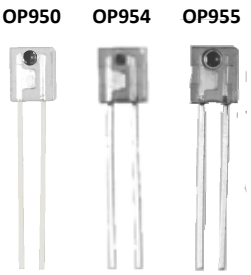
PIN Silicon Photodiode

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 printed circuit 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

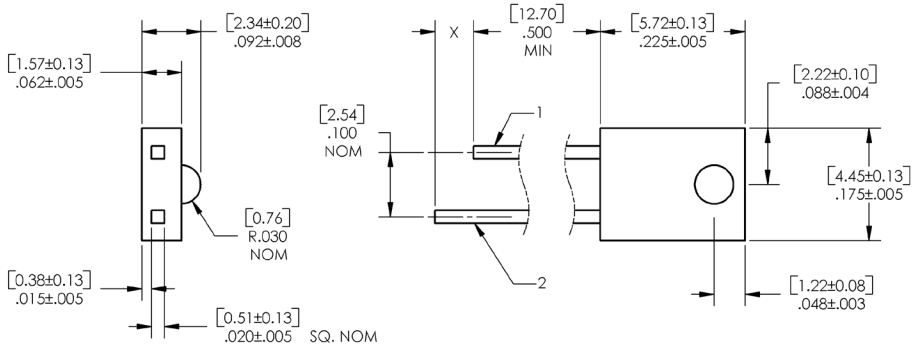
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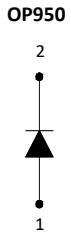
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Packaging

OP950
Sidelooker Lens

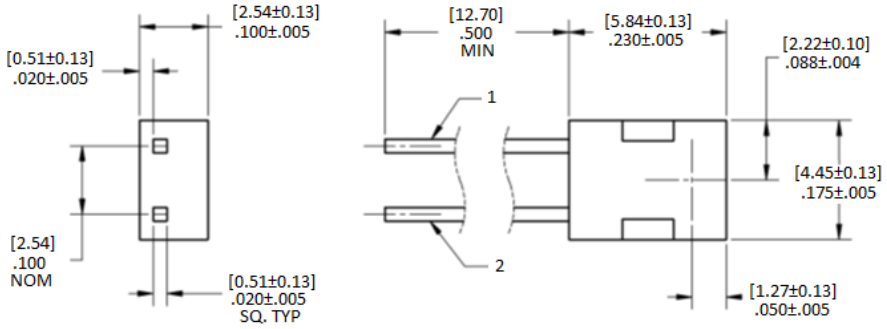


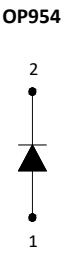


DIMENSIONS ARE IN: [MILLIMETERS]
INCHES

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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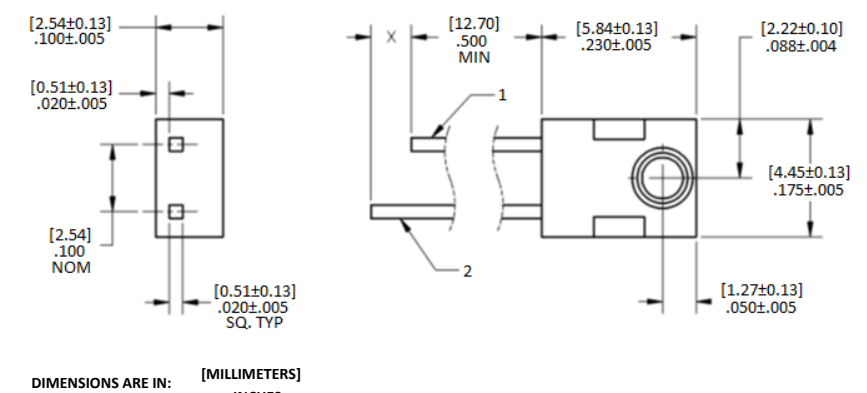
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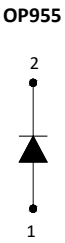
Packaging

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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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] (1)	260° C
Power Dissipation (2)	100 mW

Electrical Characteristics (T_A = 25° 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 V, E_E = 1 mW/cm^2
I_D (4)	Reverse Dark Current	-	1	60	nA	V_R = 30 V, E_E = 0
$V_{(BR)}$	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 1.07 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.

