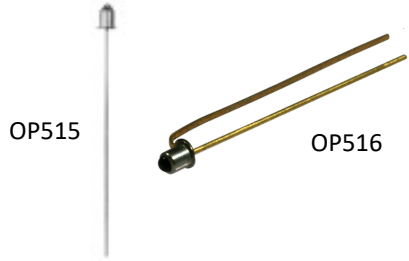


# NPN Silicon Phototransistors

OP515A, OP515B, OP515C, OP515D,  
OP516A, OP516B, OP516C, OP516D



## Features:

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

## Description:

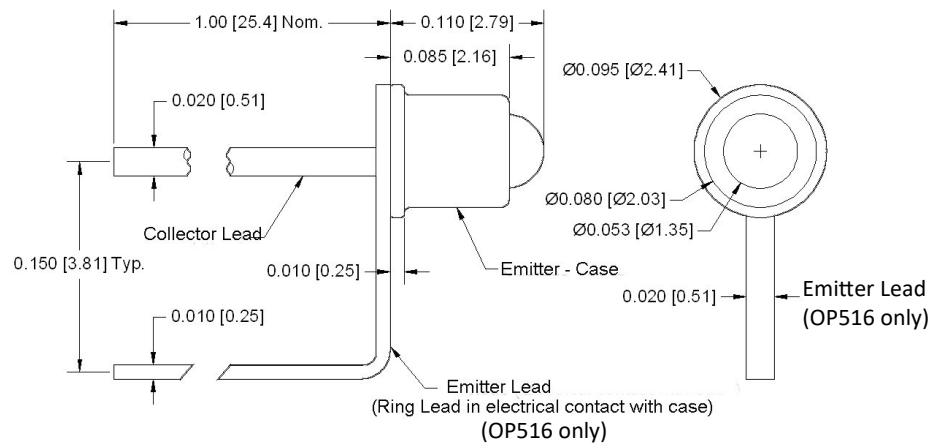
Each device in the OP515 and OP516 series consists of NPN silicon phototransistors in a small hermetic package with an extended Collector lead. The narrow receiving angle provides excellent on-axis coupling. This device is 100% production tested using infrared light for close correlation with Optek's GaAs and GaAlAs emitters.

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

Continuous Collector Current	50 mA
Collector-Emitter Voltage	30V
Emitter-Collector Voltage (OP505 and OP506 series only)	5.0 V
Storage & Operating Temperature Range	-55 °C to + 125 °C
Lead Soldering Temperature (1/16 inch (1.6 mm) from case for 5 sec. with soldering iron)	260 °C <sup>(1)</sup>
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/°C above 25 °C.



## 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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# NPN Silicon Phototransistors

OP515A, OP515B, OP515C, OP515D,  
OP516A, OP516B, OP516C, OP516D

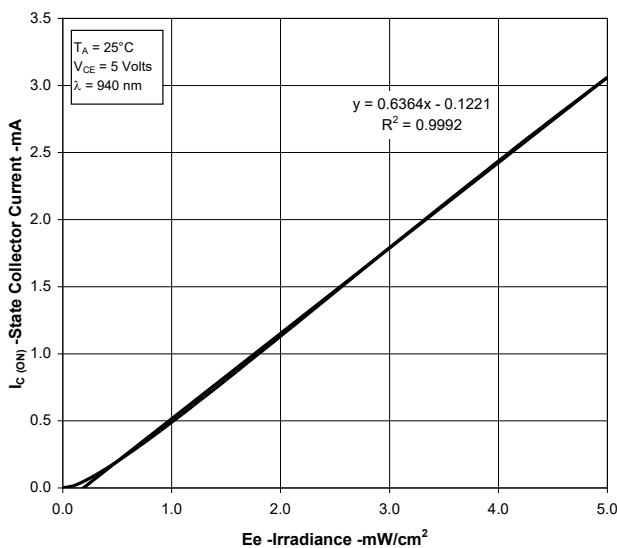


SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS	TEST CONDITIONS
$I_{C(ON)}$	On-State Collector Current	OP515D/OP516D	0.40			$V_{CE} = 5\text{ V}, E_e = 5.0\text{ mW/cm}^{2(3)}$
		OP515C/OP516C	1.00			
		OP515B/OP516B	3.00			
		OP515A/OP516A	6.00			
$I_{CEO}$	Collector-Dark Current			100	nA	$V_{CE} = 10\text{ V}, E_e = 0^{(4)}$
$V_{(BR)CEO}$	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			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	$\mu\text{A}$	$V_{EC} = 0.4\text{ V}$

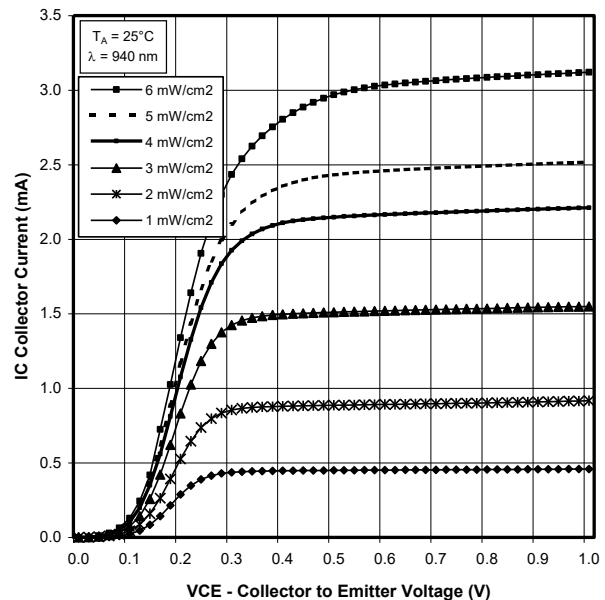
Notes:

- $E_{e(APT)}$  is a measurement of the average apertured radiant energy incident upon a sensing area 0.250" (6.35 mm) in diameter and perpendicular to and centered to the mechanical axis of the emitting surface at a distance of 0.466" (11.84 mm).  $E_{e(APT)}$  is not necessarily uniform within the measured area.
- Derating linearly 0.71 mW/°C above 25 °C
- 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.
- To calculate typical collector dark current in nA, use the formula  $I_{CEO} = 10^{(0.040T_A - 3.4)}$  where  $T_A$  is ambient temperature in °C.

On-State Collector Current Vs Irradiance



Collector Current Vs Collector to Emitter Voltage vs Irradiance



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