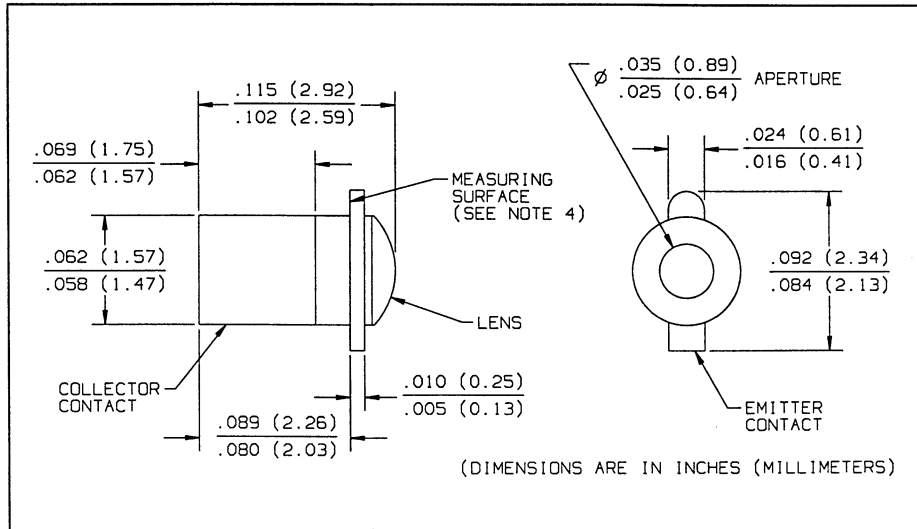
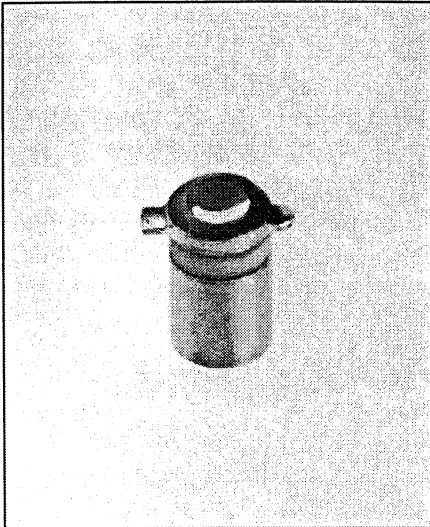


# NPN Silicon Phototransistors

## Types OP600A, OP600B, OP600C



### Features

- Narrow receiving angle
- Variety of sensitivity ranges
- Enhanced temperature range
- Ideal for direct mounting in PC boards
- Mechanically and spectrally matched to the OP123 and OP223 series devices
- TX/TXV processing available (see Hi-Rel section)

### Description

The OP600 series device consists of an NPN silicon phototransistor mounted in a hermetically sealed "Pill" type package. The narrow receiving angle provides excellent on-axis coupling. These devices are 100% production tested using infrared light for close correlation with Optek GaAs and GaAlAs emitters.

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

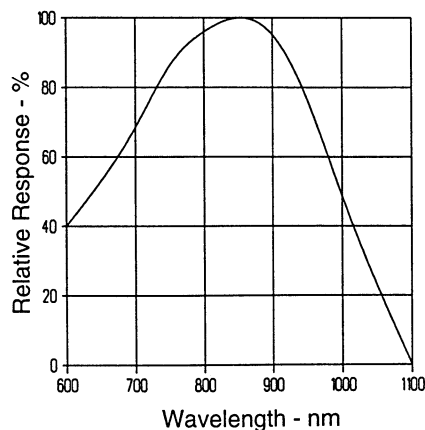
Collector-Emitter Voltage .....	25 V
Emitter-Collector Voltage .....	5.0 V
Storage Temperature Range .....	$-65^\circ\text{C}$ to $+150^\circ\text{C}$
Operating Temperature Range .....	$-65^\circ\text{C}$ to $+125^\circ\text{C}$
Soldering Temperature (5 sec. with soldering iron) .....	$260^\circ\text{C}^{(1)(2)}$
Power Dissipation .....	50 mW <sup>(3)</sup>
Continuous Collector Current .....	50 mA

