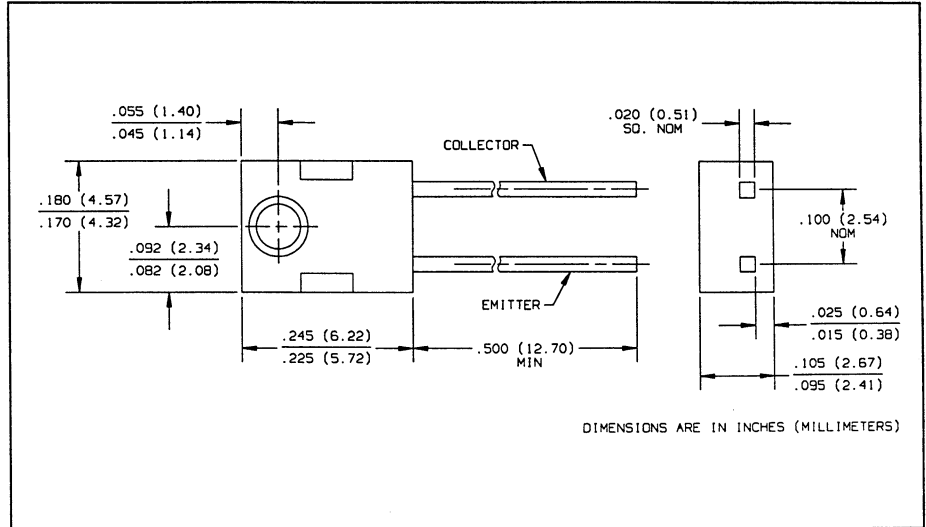
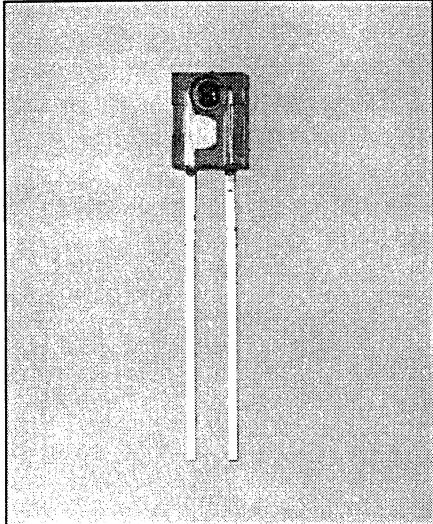


# NPN Silicon Photodarlington

## Types OP565A, OP565B, OP565C



### Features

- Variety of sensitivity ranges
- High current gain
- Side-looking package for space limited applications

### Description

The OP565 series consist of NPN silicon photodarlington transistors molded in green-tinted epoxy packages. The lensing effect allows an acceptance half angle of  $28^\circ$  measured from the optical axis to the half power point. Photodarlington devices are normally used in applications where light signal levels are low and more current gain is needed than is possible with phototransistors. The side-looking package is designed for easy PC board mounting of slotted optical switches or optical interrupt detectors. These devices are 100% production tested using infrared light for close correlation with Optek GaAs and GaAlAs emitters.

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

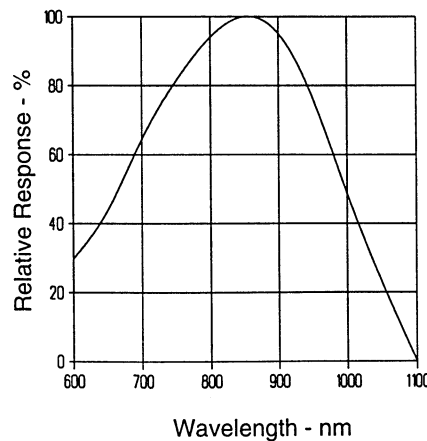
|  |   |
|--|---|
| Collector-Emitter Voltage .....  | 15.0 V                                      |
| Emitter-Collector Voltage .....  | 5.0 V                                       |
| Storage and Operating Temperature Range .....  | $-40^\circ\text{C}$ to $+100^\circ\text{C}$ |
| Lead Soldering Temperature [1/16 inch (1.6 mm) from case for 5 sec. with soldering iron] ..... | $260^\circ\text{C}^{(1)}$                   |
| Power Dissipation .....  | $100\text{ mW}^{(2)}$                       |

#### Notes:

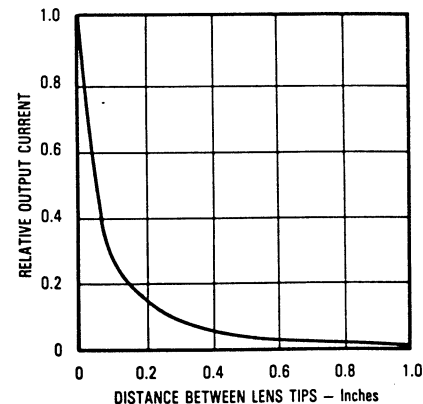
- (1) RMA flux is recommended. Duration can be extended to 10 sec. max. when flow soldering. Max. 20 grams force may be applied to leads when soldering.
- (2) Derate linearly  $1.33\text{ mW}/^\circ\text{C}$  above  $25^\circ\text{C}$ .
- (3) Light source is an unfiltered GaAs LED with a peak emission wavelength of 930 nm and a radiometric intensity level which varies less than 10% over the entire lens surface of the phototransistor being tested.

