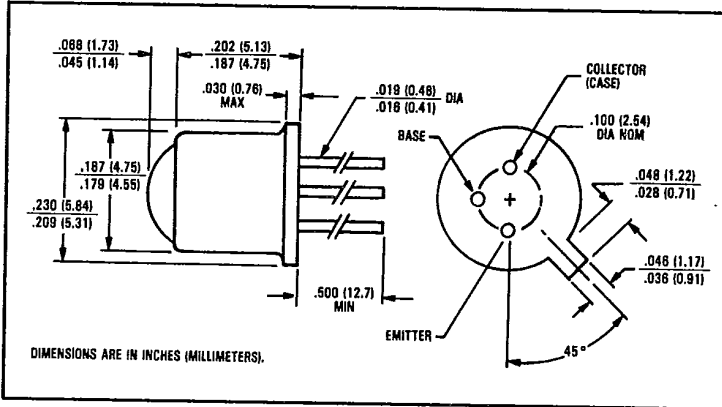
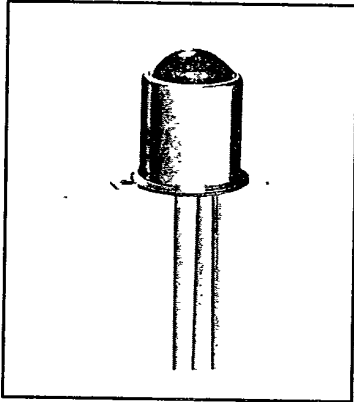


# NPN Silicon Phototransistors

## Types OP800, OP801, OP802, OP803, OP804, OP805



**Features**

- Lensed for high sensitivity
- Wide range of collector currents
- TO-18 hermetically sealed package

**Description**

The OP800 through OP805 each consist of an NPN silicon phototransistor mounted in a lensed, hermetically sealed, TO-18 package. TO-18 packages offer high power dissipation, and superior hostile environment operation. The lensing effect allows an acceptance half angle of 10° measured from the optical axis to the half power point. The base lead is bonded to enable conventional transistor biasing. This series is mechanically and spectrally matched to the OP130 and OP231 series of infrared emitting diodes.

**Absolute Maximum Ratings (T<sub>A</sub> = 25°C unless otherwise noted)**

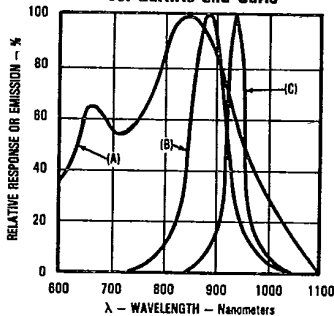
Collector-Base Voltage .....	30 V
Collector-Emitter Voltage .....	30 V
Emitter-Base Voltage .....	5.0 V
Emitter-Collector Voltage .....	5.0 V
Storage Temperature Range .....	-65°C to +150°C
Operating Temperature Range .....	-65°C to +125°C
Lead Soldering Temperature (1/16 inch (1.6 mm) from case for 5 sec. with soldering iron) <sup>(1)</sup> .....	240°C
Power Dissipation .....	250 mW <sup>(2)</sup>

**Notes:**

- (1) RMA flux is recommended. Duration can be extended to 10 sec. max. when wave soldering.
- (2) Derate linearly 2.5 mW/°C above 25°C.
- (3) Junction temperature maintained at 25°C.
- (4) Light source is an unfiltered tungsten bulb operating at CT = 2870°K or equivalent infrared source.

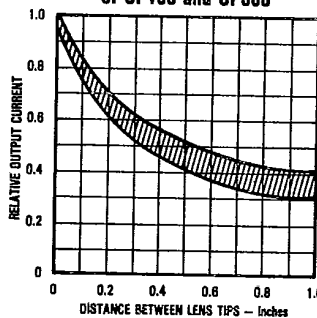
**Typical Performance Curves**

**Spectral Response of OP800-OP805 vs. GaAlAs and GaAs**



Test Conditions (LED): T<sub>A</sub> = T<sub>J</sub> = 25°C, I<sub>c</sub> = 100 mA, DC = 0.1%, PW = 100 μs  
Peak Wavelength - λ<sub>p</sub>: (A) XSTR - 850 ± 30 nm, (B) LED GaAlAs - 875 ± 20 nm, (C) LED GaAs - 930 ± 15 nm