#### Notes:

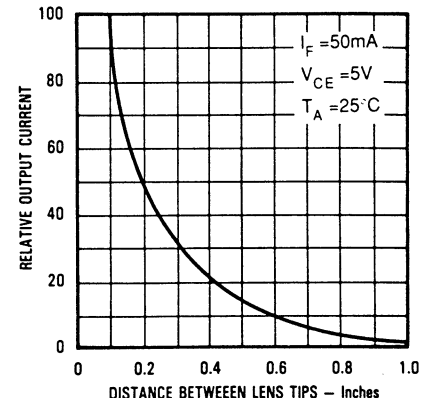
- (1) Refer to Application Bulletin 202 which discusses proper techniques for soldering Pill type devices to PC boards.
- (2) No clean or low solids, RMA flux is recommended. Duration can be extended to 10 sec. max. when flow soldering.
- (3) Derate linearly  $0.5\text{mW}/^\circ\text{C}$  above  $25^\circ\text{C}$ .
- (4) Junction temperature maintained at  $25^\circ\text{C}$ .
- (5) Light source is a GaAlAs LED, peak Wavelength = 890 nm, providing an irradiance of  $2.5\text{mW}/\text{cm}^2$ . The source irradiance is not necessarily uniform over the entire lens area of the unit under test.

### Typical Performance Curves

Typical Spectral Response



Coupling Characteristics of OP123 and OP600



# Types OP600A, OP600B, OP600C

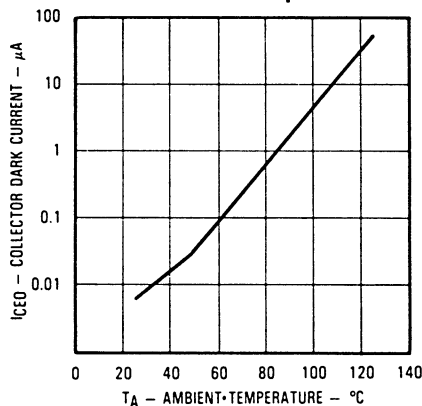
Electrical Characteristics ( $T_A = 25^\circ\text{C}$  unless otherwise noted)

SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS	TEST CONDITIONS
$I_{C(ON)}^{(4)}$	On-State Collector Current	OP600C 0.30 OP600B 0.60 OP600A 1.20		1.8	mA mA mA	$V_{CE} = 5\text{ V}, E_e = 2.5\text{ mW/cm}^2(5)$
$I_{CEO}$	Collector Dark Current				nA	$V_{CE} = 10\text{ V}, E_e = 0$
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage	25			V	$I_C = 100\ \mu\text{A}$
$V_{(BR)ECO}$	Emitter-Collector Breakdown Voltage	5.0			V	$I_E = 100\ \mu\text{A}$
$V_{CE(SAT)}^{(4)}$	Collector-Emitter Saturation Voltage			0.40	V	$I_C = 0.15\text{ mA}, E_e = 2.5\text{ mW/cm}^2(5)$
$t_r$	Rise Time		15		$\mu\text{s}$	$V_{CC} = 5\text{ V}, I_C = 0.80\text{ mA}, R_L = 1\text{ k}\Omega, \text{ See Test Circuit}$
$t_f$	Fall Time		15		$\mu\text{s}$	

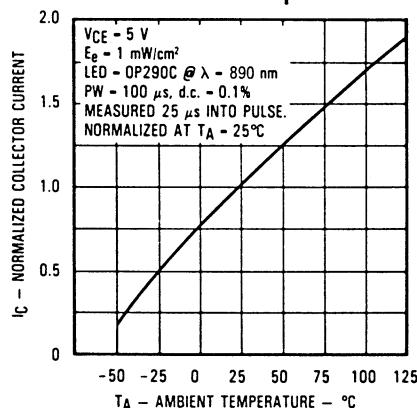
PHOTOSENSORS

## Typical Performance Curves

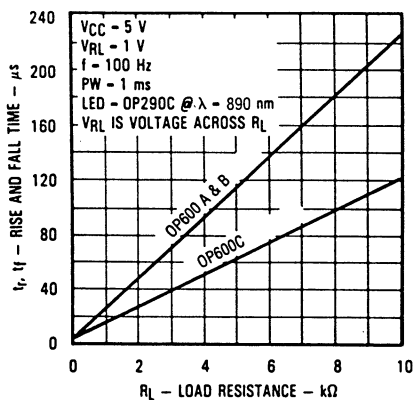
**Collector Dark Current vs. Ambient Temperature**



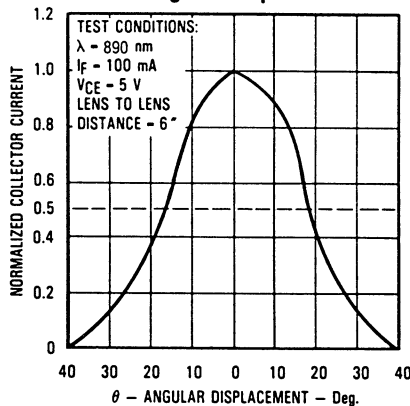
**Normalized Collector Current vs. Ambient Temperature**



**Rise and Fall Time vs. Load Resistance**



**Normalized Collector Current vs. Angular Displacement**



**Switching Time Test Circuit**

