PIN Silicon Photodiode

OP905, OP906

Features:

- Clear epoxy package
- Linear response vs. irradiance
- Fast switching time
- Narrow receiving angle
- T-1package style
- Small package style ideal for space-limited applications

Description:

Each **OP905** and **OP906** device consists of a PIN silicon photodiode molded in a clear epoxy package that allows spectral response from visible to infrared light wavelengths. The T-1 package style is ideal for space-limited applications. Both devices have a narrow receiving angle, which provides excellent on-axis coupling. Both are also 100% production tested using infrared light for close correlation with OPTEK's GaAs and GaAiAs emitters.

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

Applications:

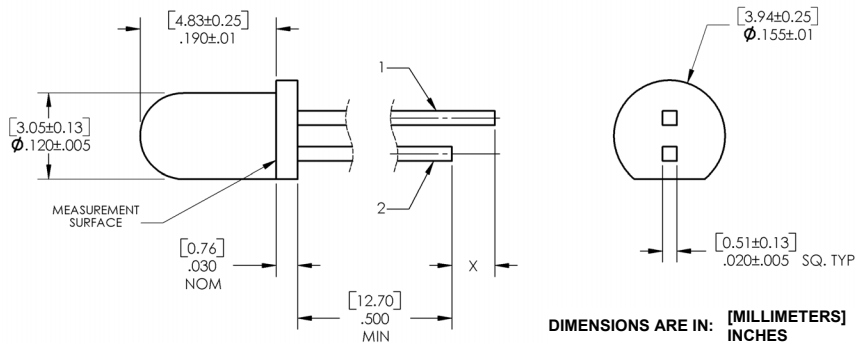
- Non-contact reflective object sensor
- Assembly line automation
- Machine automation
- Machine safety
- End of travel sensor
- Door sensor

Ordering Information			
Part Number	**Sensor**	**Viewing Angle**	**Lead Length**
OP905	Photodiode	95°	0.50"
OP906			

OP905 - OP906

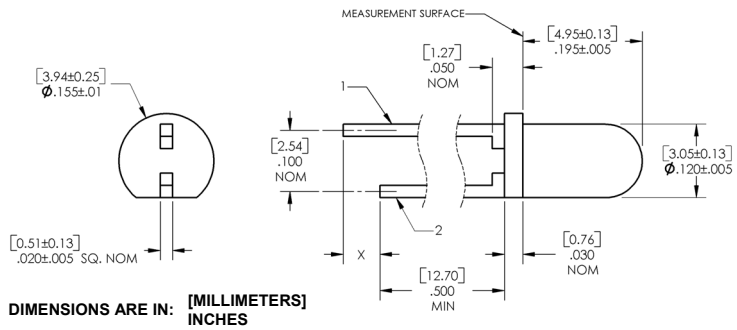
Pin #	Diode
1	Anode
2	Cathode

OP905



DIMENSIONS ARE IN: [MILLIMETERS] INCHES

OP906



DIMENSIONS ARE IN: [MILLIMETERS] INCHES

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.

RoHS

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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 (1.6mm) 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 OP905 OP906	 14 16	 - -	 32 35	µA	V_R = 5 V, E_E = 0.50 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) 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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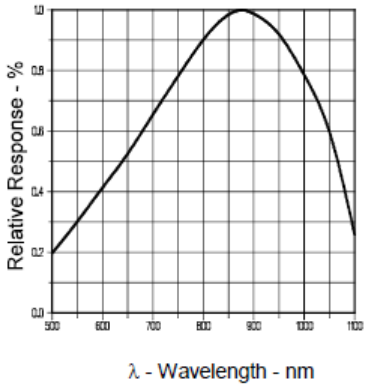
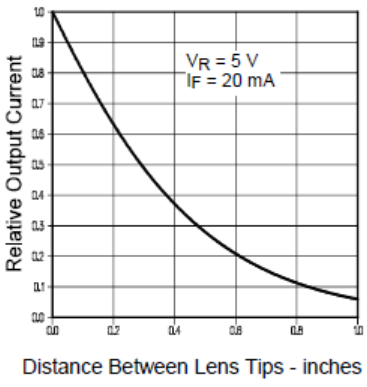
Performance

