PIN Silicon Photodiode

OP993, OP999

TT Electronics

Electrical Specifications

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

Reverse Breakdown Voltage	60 V
Storage & Operating Temperature Range	-40° C to +100° C
Lead Soldering Temperature [1/16 inch (1.6 mm) from the case for 5 sec. with soldering iron]	260° C[1]
Reverse Breakdown Voltage	60 V
Power Dissipation	100 mW[2]

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

SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS	TEST CONDITIONS
I_L	Reverse Light Current OP993 OP999	12.5 6.5	- -	28.5 15	µA	V_R = 5 V, E_E = 1.7 mW/cm^2 [3] 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 [4]
$V_{(BR)}$	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	Rise Time		5		ns	V_R = 20 V, λ = 850 nm, R_L = 50 Ω
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 mW/° C above 25° C.

(3) Light source is an unfiltered GaAIAs emitting diode operating at peak emission wavelength of 890 nm and $E_{E(APT)}$ of 1.7 mW/cm^2 for OP993 and 0.25mW/cm^2 for OP999 average within a 0.25" diameter aperture.

(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.

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OP993

Coupling Characteristics OP993 and OP293
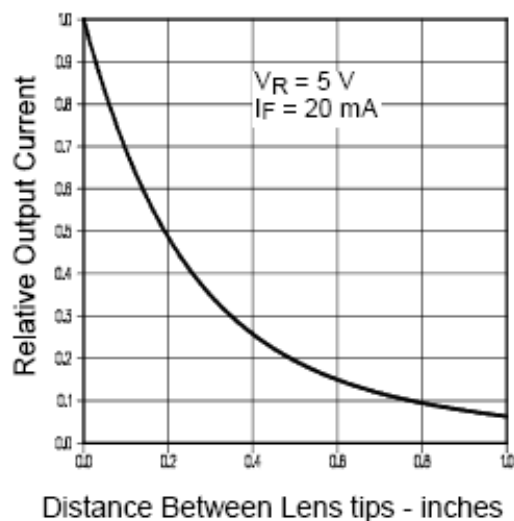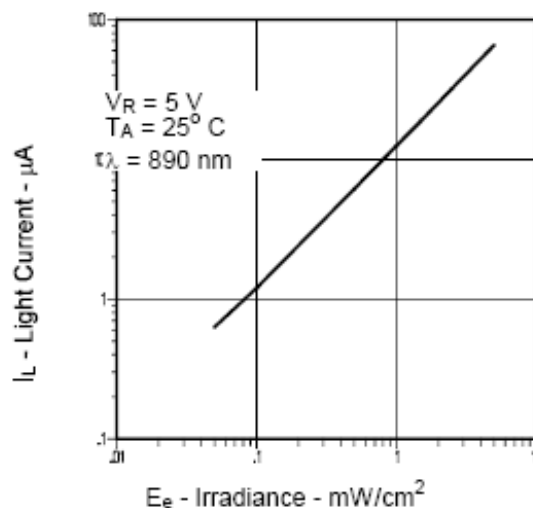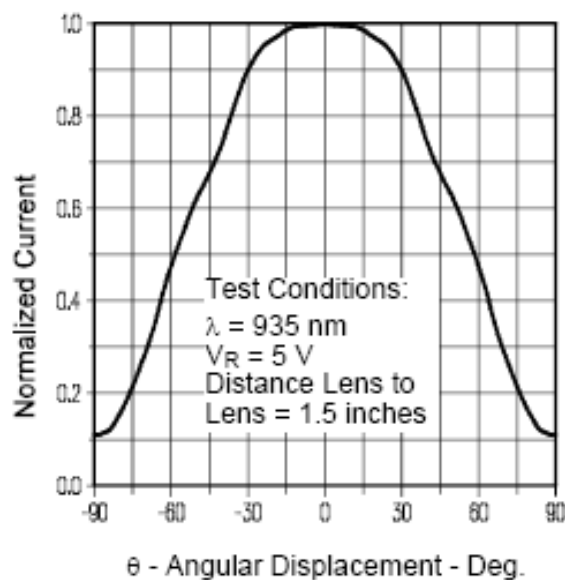
$V_R = 5$ V
$I_F = 20$ mA

Relative Output Current

Distance Between Lens tips - inches

Light Current vs. Irradiance

$V_R = 5$ V
$T_A = 25°$ C
$\tau\lambda = 890$ nm
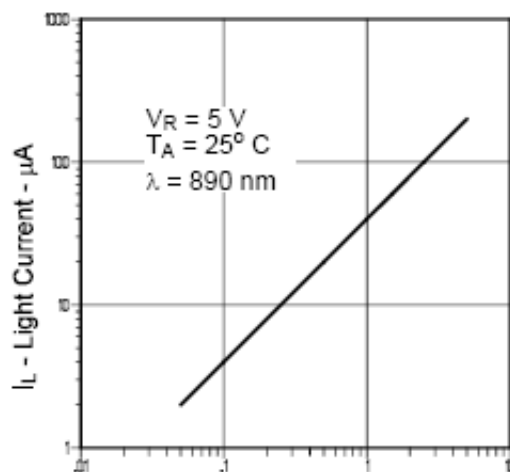
I_L - Light Current - µA

