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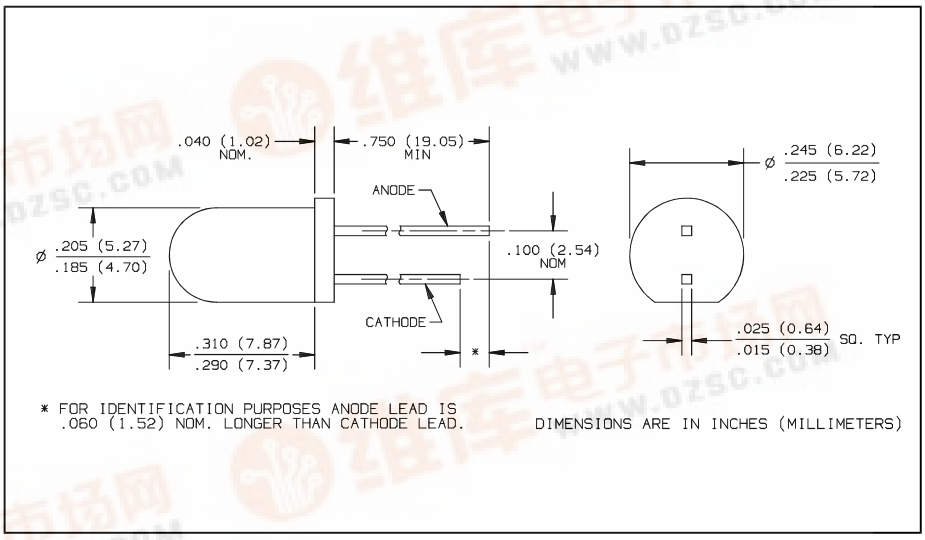
Product Bulletin OP999
June 1996

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.

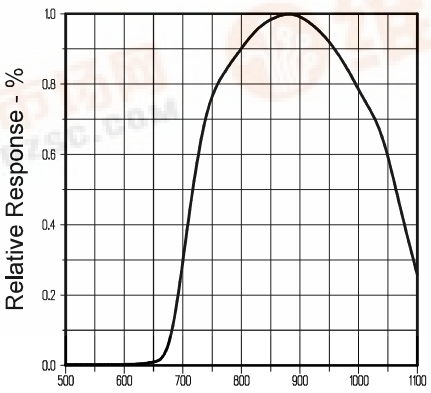
Absolute Maximum Ratings (T_A = 25° C unless otherwise noted)

Reverse Breakdown Voltage . . . . . 60 V
Storage and Operating Temperature Range . . . . . -40° C to +100° C
Lead Soldering Temperature (1/16 inch [1.6 mm] from case for 5 sec. with soldering iron). . . . . 260° C(1)
Power Dissipation . . . . . 100 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 mW/° C above 25° C.
(3) Light source is an unfiltered GaAlAs emitting diode operating at peak emission wavelength of 890 nm and $E_{e(APT)}$ of 0.25 mW/cm^2.
(4) This dimension is held to within ± 0.005" on the flange edge and may vary up to ± 0.020" in the area of the leads.

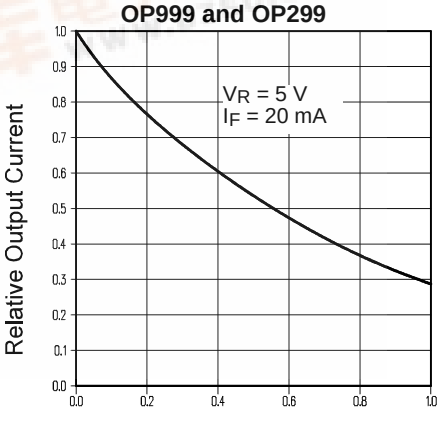
Typical Performance Curves

Relative Response vs. Wavelength



λ - Wavelength - nm

Coupling Characteristics OP999 and OP299



Distance Between Lens Tips - inches

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Type OP999

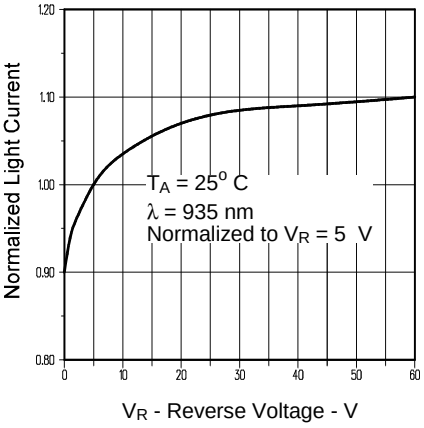
Electrical Characteristics (T_A = 25° C unless otherwise noted)

SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS	TEST CONDITIONS
I_L	Reverse Light Current	6.5		15	µA	V_R = 5 V, E_e = 0.25 mW/cm^2 (3)
I_D	Reverse Dark Current		1	60	nA	V_R = 30 V, E_e = 0
$V_{(BR)}$	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, t_f	Rise Time, Fall Time		5		ns	V_R = 20 V, λ = 850 nm, R_L = 50 Ω

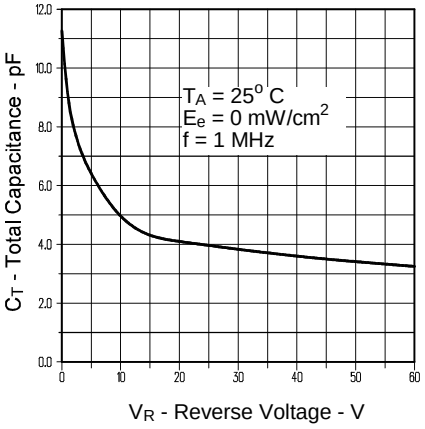
Typical Performance Curves

PHOTOSENSORS

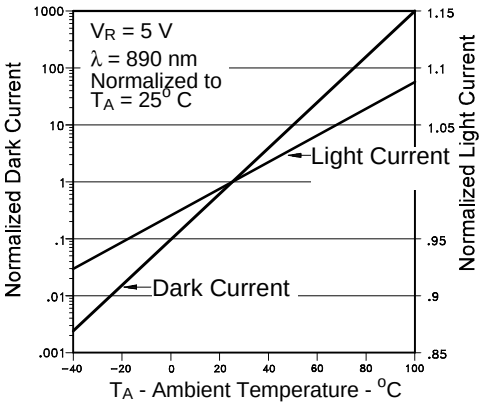
Normalized Light Current vs Reverse Voltage



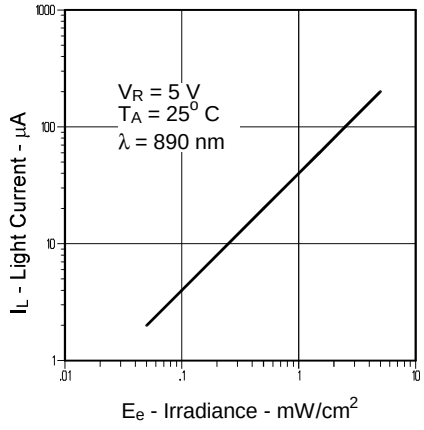
Total Capacitance vs Reverse Voltage



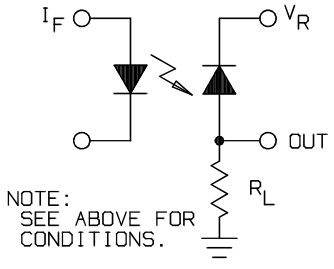
Normalized Light and Dark Current vs Ambient Temperature



Light Current vs. Irradiance



Switching Time Test Circuit



Light Current vs. Angular Displacement