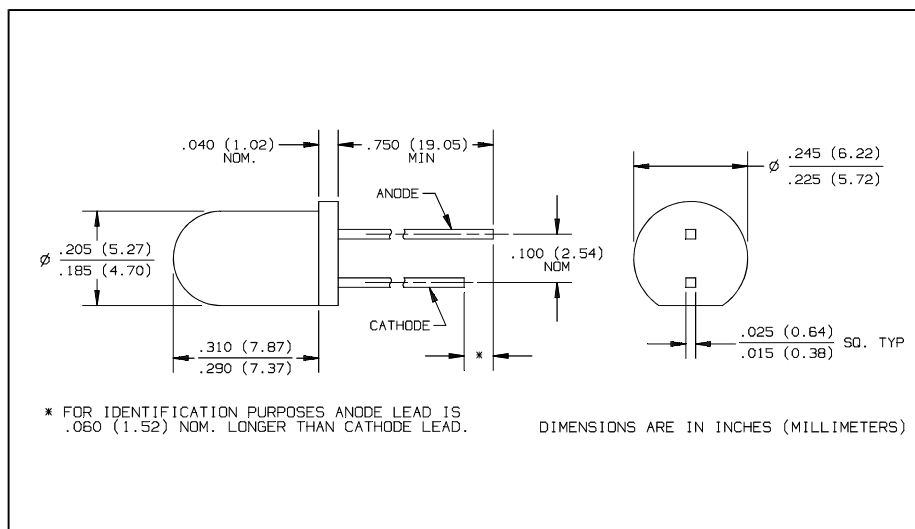


# PIN Silicon Photodiode

## Type OP999



### Features

- Narrow receiving angle
- Linear response vs. irradiance
- Fast switching time
- T-1 3/4 package style

### Description

The OP999 photodiode consists of a PIN silicon photodiode mounted in a dark blue plastic injection molded shell package. The narrow receiving angle provides excellent on-axis coupling. The sensors are 100% production tested for close correlation with Optek GaAlAs emitters.

Optek's packaging process provides excellent optical and mechanical axis alignment. The shell also provides excellent optical lens surface, control of chip placement, and consistency of the outside package dimensions.

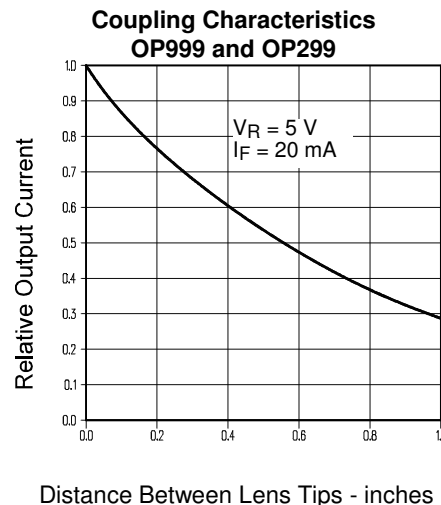
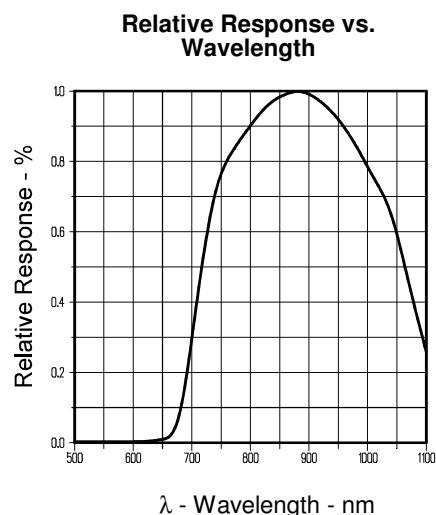
### Absolute Maximum Ratings ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

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 GaAlAs emitting diode operating at peak emission wavelength of 890 nm and  $E_{\text{E(APT)}}$  of 0.25 mW/cm<sup>2</sup>.
- (4) This dimension is held to within  $\pm 0.005$ " on the flange edge and may vary up to  $\pm 0.020$ " in the area of the leads.

