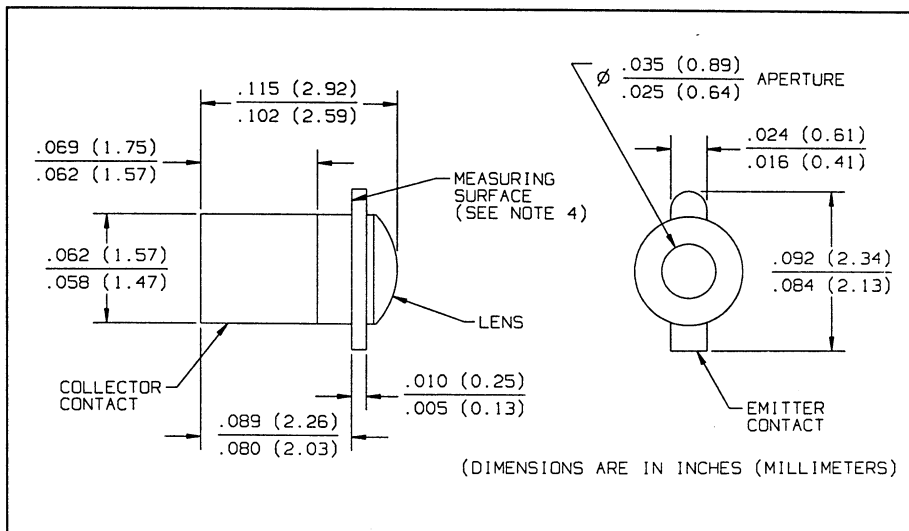
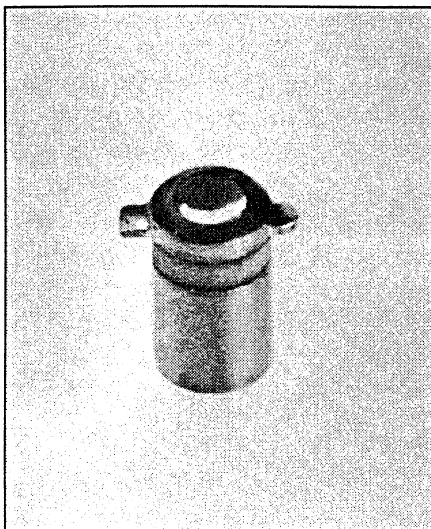


NPN Silicon Photodarlington

Types OP300SL, OP301SL, OP302SL, OP303SL, OP304SL, OP305SL



Features

- Narrow receiving angle
- Variety of sensitivity ranges
- Enhanced temperature range
- High current gain
- Ideal for direct mounting in PC boards
- Mechanically and spectrally matched to the OP123 and OP223 series emitters

Description

The OP300SL through OP305SL series devices consist of NPN silicon photodarlington mounted in hermetically sealed "Pill" type packages. The narrow receiving angle provides excellent on-axis coupling. Photodarlington are normally used in applications where light signal levels are low and more current gain is needed than is possible with phototransistors.

Replaces

OP300 series

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

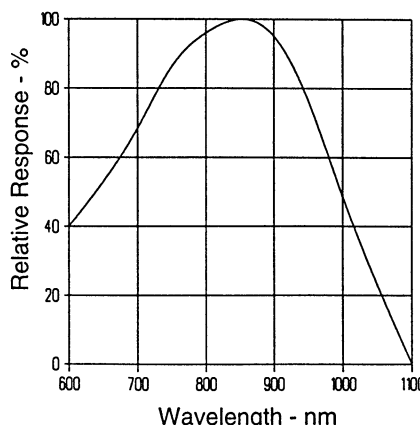
Collector-Emitter Voltage	15.0 V
Emitter-Collector Voltage	5.0 V
Storage Temperature Range	-65°C to $+150^\circ\text{C}$
Operating Temperature Range	-65°C to $+125^\circ\text{C}$
Soldering Temperature (5 sec. with soldering iron)	$260^\circ\text{C}^{(1)(2)}$
Power Dissipation	50 mW ⁽³⁾
Continuous Collector Current	50 mA

Notes:

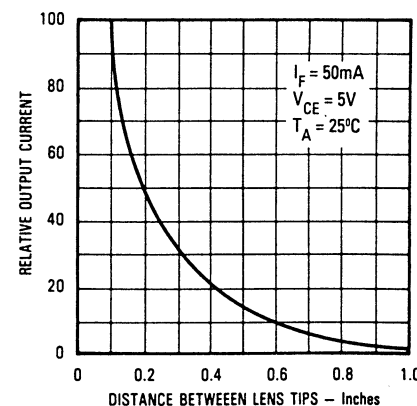
- (1) Refer to Application Bulletin 202 which discusses proper techniques for soldering Pill type devices to PC boards.
- (2) No clean or low solids, RMA flux is recommended. Duration can be extended to 10 sec. max. when flow soldering.
- (3) Derate linearly 0.5 mW/ $^\circ\text{C}$ above 25°C .
- (4) 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 OP300



