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With the principle of "Quality Parts,Customers Priority,Honest Operation,and Considerate Service",our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

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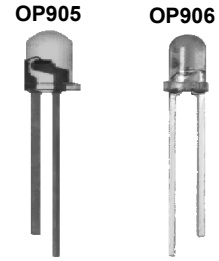
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Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China



# PIN Silicon Photodiode

OP905, OP906



## Features:

- Clear epoxy package
- Linear response vs. irradiance
- Fast switching time
- Narrow receiving angle
- T-1 package 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:

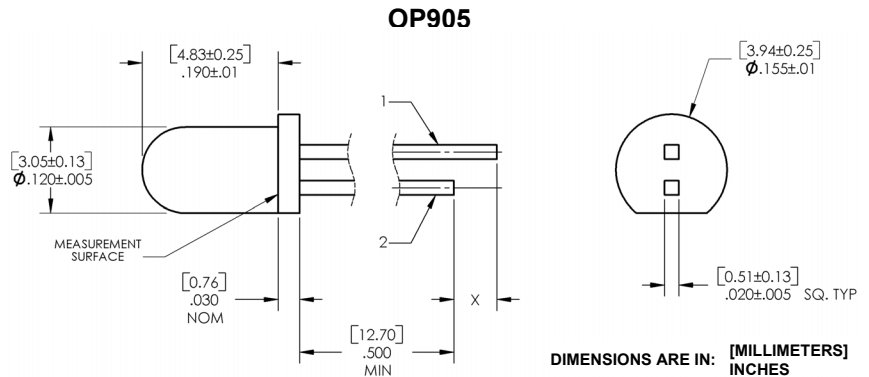
- Non-contact reflective object sensor
- Assembly line automation
- Machine automation
- Machine safety
- End of travel sensor
- Door sensor

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

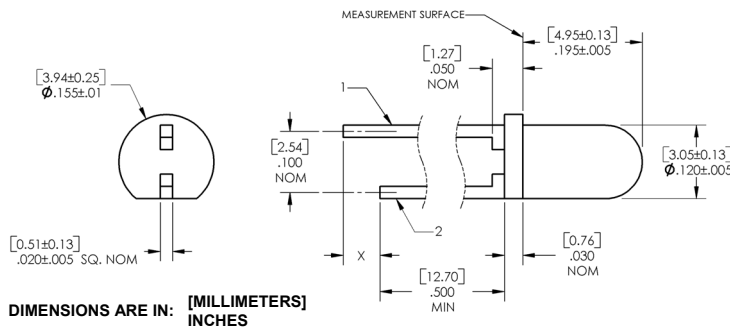
OP905 - OP906



Pin #	Diode
1	Anode
2	Cathode



OP906



**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.



General Note  
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# PIN Silicon Photodiode

OP905, OP906



## 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 (1.6mm) 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					$V_R = 5\text{ V}$ , $E_E = 0.50\text{ mW/cm}^2^{(3)}$
	OP905	14	-	32	$\mu\text{A}$	
	OP906	16	-	35		
$I_D$	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) 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  $^\circ\text{C}$ .