E_e - Irradiance - mW/cm^2

Light Current vs. Angular Displacement
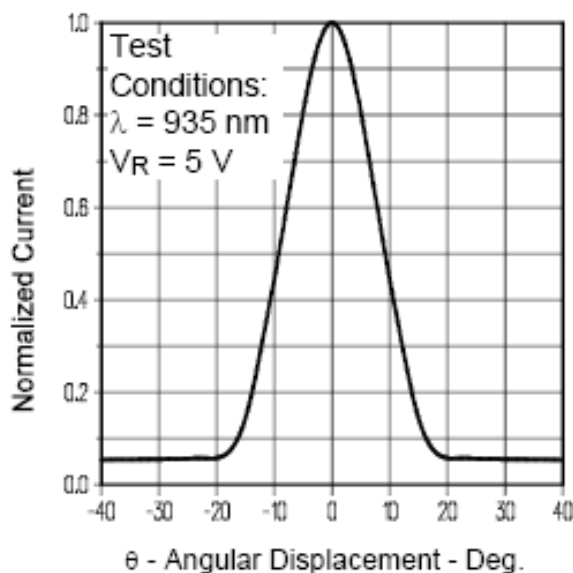
Normalized Current

Test Conditions:
$\lambda = 935$ nm
$V_R = 5$ V
Distance Lens to
Lens = 1.5 inches

θ - Angular Displacement - Deg.

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OP999

Coupling Characteristics OP999 and OP299

Relative Output Current vs. Distance Between Lens Tips - inches

$V_R = 5\ V$
$I_F = 20\ mA$

Light Current vs. Irradiance

I_L - Light Current - μA vs. E_e - Irradiance - mW/cm^2

$V_R = 5\ V$
$T_A = 25^\circ\ C$
$\lambda = 890\ nm$

Light Current vs. Angular Displacement

Normalized Current vs. θ - Angular Displacement - Deg.

Test Conditions:
$\lambda = 935\ nm$
$V_R = 5\ V$

PIN Silicon Photodiode
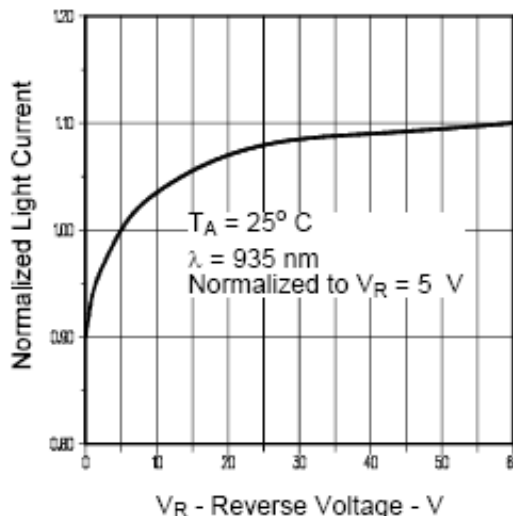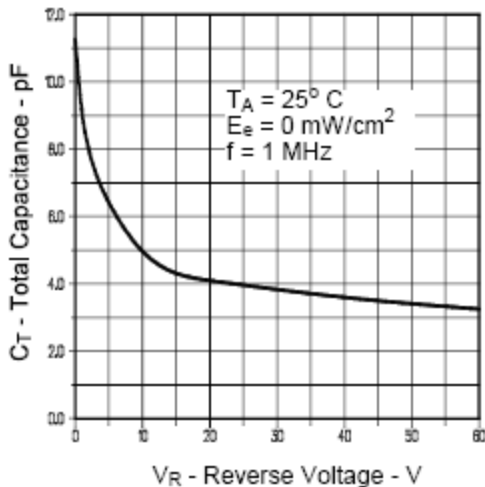
OP993, OP999

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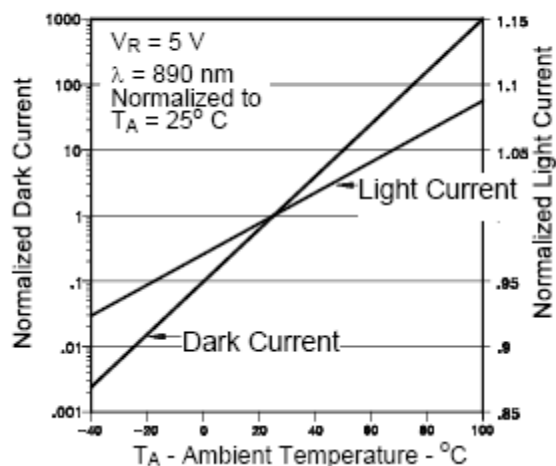
Relative Response vs. Wavelength
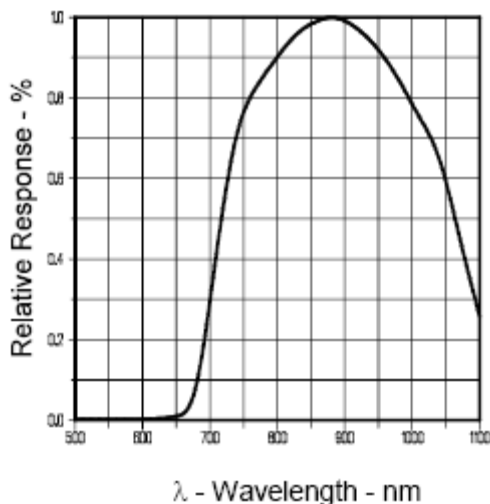
Normalized Light Current vs Reverse Voltage

Total Capacitance vs Reverse Voltage

Normalized Light and Dark Current vs Ambient Temperature