

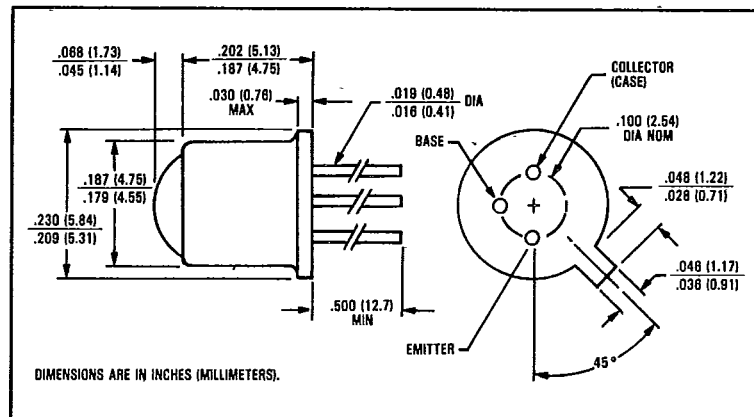
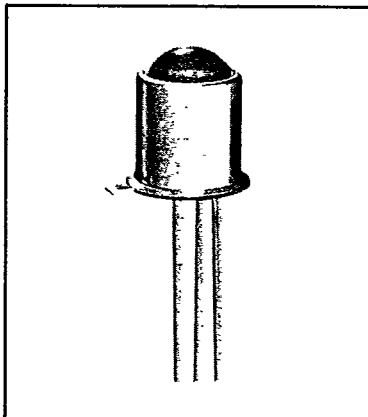
Optoelectronics Division
TRW Electronic Components Group

Product Bulletin 6144
January 1985

TRW

NPN Silicon Phototransistors

Types OP841, OP842, OP843, OP844, OP845



Features

- Collector currents are binned to minimums only
- Lensed for high sensitivity
- TO-18 hermetically sealed package

Description

The OP841 through OP845 each consist of an NPN silicon phototransistor mounted in a lensed, hermetically sealed, TO-18 package. 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. Except for minor differences in collector current ranges and minimum range binning only, this series is identical to the OP800 series and is mechanically and spectrally matched to the OP130 and OP231 series of infrared emitting diodes.

Absolute Maximum Ratings (T_A = 25°C unless otherwise noted)

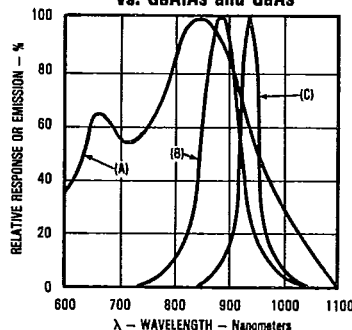
Collector-Base Voltage	30 V
Collector-Emitter Voltage	30 V
Emitter-Base Voltage	5.0 V
Emitter-Collector Voltage	5.0 V
Storage Temperature Range	-65°C to +150°C
Operating Temperature Range	-65°C to +125°C
Lead Soldering Temperature (1/16 inch [1.6 mm] from case for 5 sec. with soldering iron) ⁽¹⁾	240°C
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/°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.

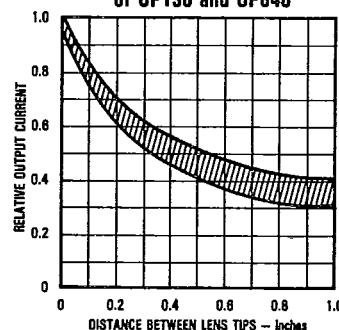
Typical Performance Curves

Spectral Response of OP841-OP845 vs. GaAlAs and GaAs



Test Conditions (LED): T_A = T_J = 25°C, I_F = 100 mA,
DC = 0.1%, PW = 100 μs
Peak Wavelength - λ_p: (A) XSTR - 850 ± 30 nm, (B) LED
GaAlAs - 875 ± 20 nm, (C) LED GaAs - 930 ± 15 nm