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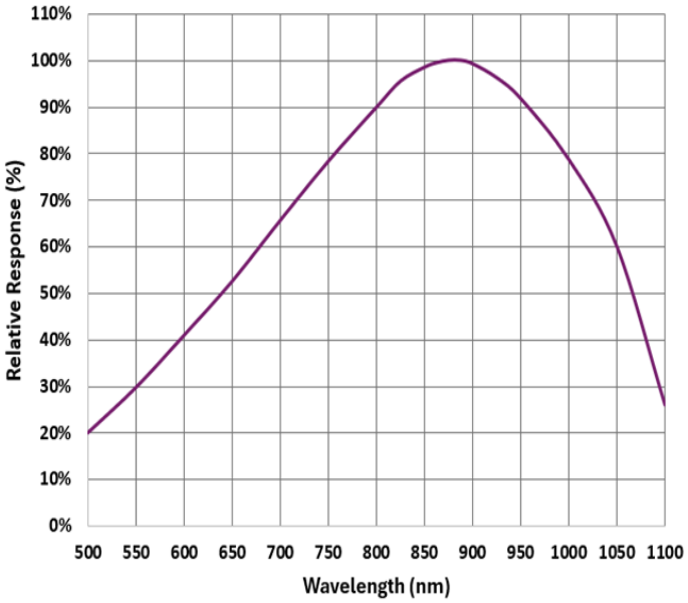
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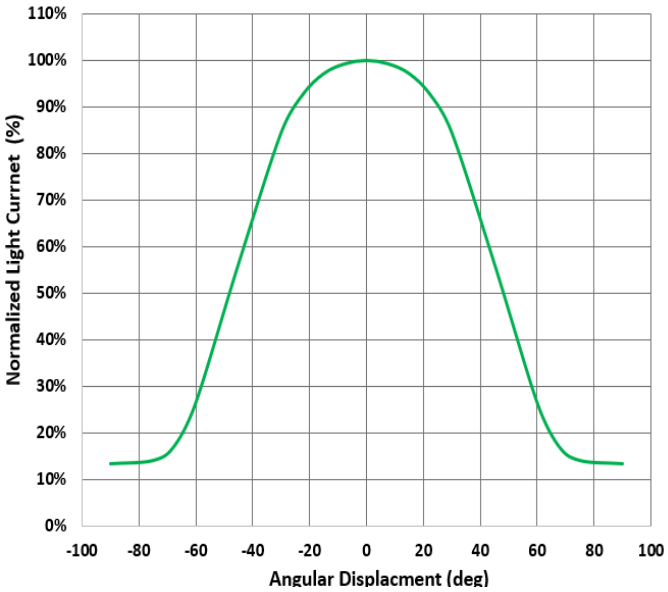
Typical Performance

