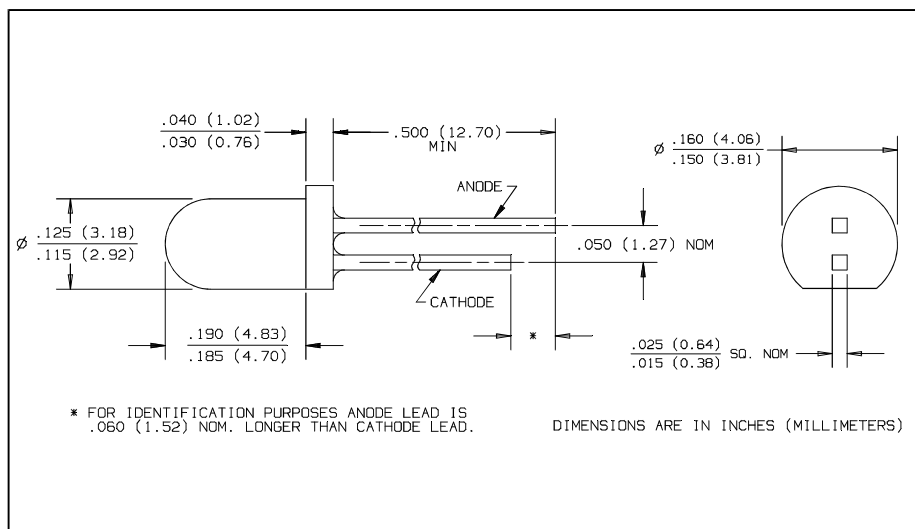
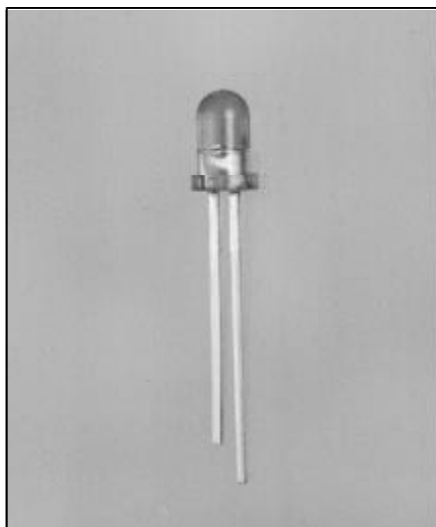


# PIN Silicon Photodiode Type OP905



## Features

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

## Description

The OP905 device consists of a PIN silicon photodiode molded in a clear epoxy package which allows spectral response from visible to infrared light wavelengths. The narrow receiving angle provides excellent on-axis coupling. These devices are 100% production tested using infrared light for close correlation with Optek's GaAs and GaAlAs emitters.

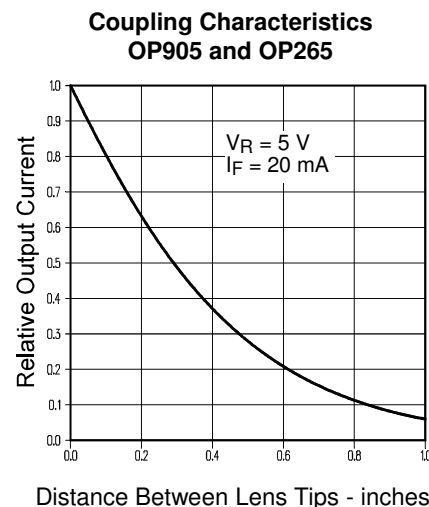
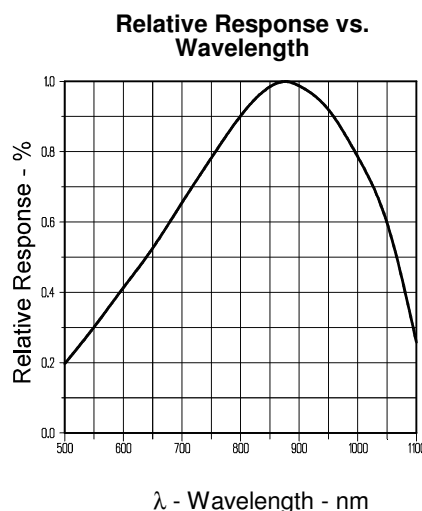
## Absolute Maximum Ratings ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

Reverse Breakdown Voltage	60 V
Storage and Operating Temperature Range	$-40^\circ\text{C}$ to $+100^\circ\text{C}$
Lead Soldering Temperature [1/16 inch (1.6 mm) from case for 5 sec. with soldering iron]	$260^\circ\text{C}^{(1)}$
Power Dissipation	100 mW <sup>(2)</sup>

### Notes:

- (1) RMA flux is recommended. Duration can be extended to 10 sec. max. when flow soldering. Max. 20 grams force may be applied to leads when soldering.
- (2) Derate linearly 1.67 mW/ $^\circ\text{C}$  above  $25^\circ\text{C}$ .
- (3) Light source is an unfiltered GaAs LED with a peak emission wavelength of 935nm and a radiometric intensity level which varies less than 10% over the entire lens surface of the photodiode being tested.
- (4) To calculate typical dark current in nA, use the formula  $I_D = 10^{(0.042 T_A - 1.5)}$  where  $T_A$  is ambient temperature in  $^\circ\text{C}$ .