### Typical Performance Curves



# Type OP999

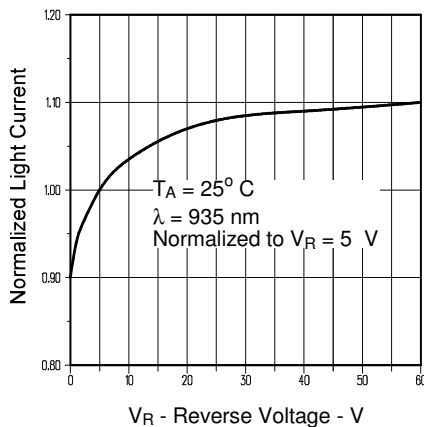
Electrical Characteristics ( $T_A = 25^\circ\text{C}$  unless otherwise noted)

SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS	TEST CONDITIONS
$I_L$	Reverse Light Current	6.5		15	$\mu\text{A}$	$V_R = 5\text{ V}$ , $E_e = 0.25\text{ mW/cm}^2$ <sup>(3)</sup>
$I_D$	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	$V_R = 20\text{ V}$ , $\lambda = 850\text{ nm}$ , $R_L = 50\text{ }\Omega$

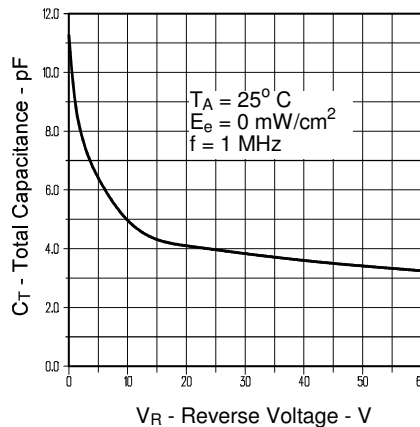
## Typical Performance Curves

PHOTOSENSORS

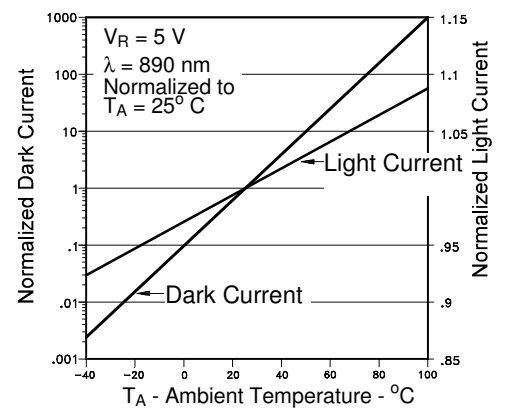
Normalized Light Current vs Reverse Voltage



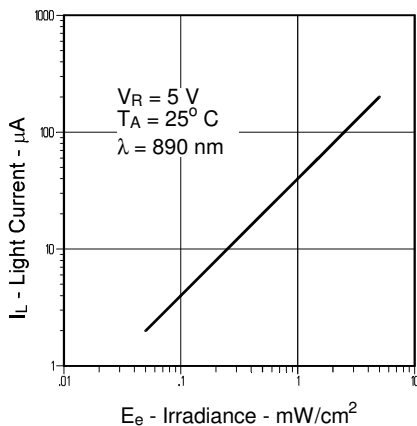
Total Capacitance vs Reverse Voltage



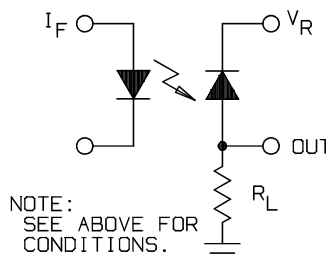
Normalized Light and Dark Current vs Ambient Temperature



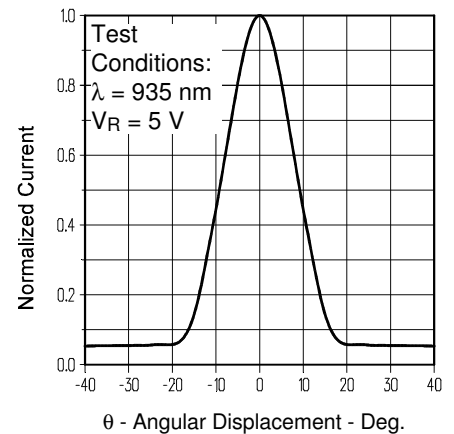
Light Current vs. Irradiance



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.

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