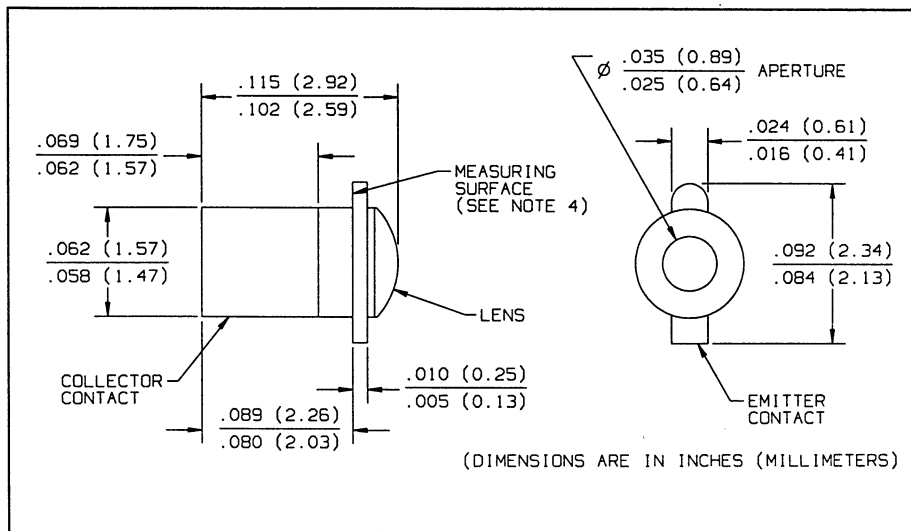
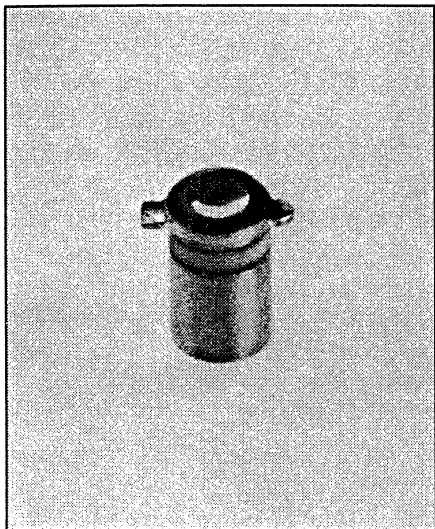


# NPN Silicon Phototransistors

## Types OP641SL, OP642SL, OP643SL, OP644SL



### 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 LED's

### Description

The OP641SL series devices consist of NPN silicon phototransistors mounted in hermetically sealed packages. The narrow receiving angle provides excellent on-axis coupling.

### Replaces

OP600, OP640 series

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

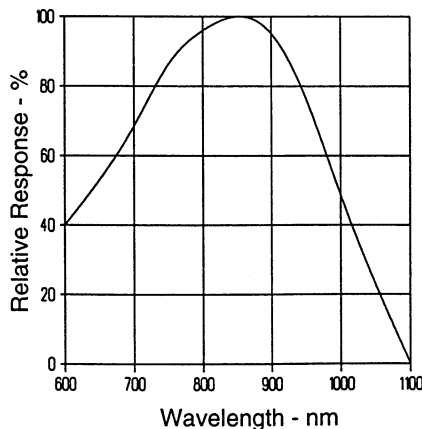
Collector-Emitter Voltage .....	25 V
Emitter-Collector Voltage .....	5.0 V
Storage Temperature Range .....	$-65^\circ\text{C}$ to $+150^\circ\text{C}$
Operating Temperature Range .....	$-65^\circ\text{C}$ to $+125^\circ\text{C}$
Soldering Temperature (5 sec. with soldering iron) .....	$260^\circ\text{C}^{(1)(2)}$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

#### Notes:

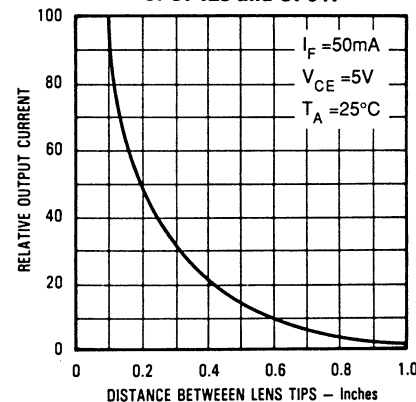
- (1) Refer to Application Bulletin 202 which discusses proper techniques for soldering Pill type devices to PC boards.
- (2) No clean or low solids, RMA flux is recommended. Duration can be extended to 10 sec. max. when flow soldering.
- (3) Derate linearly  $0.5\text{ mW}/^\circ\text{C}$  above  $25^\circ\text{C}$ .
- (4) Junction temperature maintained at  $25^\circ\text{C}$ .
- (5) Light source is an unfiltered tungsten bulb operating at  $CT = 2870\text{ K}$  or equivalent infrared source.

### Typical Performance Curves

Typical Spectral Response



Coupling Characteristics of OP123 and OP641



# Types OP641SL, OP642SL, OP643SL, OP644SL

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	OP641SL OP642SL OP643SL OP644SL	0.5 2.0 4.0 7.0	3.0 5.0 8.0 22.0	mA mA mA mA	$V_{CE} = 5\text{ V}, E_e = 20\text{ mW/cm}^2^{(5)}$
$I_{CEO}$	Collector Dark Current			100	nA	$V_{CE} = 10\text{ V}, E_e = 0$
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage	25			V	$I_C = 100\text{ }\mu\text{A}$
$V_{(BR)ECO}$	Emitter-Collector Breakdown Voltage	5.0			V	$I_E = 100\text{ }\mu\text{A}$
$V_{CE(SAT)}^{(4)}$	Collector-Emitter Saturation Voltage			0.40	V	$I_C = 0.4\text{ mA}, E_e = 20\text{ mW/cm}^2^{(5)}$
$t_r$	Rise Time		15		$\mu\text{s}$	$V_{CC} = 5\text{ V}, I_C = 0.80\text{ mA}$
$t_f$	Fall Time		15		$\mu\text{s}$	$R_L = 1\text{ k}\Omega$ , See Test Circuit

PHOTOSENSORS

## Typical Performance Curves

