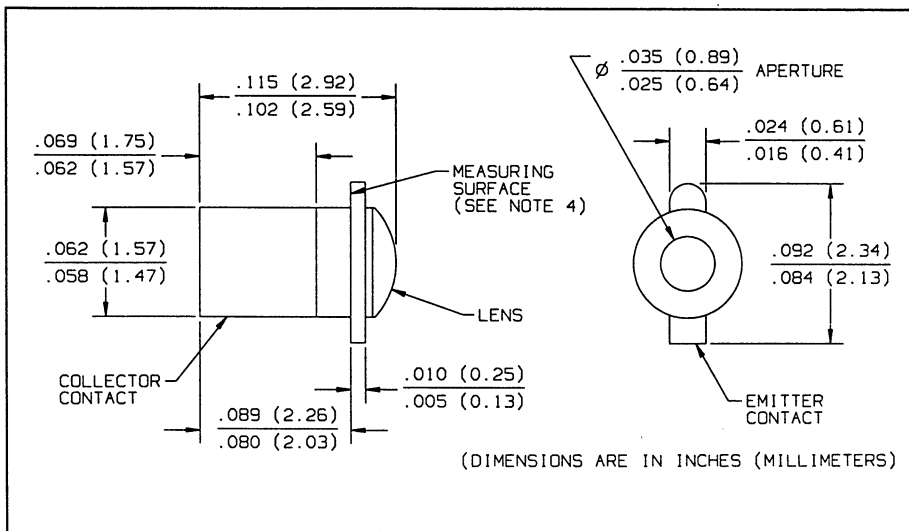
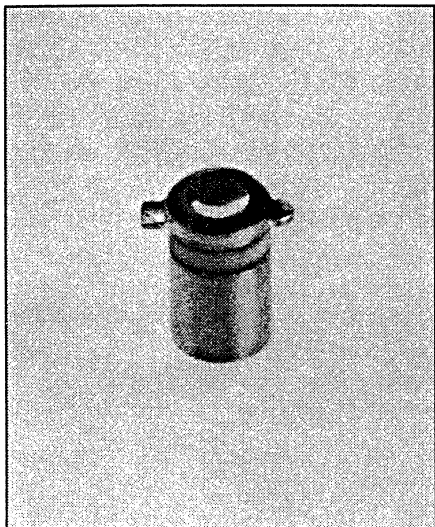


NPN Silicon Phototransistors

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)

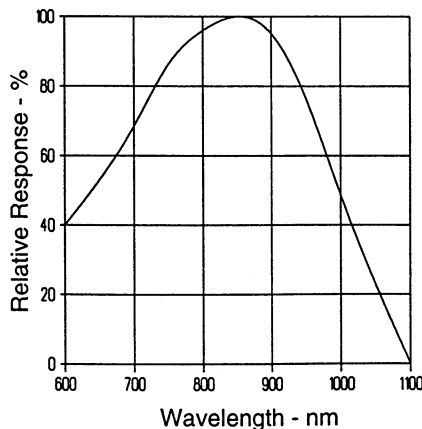
| | |
|--|---|
| Collector-Emitter Voltage | 25 V |
| Emitter-Collector Voltage | 5.0 V |
| Storage Temperature Range | -65°C to $+150^\circ\text{C}$ |
| Operating Temperature Range | -65°C to $+125^\circ\text{C}$ |
| Soldering Temperature (5 sec. with soldering iron) | $260^\circ\text{C}^{(1)(2)}$ |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

Notes:

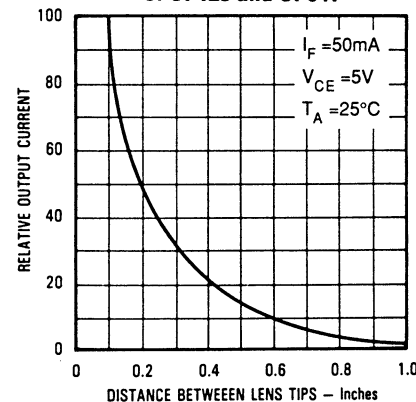
- (1) Refer to Application Bulletin 202 which discusses proper techniques for soldering Pill type devices to PC boards.
- (2) No clean or low solids, RMA flux is recommended. Duration can be extended to 10 sec. max. when flow soldering.
- (3) Derate linearly $0.5\text{ mW}/^\circ\text{C}$ above 25°C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