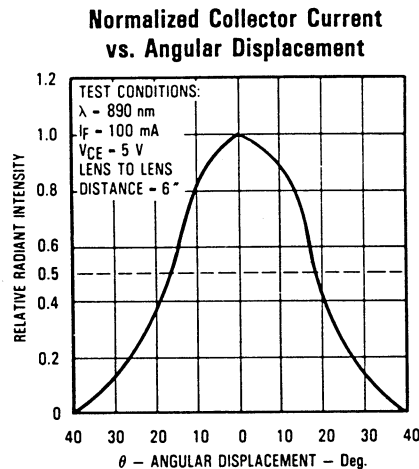
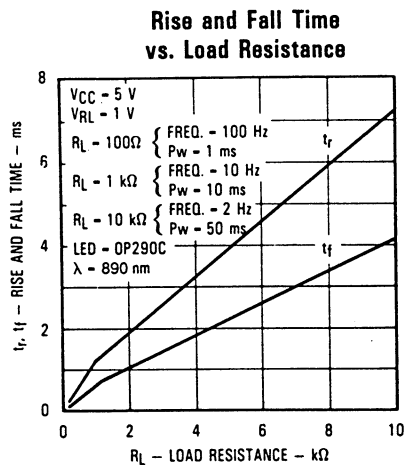
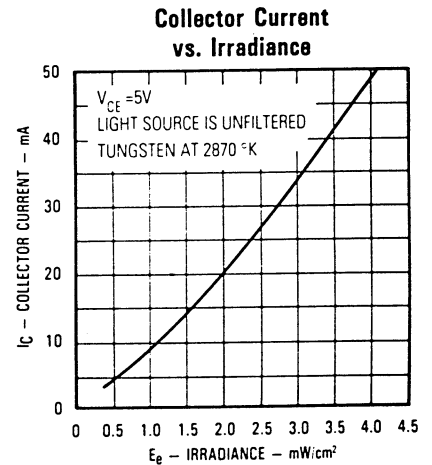
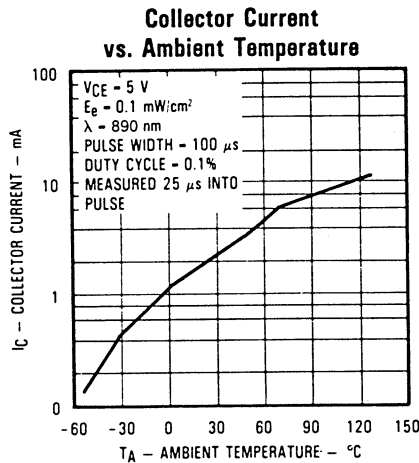
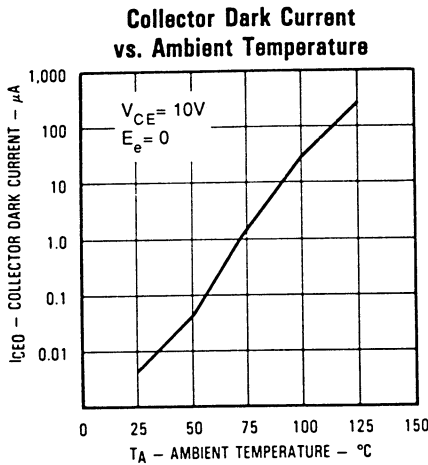
Types OP300SL Thru OP305SL

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	OP300SL	0.8			mA $V_{CE} = 5.0\text{ V}$, $E_e = 1.00\text{ mW/cm}^2^{(5)}$
		OP301SL	0.8		2.4	
		OP302SL	1.8		5.4	
		OP303SL	3.6		12.0	
		OP304SL	7.0		21.0	
		OP305SL	14.0			
I_{CE0}	Collector Dark Current			1.00	μA	$V_{CE} = 10\text{ V}$, $E_e = 0$
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage	15.0			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	OP300SL, OP301SL		1.10	V	$I_C = 0.4\text{ mA}$, $E_e = 1.0\text{ mW/cm}^2^{(5)}$
		OP302SL thru OP305SL		1.10	V	$I_C = 1.0\text{ mA}$, $E_e = 1.0\text{ mW/cm}^2^{(5)}$

PHOTOSENSORS

Typical Performance Curves



Switching Time Test Circuit

