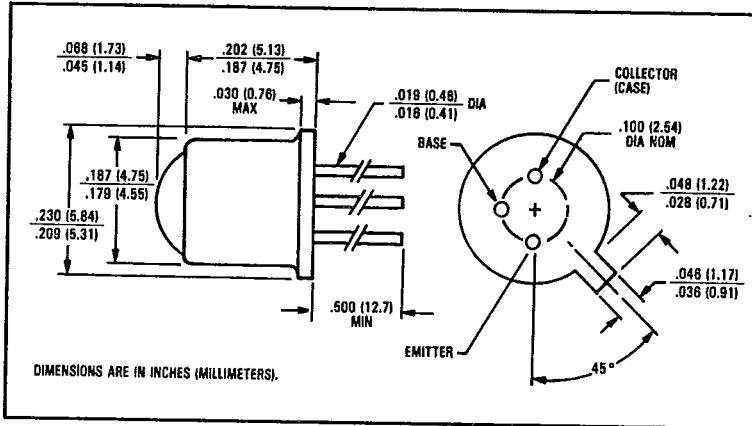
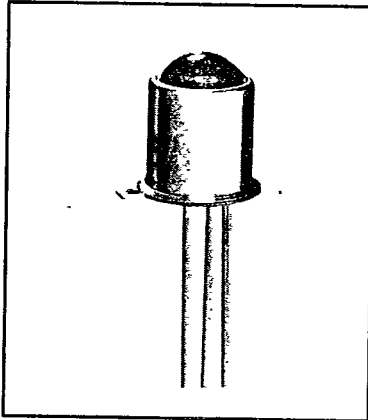


NPN Silicon Phototransistors

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

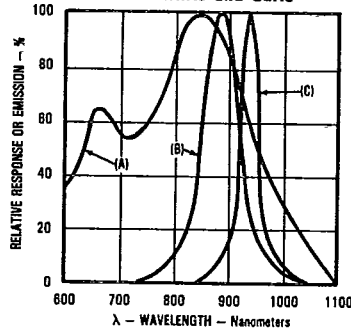
Collector-Base Voltage	30 V
Collector-Emitter Voltage	30 V
Emitter-Base Voltage	5.0 V
Emitter-Collector Voltage	5.0 V
Storage Temperature Range	-65°C to $+150^\circ\text{C}$
Operating Temperature Range	-65°C to $+125^\circ\text{C}$
Lead Soldering Temperature (1/16 inch [1.6 mm] from case for 5 sec. with soldering iron) ⁽¹⁾	240°C
Power Dissipation	250 mW ⁽²⁾

Notes:

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

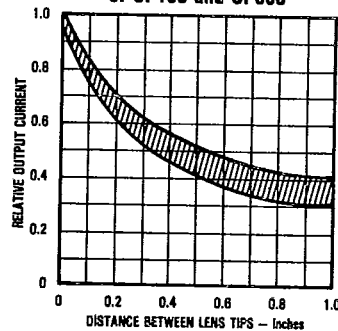
Typical Performance Curves

Spectral Response of OP800-OP805 vs. GaAlAs and GaAs



Test Conditions (LED): $T_A = T_J = 25^\circ\text{C}$, $I_F = 100 \text{ mA}$,
 $DC = 0.1\%$, $PW = 100 \mu\text{s}$
Peak Wavelength - λ_p : (A) NSTR - $850 \pm 30 \text{ nm}$, (B) LED
GaAlAs - $875 \pm 20 \text{ nm}$, (C) LED GaAs - $930 \pm 15 \text{ nm}$