# PIN Silicon Photodiode

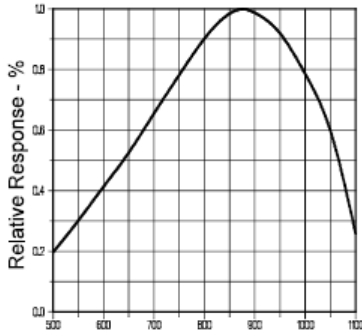
OP905, OP906



## Performance

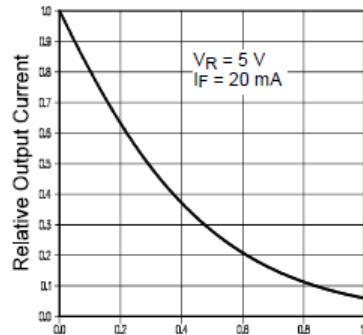
OP905

Relative Response vs. Wavelength



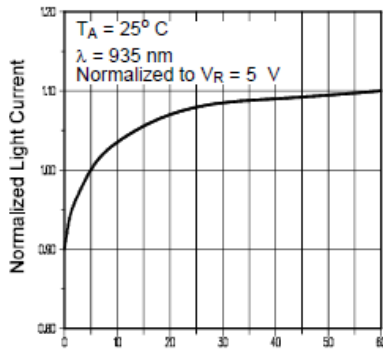
$\lambda$  - Wavelength - nm

Coupling Characteristics  
OP905 and OP265



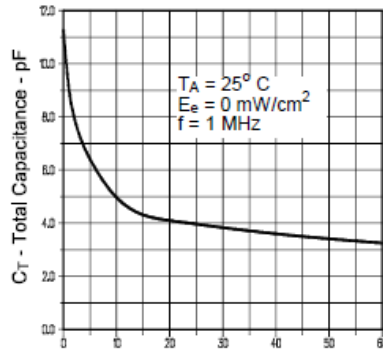
Distance Between Lens Tips - inches

Normalized Light Current vs Reverse Voltage



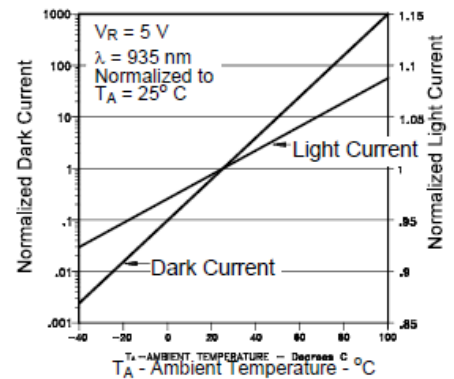
$V_R$  - Reverse Voltage - V

Total Capacitance vs Reverse Voltage

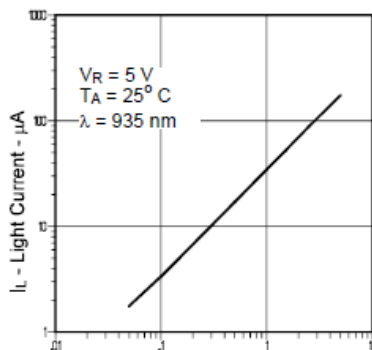


$V_R$  - Reverse Voltage - V

Normalized Light and Dark Current vs Ambient Temperature

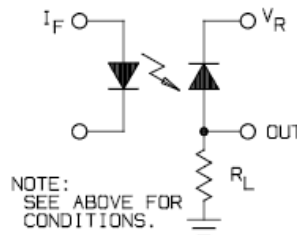


Light Current vs. Irradiance

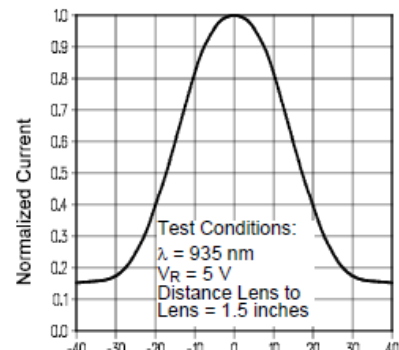


$E_e$  - Irradiance -  $\text{mW}/\text{cm}^2$

Switching Time Test Circuit



Light Current vs. Angular Displacement



$\theta$  - Angular Displacement - Deg.