OP905

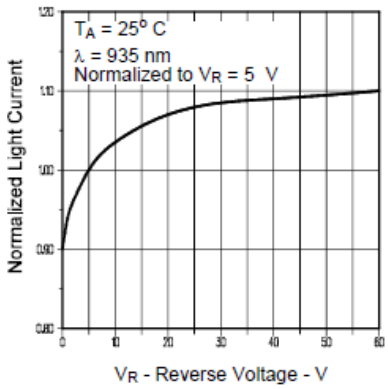
Relative Response vs. Wavelength



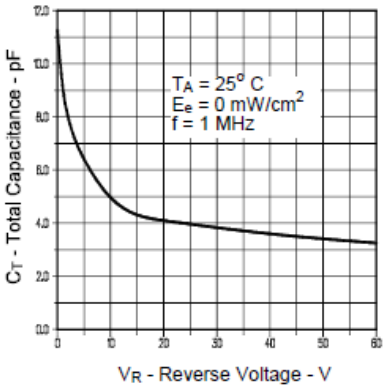
Coupling Characteristics OP905 and OP265



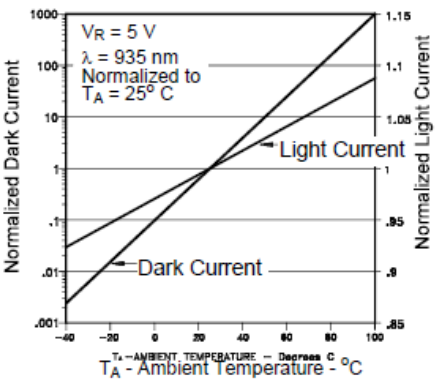
Normalized Light Current vs Reverse Voltage



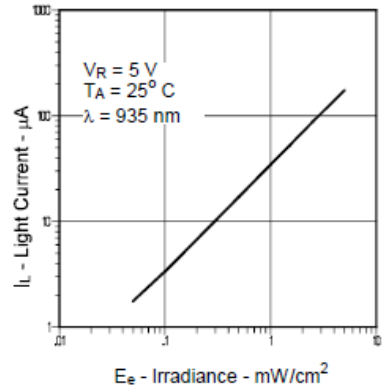
Total Capacitance vs Reverse Voltage



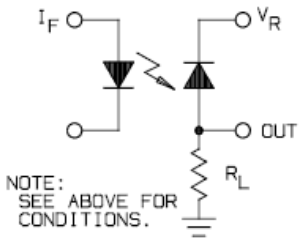
Normalized Light and Dark Current vs Ambient Temperature