**Coupling Characteristics of OP130 and OP800**



Types OP800, OP801, OP802, OP803, OP804, OP805

T-41-61

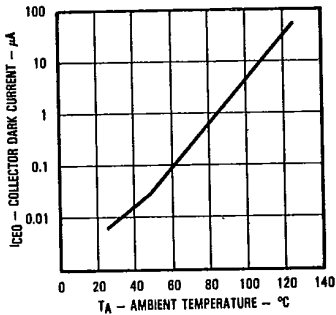
Electrical Characteristics (T<sub>A</sub> = 25°C unless otherwise noted)

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions	
I <sub>C(ON)</sub> <sup>(2)</sup>	On-State Collector Current	OP800	0.60			mA	V <sub>CE</sub> = 5.0 V, E <sub>B</sub> = 5.0 mW/cm <sup>2(4)</sup>
		OP801	0.50		3.0	mA	V <sub>CE</sub> = 5.0 V, E <sub>B</sub> = 5.0 mW/cm <sup>2(4)</sup>
		OP802	2.0		5.0	mA	V <sub>CE</sub> = 5.0 V, E <sub>B</sub> = 5.0 mW/cm <sup>2(4)</sup>
		OP803	4.0		8.0	mA	V <sub>CE</sub> = 5.0 V, E <sub>B</sub> = 5.0 mW/cm <sup>2(4)</sup>
		OP804	7.0		22	mA	V <sub>CE</sub> = 5.0 V, E <sub>B</sub> = 5.0 mW/cm <sup>2(4)</sup>
		OP805	15.0			mA	V <sub>CE</sub> = 5.0 V, E <sub>B</sub> = 5.0 mW/cm <sup>2(4)</sup>
I <sub>CEO</sub>	Collector Dark Current			100	nA	V <sub>CE</sub> = 10.0 V, E <sub>B</sub> = 0	
V <sub>(BR)CEO</sub>	Collector-Emitter Breakdown Voltage	30			V	I <sub>C</sub> = 100 μA	
V <sub>(BR)ECO</sub>	Emitter-Collector Breakdown Voltage	5.0			V	I <sub>C</sub> = 100 μA	
V <sub>CE(SAT)</sub>	Collector-Emitter Saturation Voltage			0.4	V	I <sub>C</sub> = 0.40 mA, E <sub>B</sub> = 5.0 mW/cm <sup>2(4)</sup>	
t <sub>r</sub>	Rise Time		2.0		μs	V <sub>CC</sub> = 5.0 V, I <sub>C</sub> = 0.80 mA	
t <sub>f</sub>	Fall Time		2.0		μs	R <sub>L</sub> = 100Ω, See Test Circuit	

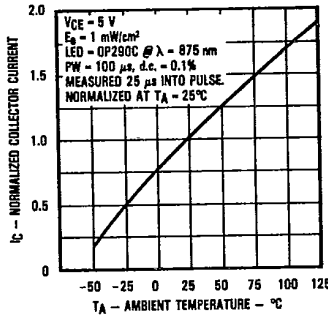


Typical Performance Curves

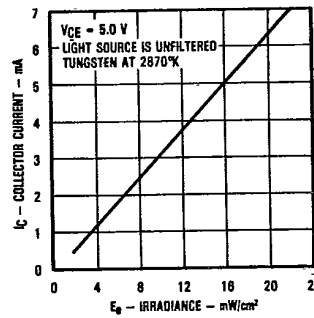
Collector Dark Current vs. Ambient Temperature



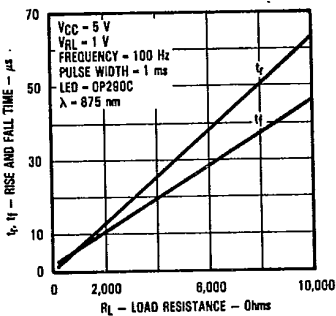
Normalized Collector Current vs. Ambient Temperature



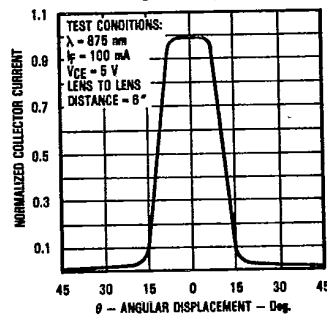
Collector Current vs. Irradiance



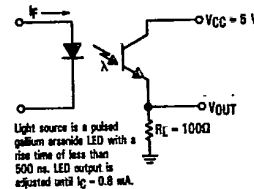
Rise and Fall Time vs. Load Resistance



Normalized Collector Current vs. Angular Displacement



Switching Time Test Circuit



TRW reserves the right to make changes at any time in order to improve design and to supply the best product possible.

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