NPN Silicon Phototransistor

OP600 Series

Features:

- Narrow receiving angle
- Variety of sensitivity ranges
- Enhanced temperature range
- PC Board Mounting
- Mechanically and spectrally matched to OP123 and OP223 LEDs
- TXV and S level processing available

Description:

Each device in this series is a NPN silicon phototransistor in a hermetically sealed pill package. The narrow receiving angle provides excellent on-axis coupling.

The **OP600** series devices are 100% production tested using infrared light for close correlation with OPTEK GaAs and GaAlAs emitters. Components in the OP600 series are mechanically and spectrally matched to the OP123 and OP233 series.

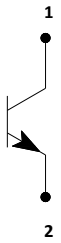
TXV and S level components are available. For more information, please contact your local representative or OPTEK.

Please refer to Application Bulletin 210 for additional thermal information, and to Application Bulletin 202 for pill-type soldering to PC Board.

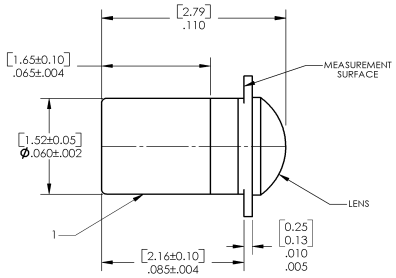
Applications:

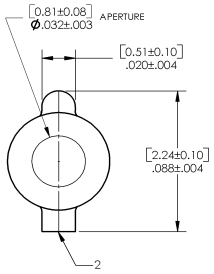
- Non-contact reflective object sensor
- Assembly line automation
- Machine automation
- High Voltage Isolation applications
- Machine safety
- End of travel sensor
- Door sensor

Pin #	Sensor
1	Collector
2	Emitter



Ordering Information				
Part Number	Sensor	Light Current $I_{C(ON)}$ (mA) Min / Max	Input Power E_E (mW/cm^2)	Viewing Angle
OP600A	Transistor	1.20 / NA	2.5	35°
OP600B		0.60 / 1.80		
OP600C		0.30 / NA		
OP643SL		4.00 / 8.00	20.0	
OP644SL		7.00 / 22.00		





DIMENSIONS ARE IN: [Millimeters] Inches

RoHS

ATTENTION
OBSERVE PRECAUTIONS FOR ELECTROSTATIC SENSITIVE DEVICES

General Note
TT Electronics reserves the right to make changes in product specification without notice or liability. All information is subject to TT Electronics' own data and is considered accurate at time of going to print.

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Electrical Specifications

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

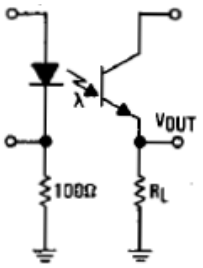
Collector-Emitter Voltage	25 V
Emitter-Collector Voltage	5 V
Storage Temperature Range	-65° C to +150° C
Operating Temperature Range	-65° C to +125° C
Soldering Temperature (5 seconds with soldering iron) (1)(2)	260° C
Power Dissipation (3)	50 mW
Continuous Collector Current	50 mA

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

SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS	TEST CONDITIONS
$I_{C(ON)}$ (4)	On-State Collector Current (5) OP600A OP600B OP600C	 1.2 0.6 0.3	 - - -	 1.8 1.8 1.8	mA	V_{CE} = 5 V, E_E = 2.5 mW/cm^2
	OP643SL (6)	4.0	-	8.0		V_{CE} = 5 V, E_E = 20 mW/cm^2
I_{CEO}	Collector-Dark Current	-	-	100	nA	V_{CE} = 10 V, E_E = 0
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage	25	-	-	V	I_C = 100 µA
$V_{(BR)ECO}$	Emitter-Collector Breakdown Voltage	5	-	-	V	I_E = 100 µA
$V_{CE(SAT)}$ (4)	Collector-Emitter OP600 (A, B, C) (5) OP643-644 (SL) (6)	-	-	0.4	V	I_C = 0.15 mA, E_E = 2.5 mW/cm^2 I_C = 0.4 mA, E_E = 20 mW/cm^2
t_r	Rise Time	-	15	-	µs	V_{CC} = 5 V, I_C = 0.80 mA, R_L = 1 kΩ, See Test Circuit
t_f	Fall Time	-	15	-	µs	V_{CC} = 5 V, I_C = 0.80 mA, R_L = 1 kΩ, See Test Circuit

Notes:

(1) Refer to Application Bulleting 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 seconds maximum when flow soldering.
(3) Derate linearly 0.5 mW/° C above 25° C.
(4) Junction temperature maintained at 25° C.
(5) For OP600A, OP600B and OP600C, light source is a GaAlAs LED, peak wavelength = 890 nm, that provides irradiance of 2.5 mW/cm^2. The source irradiance is not necessarily uniform over the entire lens area of the unit being tested.
(6) For OP643SL and OP644SL, light source is an unfiltered tungsten bulb operating at CT = 2870 K or equivalent infrared source.



