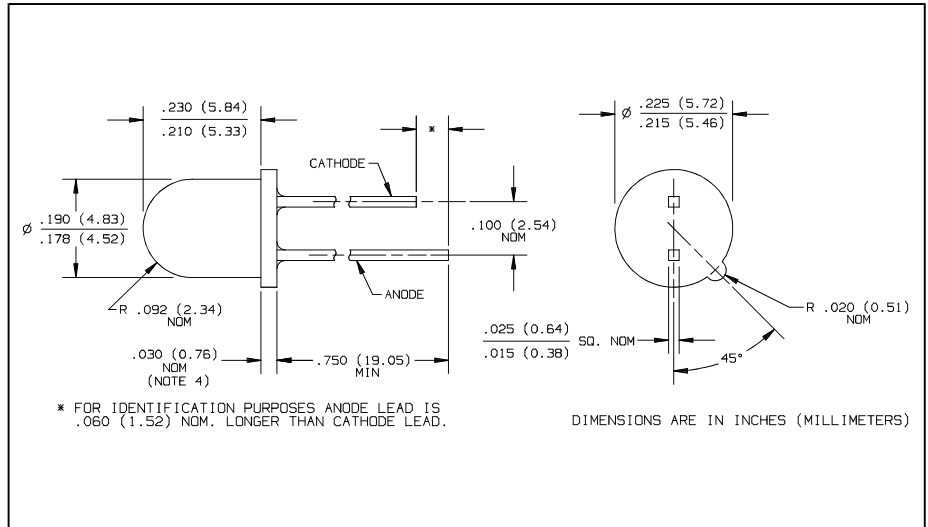


# PIN Silicon Photodiode

## Type OP993



### Features

- Wide receiving angle
- Linear response vs. irradiance
- Fast switching time
- TO-18 equivalent package style

### Description

The OP993 photodiode consists of a PIN silicon photodiode mounted in a dark blue plastic injection molded shell package. The wide receiving angle provides excellent on-axis coupling. The sensors are 100% production tested for close correlation with Optek 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 external package dimensions.

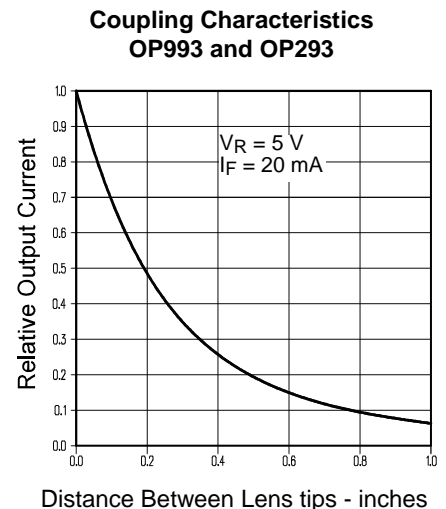
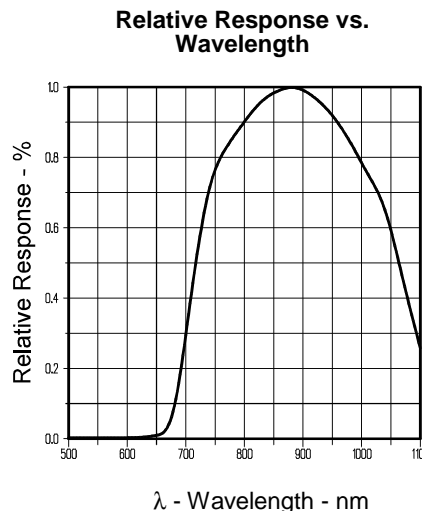
### Absolute Maximum Ratings ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

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	$100\text{ mW}^{(2)}$

#### 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  $1.67\text{ mW}/^\circ\text{C}$  above  $25^\circ\text{C}$ .
- (3) Light source is an unfiltered GaAlAs emitting diode operating at peak emission wavelength of 890nm and  $E_{e(\text{APT})}$  of  $1.7\text{ mW}/\text{cm}^2$  average within a .250" dia. aperture.
- (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 OP993