Coupling Characteristics of OP130 and OP840



Types OP841, OP842, OP843, OP844, OP845

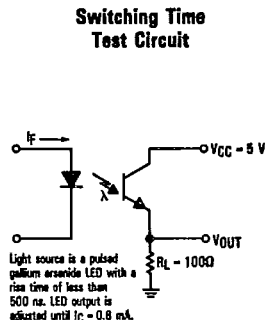
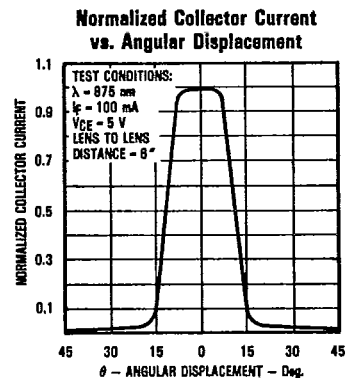
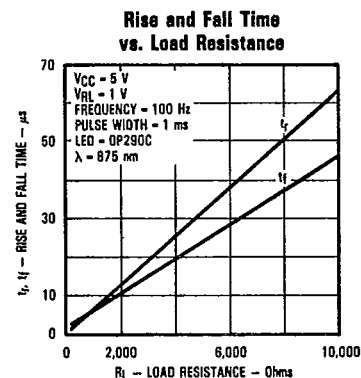
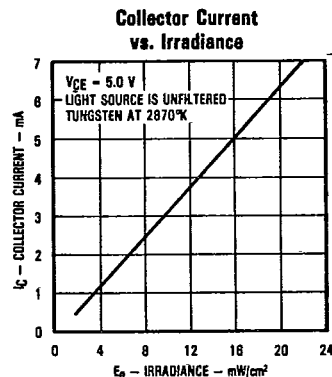
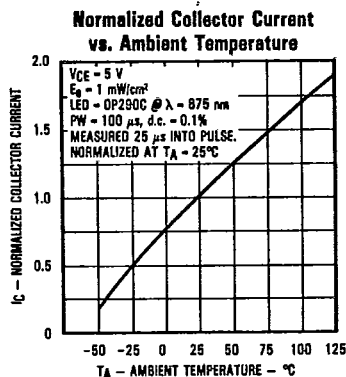
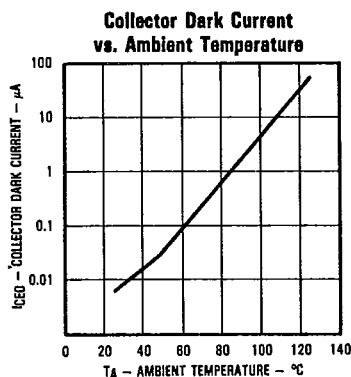
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Electrical Characteristics ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
$I_{C(ON)}^{(1)}$	On-State Collector Current	OP841 0.50 OP842 2.0 OP843 5.0 OP844 7.0 OP845 15.0			mA	$V_{CE} = 5.0\text{ V}$, $E_g = 5.0\text{ mW/cm}^2$ ⁽⁴⁾ $V_{CE} = 5.0\text{ V}$, $E_g = 5.0\text{ mW/cm}^2$ ⁽⁴⁾ $V_{CE} = 5.0\text{ V}$, $E_g = 5.0\text{ mW/cm}^2$ ⁽⁴⁾ $V_{CE} = 5.0\text{ V}$, $E_g = 5.0\text{ mW/cm}^2$ ⁽⁴⁾ $V_{CE} = 5.0\text{ V}$, $E_g = 5.0\text{ mW/cm}^2$ ⁽⁴⁾
I_{CEO}	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	$I_E = 100\text{ }\mu\text{A}$
$V_{CE(SAT)}^{(3)}$	Collector-Emitter Saturation Voltage			0.40	V	$I_C = 0.40\text{ mA}$, $E_g = 5.0\text{ mW/cm}^2$ ⁽⁴⁾
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

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Typical Performance Curves



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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