



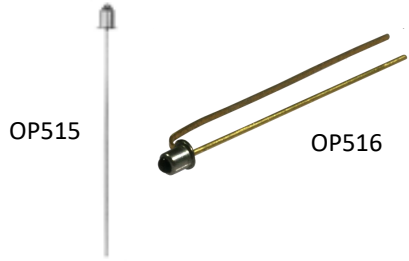
**THE DATASHEET OF
OP516A**



NPN Silicon Phototransistors

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

Obsolete (OP516D)



Features:

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

Description:

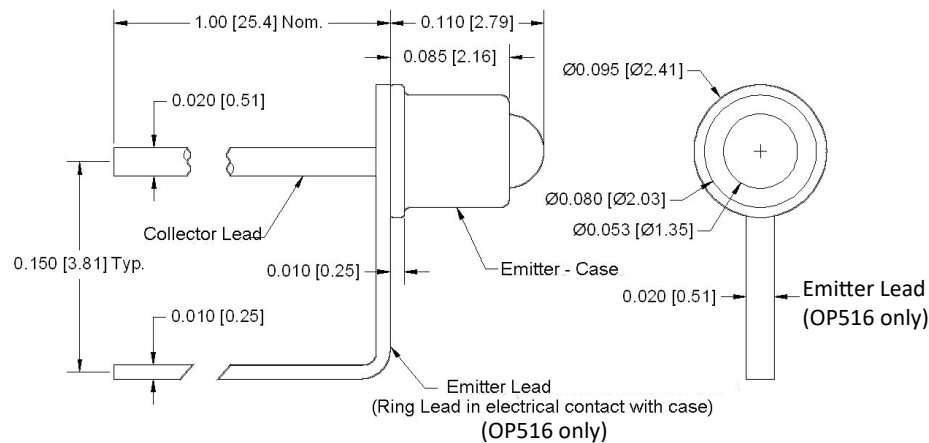
Each device in the OP515 and OP516 series consists of NPN silicon phototransistors in a small hermetic package with an extended Collector lead. The narrow receiving angle provides excellent on-axis coupling. This device is 100% production tested using infrared light for close correlation with Optek's 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 | 30 V |
| Emitter-Collector Voltage (OP515 and OP516 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 ⁽¹⁾ |
| Power Dissipation | 100 mW ⁽²⁾ |

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.

TT Electronics | OPTEK Technology
2900 E. Plano Pkwy, Plano, TX 75074 | Ph: +1 972 323 2200
www.ttelectronics.com | sensors@ttelectronics.com

NPN Silicon Phototransistors



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OP516A, OP516B, OP516C

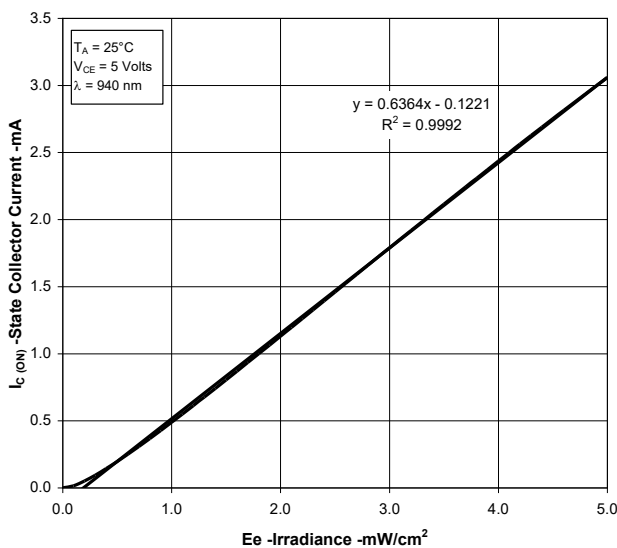
Obsolete (OP516D)

| SYMBOL | PARAMETER | MIN | TYP | MAX | UNITS | TEST CONDITIONS | |
|-----------------------|---|---------------|------|-----|---------------|--|---|
| $I_{C(ON)}$ | On-State | OP515D | 0.40 | - | - | $V_{CE} = 5\text{ V}, E_e = 5.0\text{ mW/cm}^2(3)$ | |
| | Collector | OP515C/OP516C | 1.00 | - | - | | |
| | Current | 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 | OP515/OP516 | - | - | 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 OP515A-D and OP516A-C series | - | 1.00 | - | %/°C | $V_{CE} = 5\text{ V}, E_e = 1.0\text{ mW/cm}^2$ | |
| I_{ECO} | Emitter-Reverse Current | - | - | 100 | μA | $V_{EC} = 0.4\text{ V}$ | |

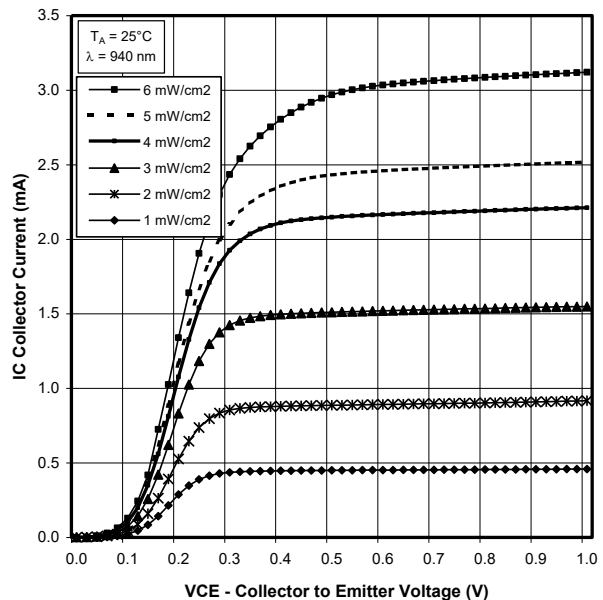
Notes:

- $E_{e(APT)}$ 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 $I_{CED} = 10^{(0.040T_A - 3.4)}$ where T_A is ambient temperature in °C.

On-State Collector Current Vs Irradiance



Collector Current Vs Collector to Emitter Voltage vs Irradiance





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www.ttelectronics.com | sensors@ttelectronics.com

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