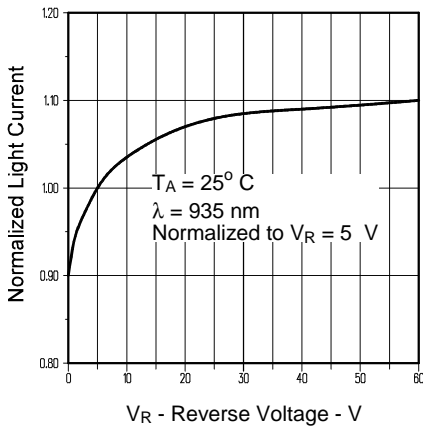
Electrical Characteristics ( $T_A = 25^\circ\text{C}$  unless otherwise noted)

SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS	TEST CONDITIONS
$I_L$	Reverse Light Current	12.5		28.5	$\mu\text{A}$	$V_R = 5\text{ V}$ , $E_e = 1.7\text{ mW/cm}^2(3)$
$I_D$	Reverse Dark Current		1	60	nA	$V_R = 30\text{ V}$ , $E_e = 0$
$V_{(BR)}$	Reverse Breakdown Voltage	60			V	$I_R = 100\ \mu\text{A}$
$V_F$	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	$V_R = 20\text{ V}$ , $\lambda = 850\text{ nm}$ , $R_L = 50\ \Omega$

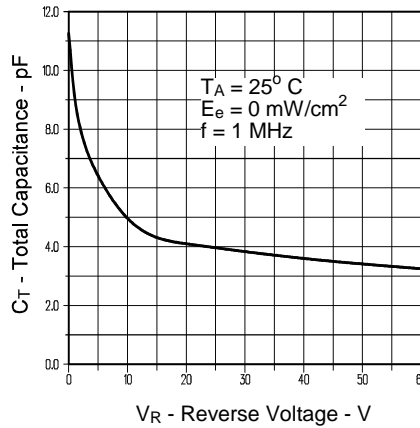
## Typical Performance Curves

PHOTOSENSORS

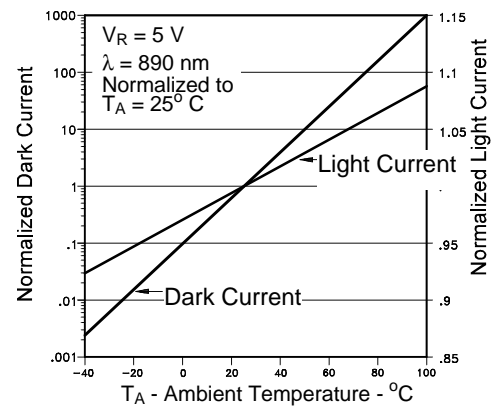
Normalized Light Current vs Reverse Voltage



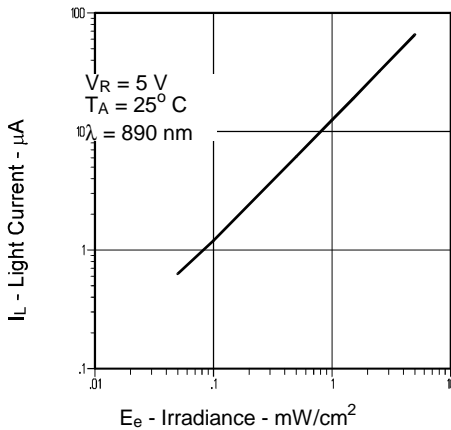
Total Capacitance vs Reverse Voltage



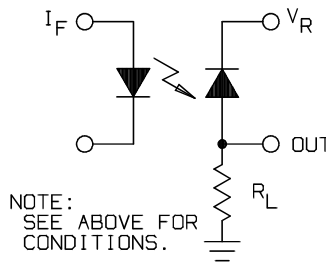
Normalized Light and Dark Current vs Ambient Temperature



Light Current vs. Irradiance



Switching Time Test Circuit



Light Current vs. Angular Displacement