## Typical Performance Curves



# Type OP905

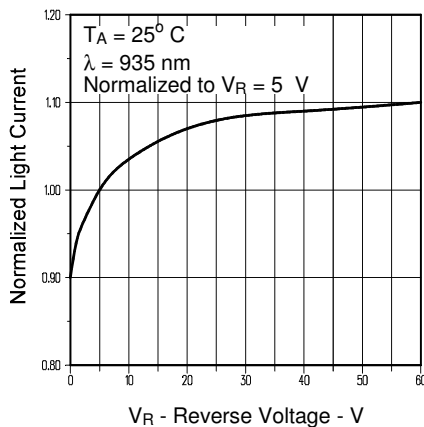
**Electrical Characteristics** ( $T_A = 25^\circ\text{C}$  unless otherwise noted)

SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS	TEST CONDITIONS
$I_L$	Reverse Light Current	14		32	$\mu\text{A}$	$V_R = 5\text{ V}$ , $E_e = 0.50\text{ mW/cm}^2(3)$
$I_D$	Reverse Dark Current		1	60	nA	$V_R = 30\text{ V}$ , $E_e = 0$
$V_{(BR)}$	Reverse Breakdown Voltage	60			V	$I_R = 100\text{ }\mu\text{A}$
$V_F$	Forward Voltage			1.2	V	$I_F = 1\text{ mA}$
$C_T$	Total Capacitance		4		pF	$V_R = 20\text{ V}$ , $E_e = 0$ , $f = 1.0\text{ MHz}$
$t_r$ , $t_f$	Rise Time, Fall Time		5		ns	$V_R = 20\text{ V}$ , $\lambda = 850\text{ nm}$ , $R_L = 50\text{ }\Omega$

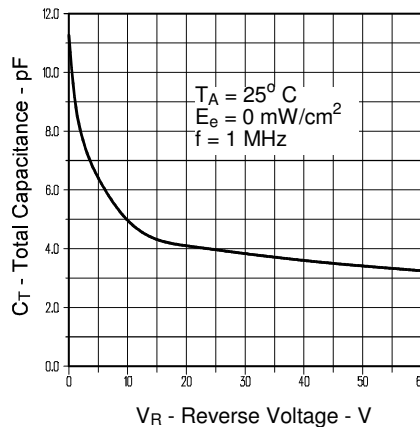
## Typical Performance Curves

PHOTOSENSORS

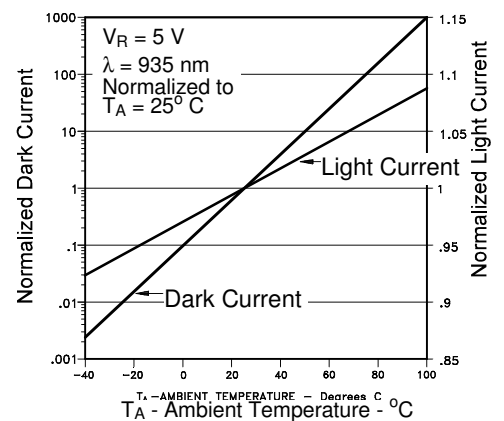
**Normalized Light Current vs Reverse Voltage**



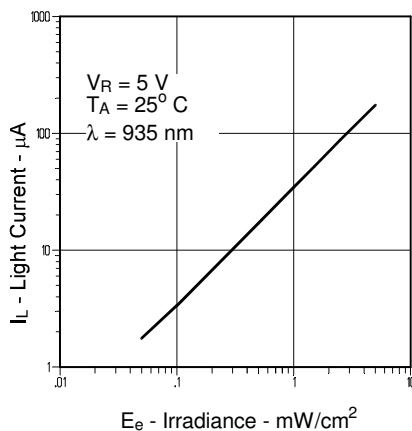
**Total Capacitance vs Reverse Voltage**



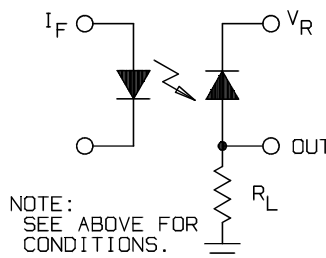
**Normalized Light and Dark Current vs Ambient Temperature**



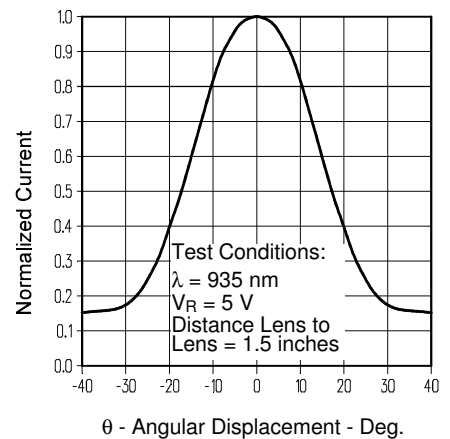
**Light Current vs. Irradiance**



**Switching Time Test Circuit**



**Light Current vs. Angular Displacement**



Optek reserves the right to make changes at any time in order to improve design and to supply the best product possible.

Optek Technology, Inc. 1215 W. Crosby Road Carrollton, Texas 75006 (972)323-2200 Fax (972)323-2396