

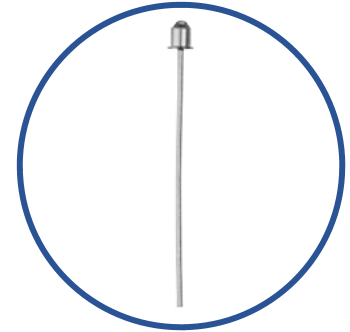
# NPN Silicon Phototransistors

OP515A, OP515B, OP515C, OP515D



## Features:

- Variety of sensitivity ranges
- Coaxial leaded package style
- Small package size for space limited applications



## Description:

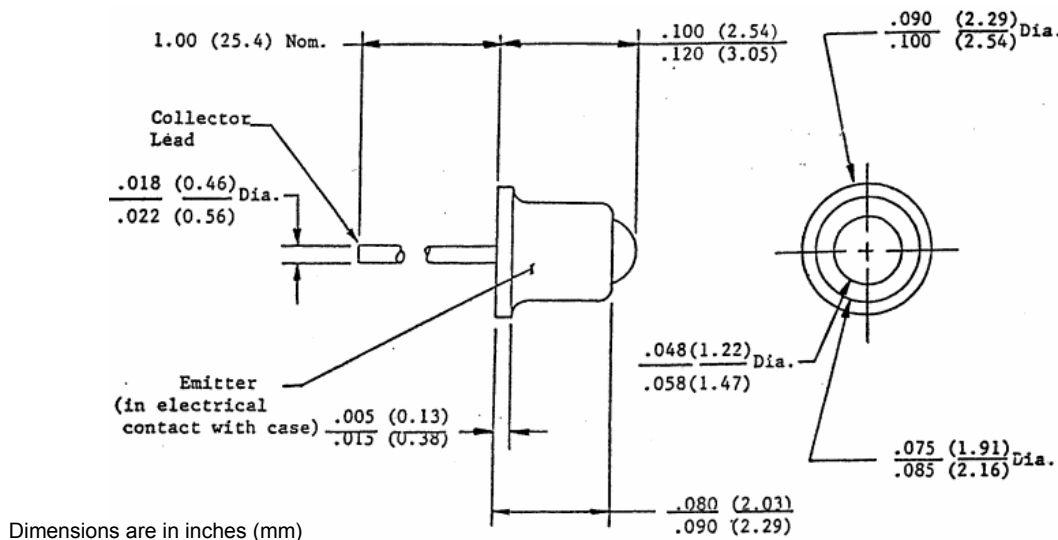
The OP515 series devices consist of NPN silicon phototransistors in a small hermetic package with an extended Collector lead. The narrow receiving angle provides excellent on-axis coupling. This device is 100% production tested using infrared light for close correlation with Optek's GaAs and GaAlAs emitters.

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

Continuous Collector Current	50 mA
Collector-Emitter Voltage	30 V
Emitter-Collector Voltage (OP505 and OP506 series only)	5.0 V
Storage & Operating Temperature Range	$-55^\circ\text{C}$ to $+125^\circ\text{C}$
Lead Soldering Temperature (1/16 inch (1.6 mm) from case for 5 sec. with soldering iron)	$260^\circ\text{C}^{(1)}$
Power Dissipation	100 mW <sup>(2)</sup>

### Notes:

- (1) RMA flux is recommended. Duration can be extended to 10 seconds max. when flow soldering. Maximum 20 grams force may be applied to the leads when soldering.
- (2) Derate linearly 0.71 mW/ $^\circ\text{C}$  above  $25^\circ\text{C}$ .



# NPN Silicon Phototransistors

## OP515A, OP515B, OP515C, OP515D

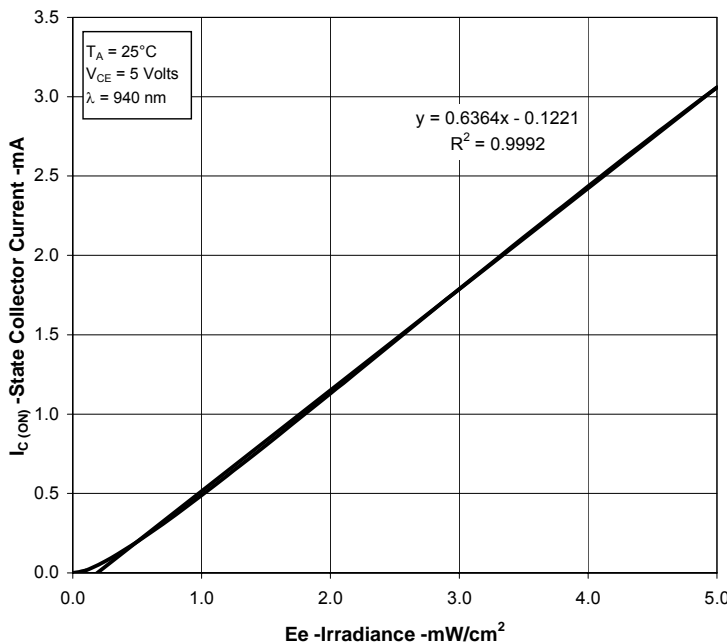


Symbol	Parameter	Min	Typ	Max	Units	Test Conditions
$I_{C(ON)}$	On-State Collector Current	OP515D OP515C OP515B OP515A	0.40 1.00 3.00 6.00			mA $V_{CE} = 5\text{ V}, E_e = 5.0\text{ mW/cm}^2(3)$
$I_{CEO}$	Collector-Dark Current			100	nA	$V_{CE} = 10\text{ V}, E_e = 0(4)$
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage	30			V	$I_C = 100\text{ }\mu\text{A}$
$V_{(BR)ECO}$	Emitter-Collector Breakdown Voltage	5			V	$I_E = 100\text{ }\mu\text{A}$
$V_{CE(SAT)}$	Collector-Emitter Saturation Voltage	OP515		0.40	V	$I_C = 400\text{ }\mu\text{A}, E_e = 5.0\text{ mW/cm}^2(3)$
$\Delta I_C/\Delta T$	Relative $I_C$ Changes with Temperature OP505A-D and OP506A-D series		1.00		%/°C	$V_{CE} = 5\text{ V}, E_e = 1.0\text{ mW/cm}^2$
$I_{ECO}$	Emitter-Reverse Current			100	$\mu\text{A}$	$V_{EC} = 0.4\text{ V}$

**Notes:**

- (1)  $E_{e(APT)}$  is a measurement of the average apertured radiant energy incident upon a sensing area 0.250" (6.35mm) in diameter and perpendicular to and centered to the mechanical axis of the emitting surface at a distance of 0.466" (11.84mm).  $E_{e(APT)}$  is not necessarily uniform within the measured area.
- (2) Derating Linearly 0.71 mW/°C above 25°C
- (3) Light source is an unfiltered GaAs LED with a peak emission wavelength of 935 nm and a radiometric intensity level which varies less than 10% over the entire lens surface of the phototransistor being tested.
- (4) To calculate typical collector dark current in nA, use the formula  $I_{CED} = 10^{(0.040T_A - 3.4)}$  where  $T_A$  is ambient temperature in °C.

**On-State Collector Current Vs Irradiance**



**Collector Current Vs Collector to Emitter Voltage vs Irradiance**