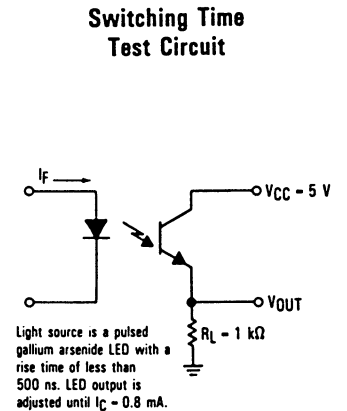
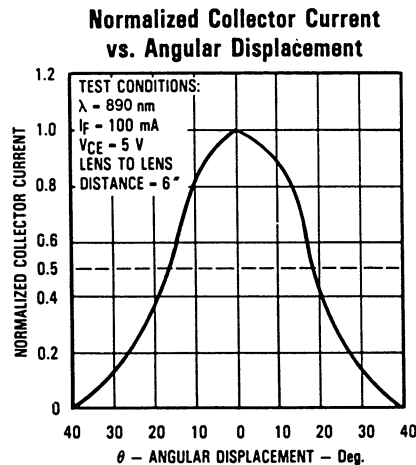
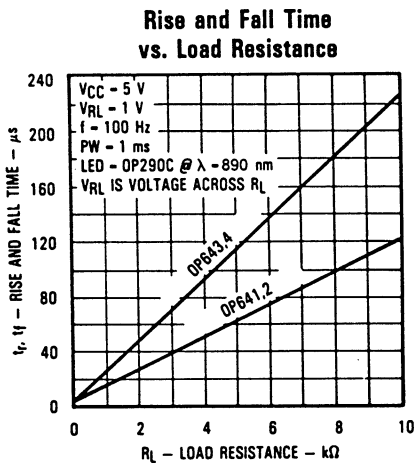
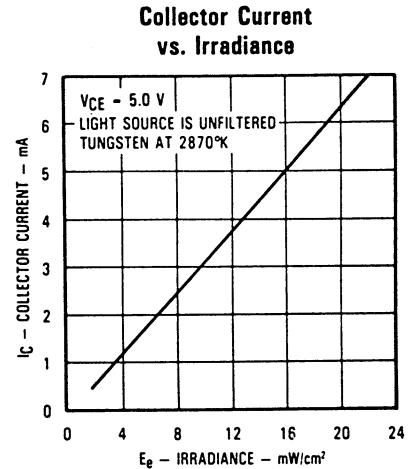
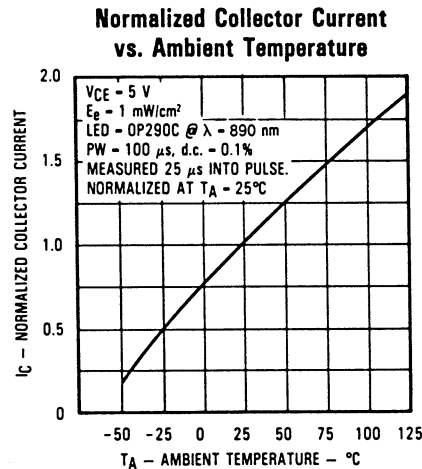
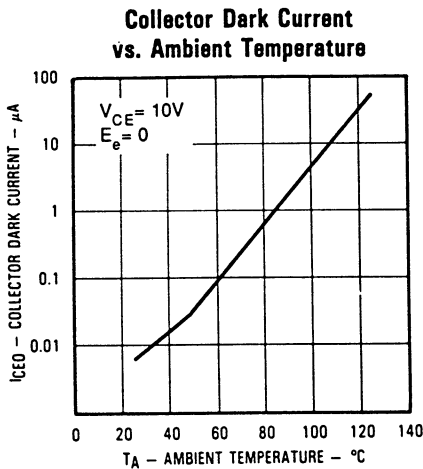


Types OP641SL, OP642SL, OP643SL, OP644SL

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 | | μs | $V_{CC} = 5\text{ V}, I_C = 0.80\text{ mA}$ |
| t_f | Fall Time | | 15 | | μs | $R_L = 1\text{ k}\Omega$, See Test Circuit |

Typical Performance Curves



PHOTOSENSORS