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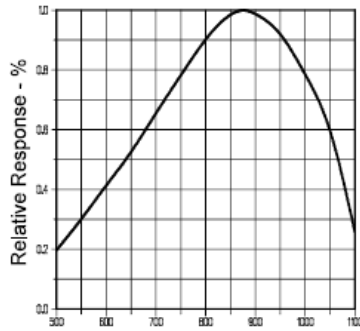
# PIN Silicon Photodiode

OP905, OP906



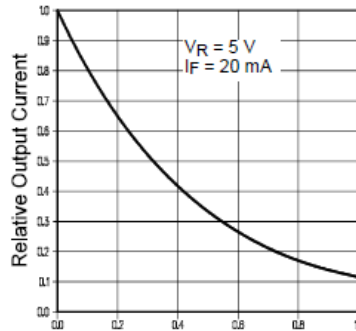
## Performance OP906

Relative Response vs. Wavelength



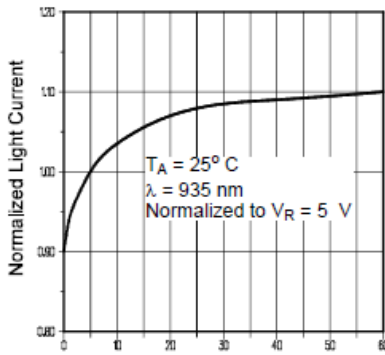
$\lambda$  - Wavelength - nm

Coupling Characteristics  
OP906 and OP266



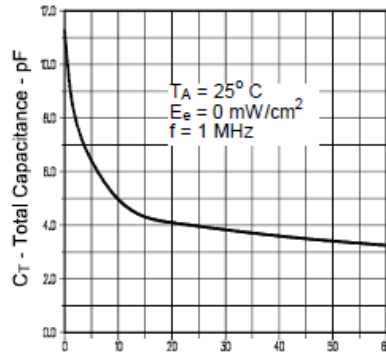
Distance Between Lens Tips - inches

Normalized Light Current vs Reverse Voltage



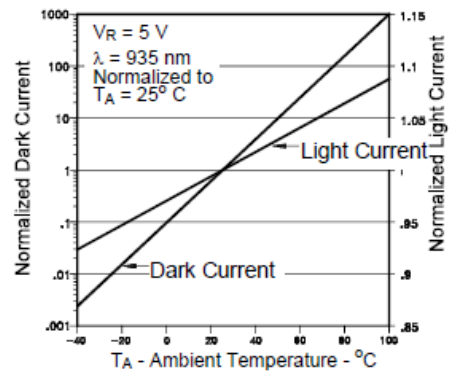
$V_R$  - Reverse Voltage - V

Total Capacitance vs Reverse Voltage

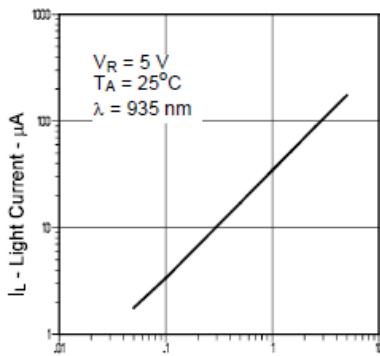


$V_R$  - Reverse Voltage - V

Normalized Light and Dark Current vs Ambient Temperature

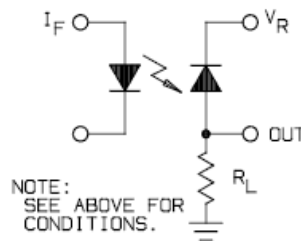


Light Current vs. Irradiance

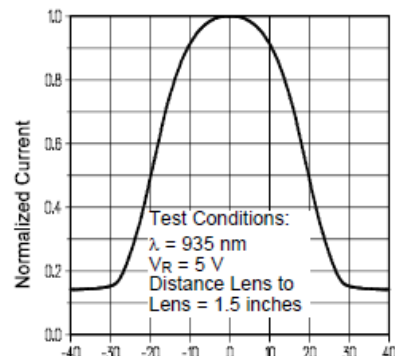


$E_e$  - Irradiance -  $mW/cm^2$

Switching Time Test Circuit



Light Current vs. Angular Displacement



$\theta$  - Angular Displacement - Deg.

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