OP950 and OP955

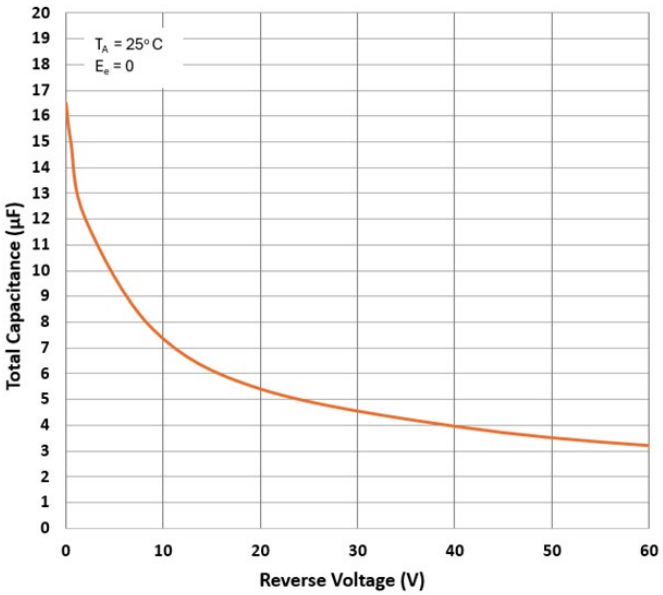
Typical Spectral Response



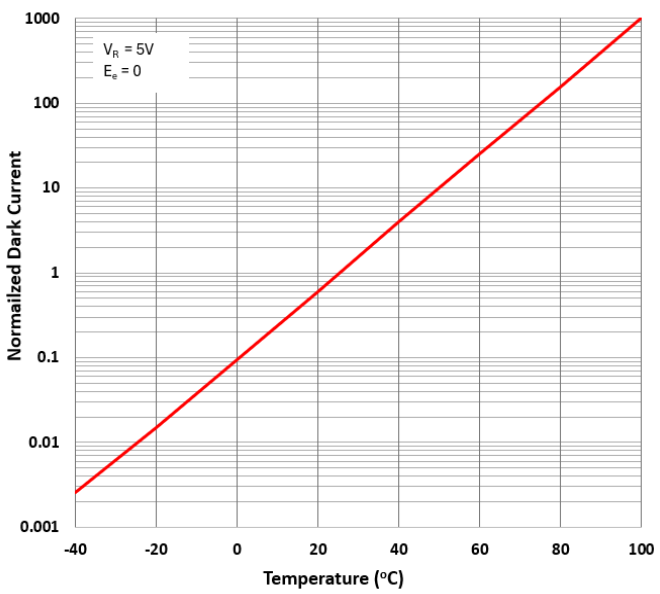
Light Current vs Angular Displacement



Total Capacitance vs Voltage



Normalized Dark Current vs Temperature



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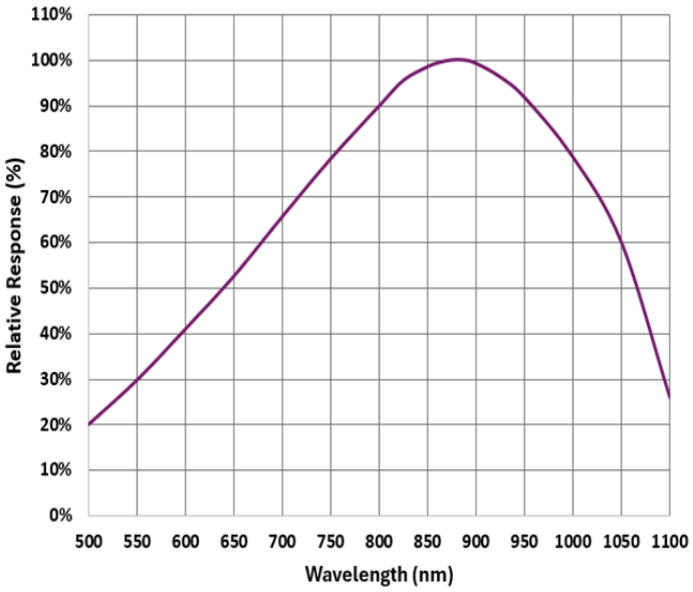
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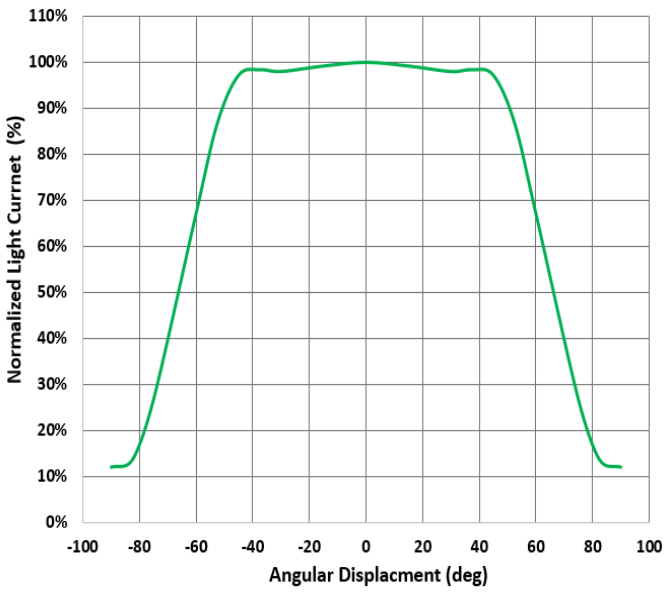
Typical Performance

OP954

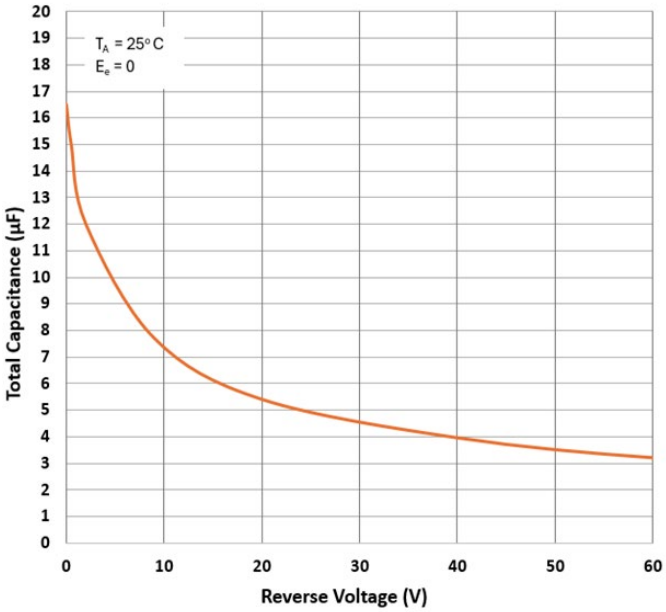
Typical Spectral Response



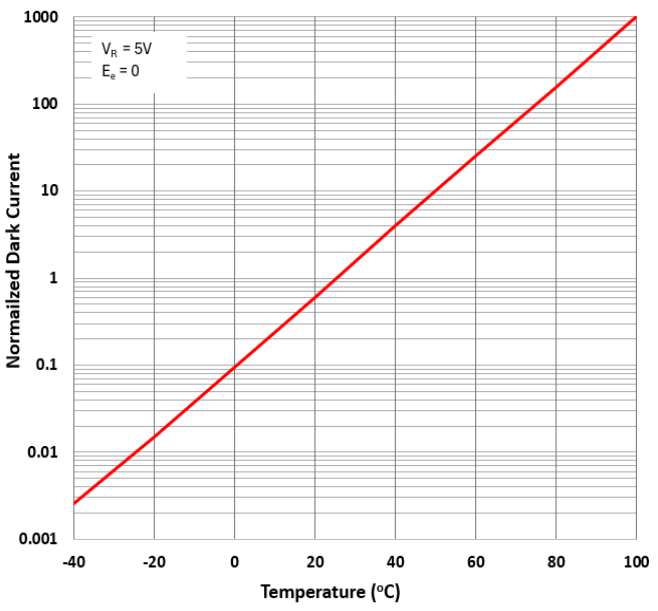
Light Current vs Angular Displacement



Total Capacitance vs Voltage



Normalized Dark Current vs Temperature



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