Test Circuit

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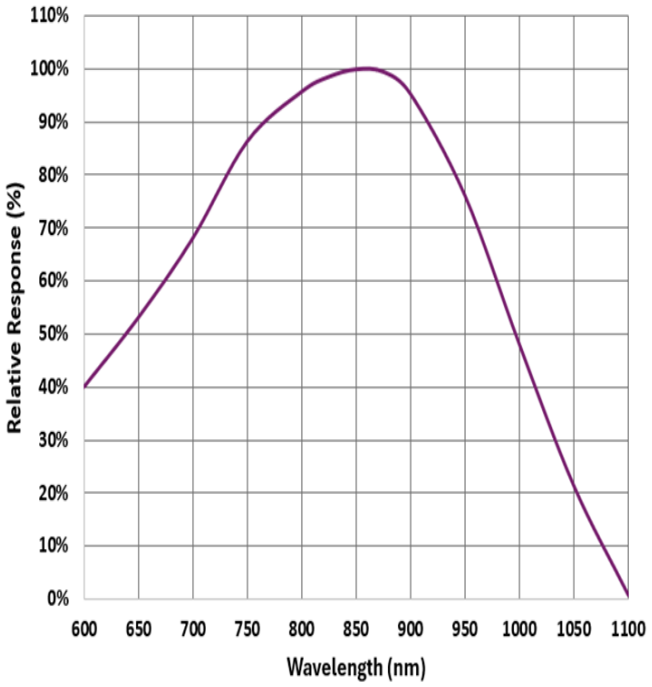
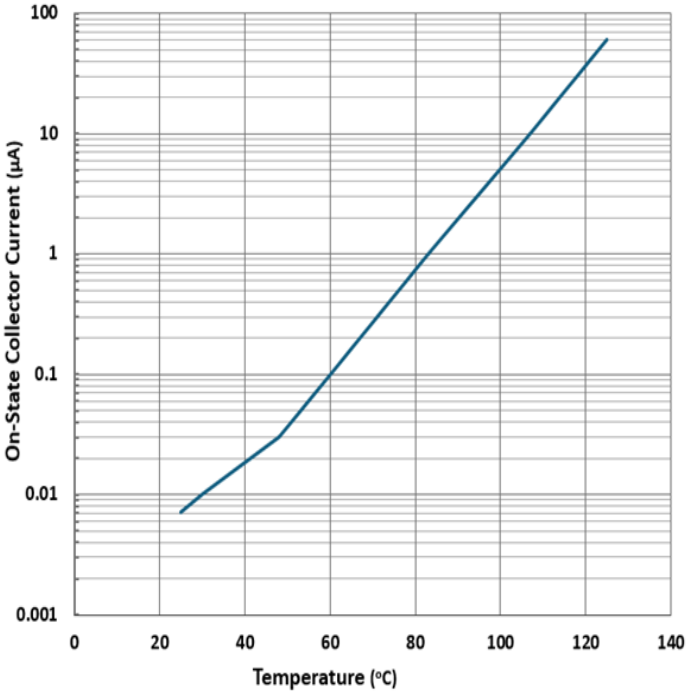
Typical Performance

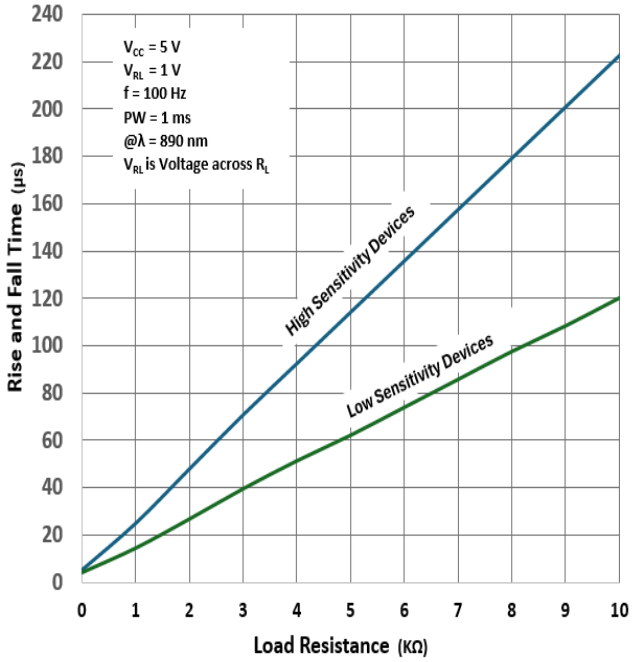
Typical Spectral Response



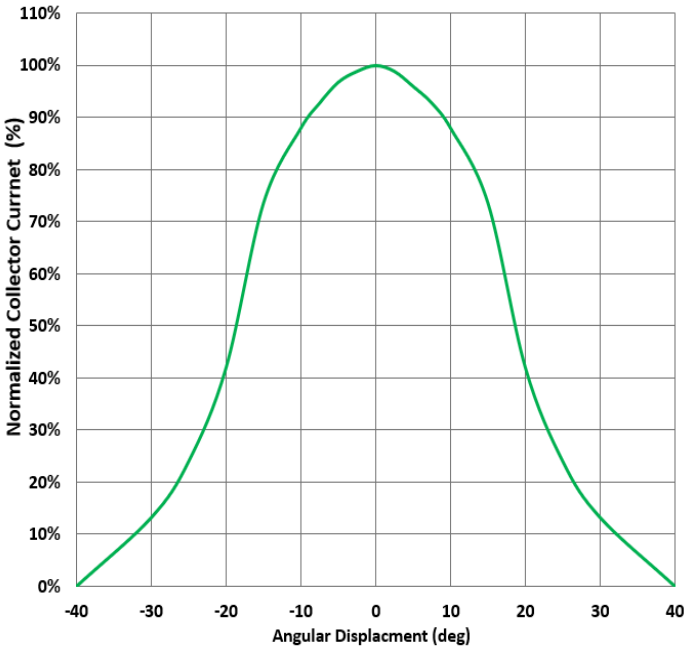
Collector Dark Current vs Temperature



Rise and Fall Times vs Load Resistance



Normalized Collector Current vs Angular Displacement



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