Coupling Characteristics of OP130 and OP800



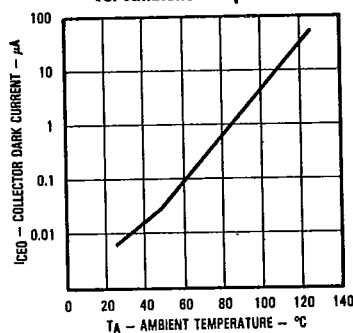
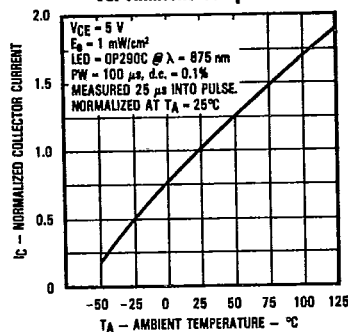
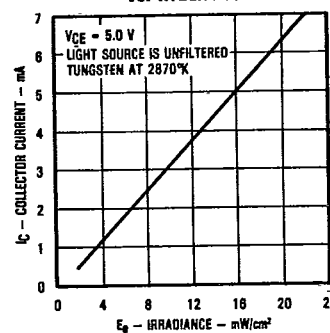
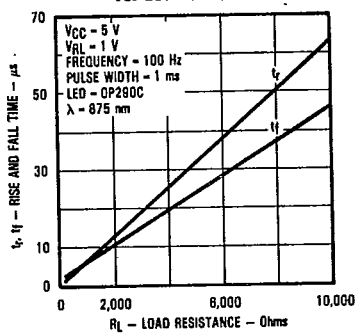
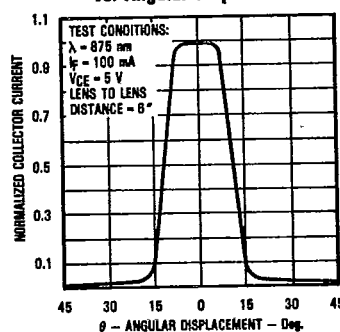
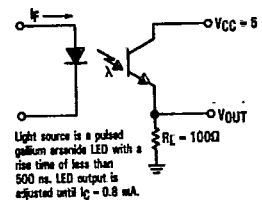
Types OP800, OP801, OP802, OP803, OP804, OP805

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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	OP800	0.60		mA	$V_{CE} = 5.0\text{ V}, E_g = 5.0\text{ mW/cm}^2$
		OP801	0.50	3.0	mA	$V_{CE} = 5.0\text{ V}, E_g = 5.0\text{ mW/cm}^2$
		OP802	2.0	5.0	mA	$V_{CE} = 5.0\text{ V}, E_g = 5.0\text{ mW/cm}^2$
		OP803	4.0	8.0	mA	$V_{CE} = 5.0\text{ V}, E_g = 5.0\text{ mW/cm}^2$
		OP804	7.0	22	mA	$V_{CE} = 5.0\text{ V}, E_g = 5.0\text{ mW/cm}^2$
		OP805	15.0		mA	$V_{CE} = 5.0\text{ V}, E_g = 5.0\text{ mW/cm}^2$
I_{CED}	Collector Dark Current			100	nA	$V_{CE} = 10.0\text{ V}, E_g = 0$
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage	30			V	$I_C = 100\text{ }\mu\text{A}$
$V_{(BR)ECO}$	Emitter-Collector Breakdown Voltage	5.0			V	$I_E = 100\text{ }\mu\text{A}$
$V_{CE(SAT)}$	Collector-Emitter Saturation Voltage			0.4	V	$I_C = 0.40\text{ mA}, E_g = 5.0\text{ mW/cm}^2$
t_r	Rise Time		2.0		μs	$V_{CC} = 5.0\text{ V}, I_C = 0.80\text{ mA}$
t_f	Fall Time		2.0		μs	$R_L = 100\Omega$, See Test Circuit

Typical Performance Curves

Collector Dark Current
vs. Ambient TemperatureNormalized Collector Current
vs. Ambient TemperatureCollector Current
vs. IrradianceRise and Fall Time
vs. Load ResistanceNormalized Collector Current
vs. Angular DisplacementSwitching 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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