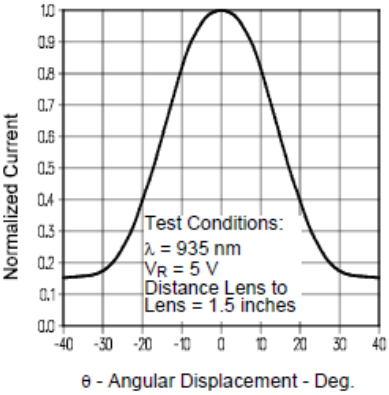
Light Current vs. Irradiance



Switching Time Test Circuit



Light Current vs. Angular Displacement



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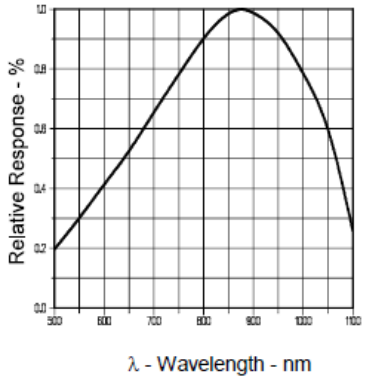
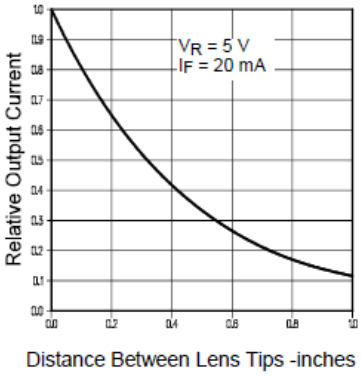
Performance
OP906

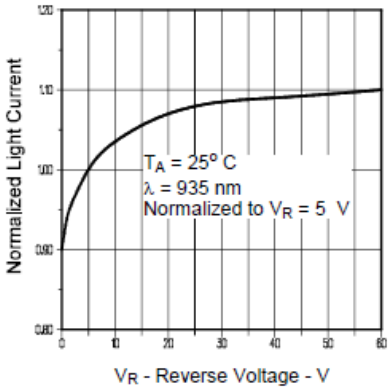
Relative Response vs. Wavelength



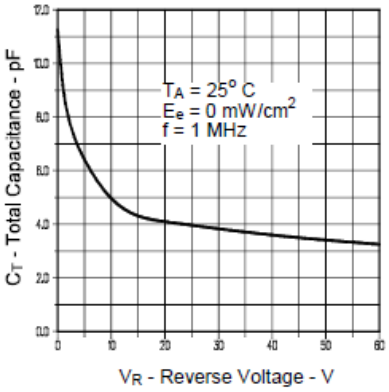
Coupling Characteristics OP906 and OP266



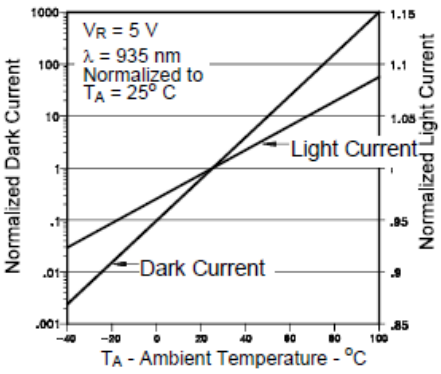
Normalized Light Current vs Reverse Voltage



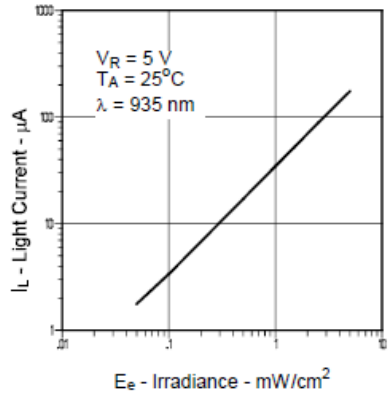
Total Capacitance vs Reverse Voltage



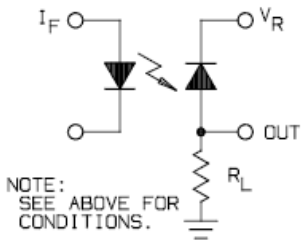
Normalized Light and Dark Current vs Ambient Temperature



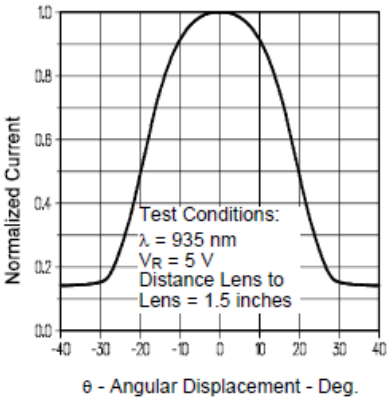
Light Current vs. Irradiance



Switching Time Test Circuit



Light Current vs. Angular Displacement



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