### Typical Performance Curves

Typical Spectral Response



Coupling Characteristics  
OP145 and OP565



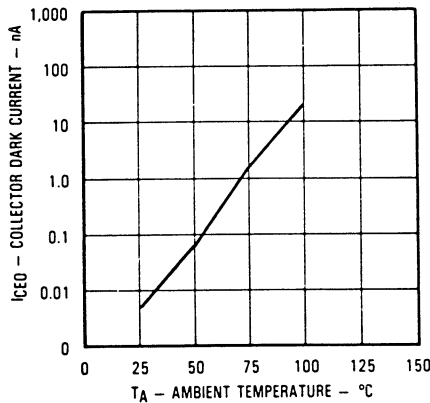
# Types OP565A, OP565B, OP565C

Electrical Characteristics ( $T_A = 25^\circ\text{C}$  unless otherwise noted)

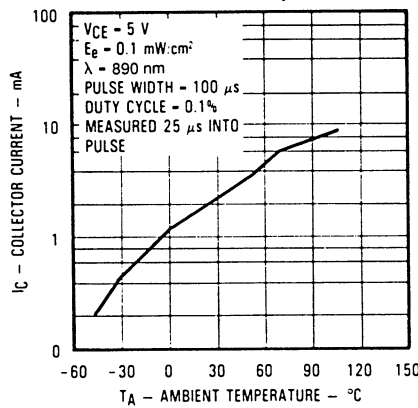
| SYMBOL        | PARAMETER                            | MIN    | TYP | MAX  | UNITS | TEST CONDITIONS                                    |
|---------------|--------------------------------------|--------|-----|------|-------|--|
| $I_{C(ON)}$   | On-State Collector Current           | OP565C | 1.1 |      | mA    | $V_{CE} = 2\text{ V}, E_e = 0.1\text{ mW/cm}^2(3)$ |
|               |                                      | OP565B | 3.3 | 9.8  | mA    |  |
|               |                                      | OP565A | 6.6 |      | mA    |  |
| $I_{CEO}$     | Collector Dark Current               |        |     | 100  | nA    | $V_{CE} = 10\text{ V}, E_e = 0$                    |
| $V_{(BR)CEO}$ | Collector-Emitter Breakdown Voltage  | 15     |     |      | V     | $I_C = 1\text{ mA}, E_e = 0$                       |
| $V_{(BR)ECO}$ | Emitter-Collector Breakdown Voltage  | 5      |     |      | V     | $I_E = 100\text{ }\mu\text{A}, E_e = 0$            |
| $V_{CE(SAT)}$ | Collector-Emitter Saturation Voltage |        |     | 1.10 | V     | $I_C = 0.4\text{ mA}, E_e = 0.1\text{ mW/cm}^2(3)$ |

## Typical Performance Curves

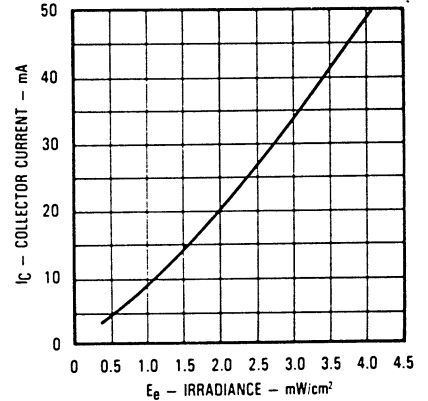
Collector Dark Current vs. Ambient Temperature



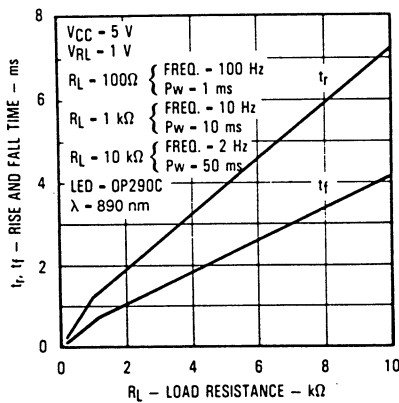
Collector Current vs. Ambient Temperature



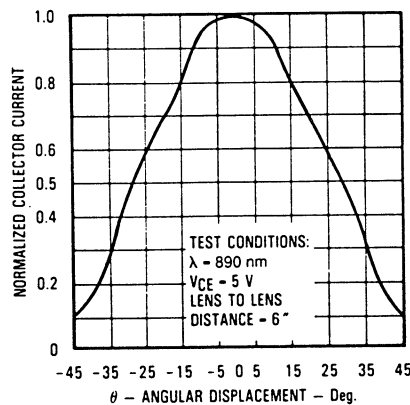
Collector Current vs. Irradiance



Rise and Fall Time vs. Load Resistance



Normalized Collector Current vs. Angular Displacement



Switching Time Test Circuit

