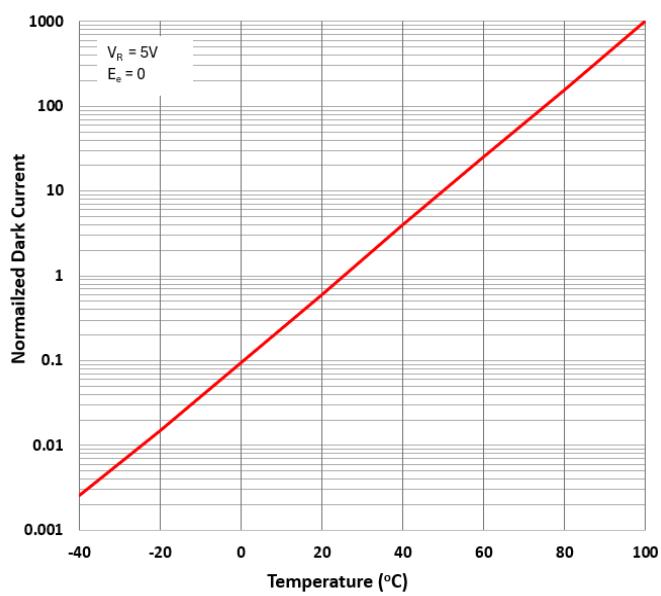
Light Current vs Angular Displacement



Total Capacitance vs Voltage



Normalized Dark Current vs Temperature



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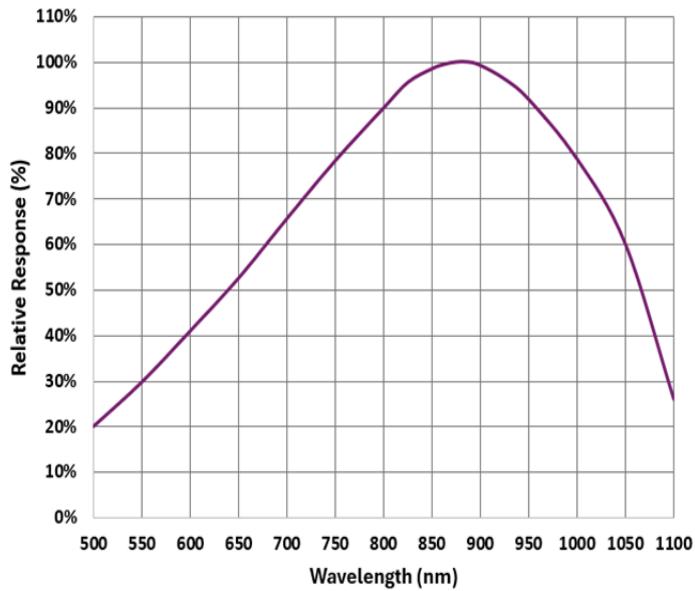
OP950 Series



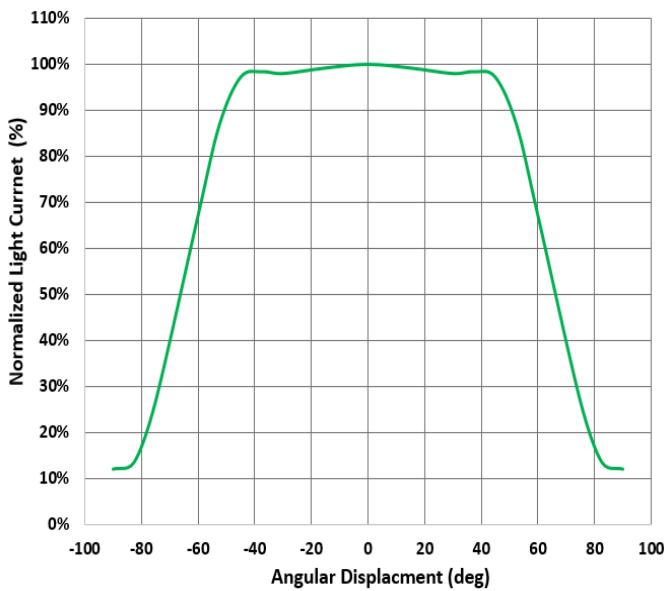
Typical Performance

OP954

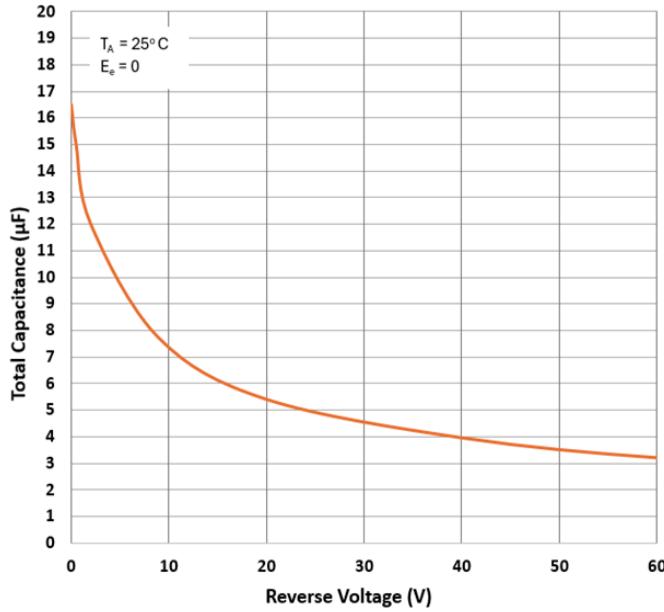
Typical Spectral Response



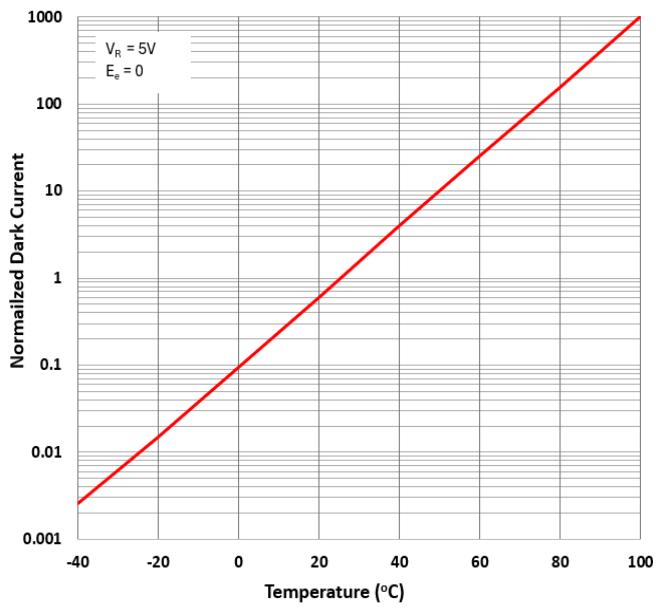
Light Current vs Angular Displacement



Total Capacitance vs Voltage



Normalized Dark Current vs Temperature



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