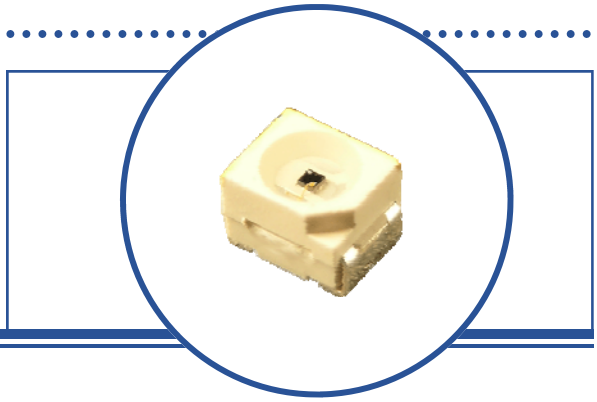
Silicon Phototransistor

OP580

TT electronics
OPTEK Technology

Features:

- Wide acceptance angle
- Fast response time
- Plastic leadless chip carrier (PLCC)
- Moisture Sensitivity Level: MSL2 or >



Description:

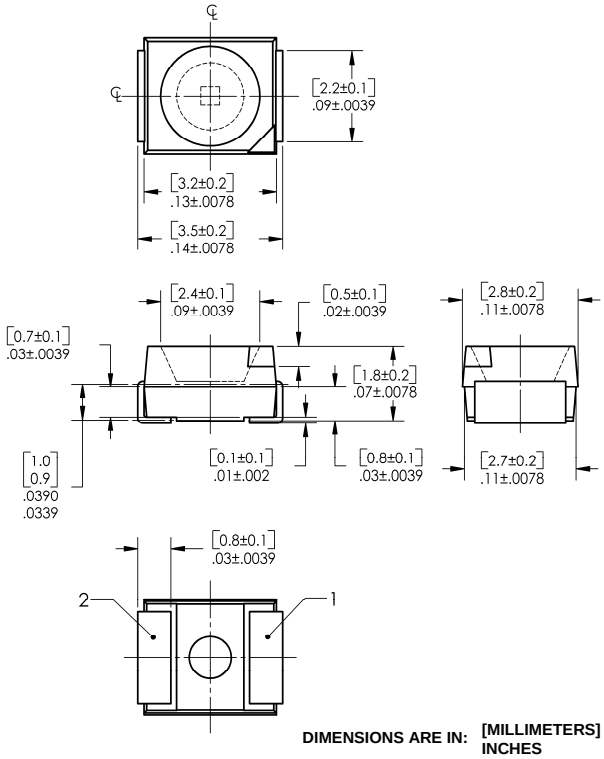
The **OP580** is an NPN silicon phototransistor mounted in a miniature SMD package. The device has a flat window lens, which enables a wide acceptance angle. It is packaged in a plastic leadless chip carrier that is compatible with most automated mounting equipment. *The OP580 is mechanically and spectrally matched to the OP280 infrared LED.*

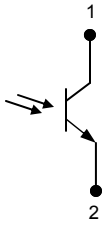
Please refer to Application Bulletins 208 and 210 for additional design information and reliability (degradation) data.

Applications:

- Non-contact position sensing
- Datum detection
- Machine automation
- Optical encoders

Ordering Information			
Part Number	**Sensor**	**Viewing Angle**	**Lead Length**
OP580	Phototransistor	100°	N/A





Pin #	Transistor
1	Collector
2	Emitter

DIMENSIONS ARE IN: **[MILLIMETERS] INCHES**

Pb
RoHS

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

OPTEK Technology Inc. — 1645 Wallace Drive, Carrollton, Texas 75006
Phone: (972) 323-2200 or (800) 341-4747 FAX: (972) 323-2396 sensors@optekinc.com www.optekinc.com

Silicon Phototransistor
OP580

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

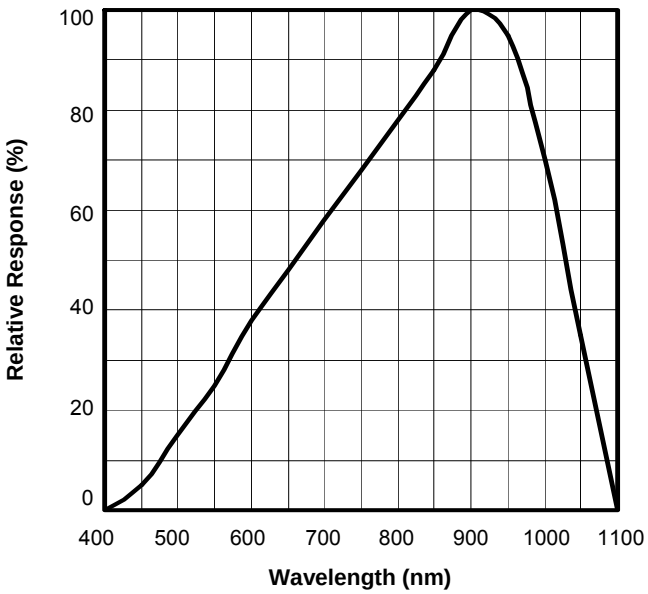
Storage Temperature Range	-40° C to +85° C
Operating Temperature Range	-25° C to +85° C
Lead Soldering Temperature	260° C(1)
Collector-Emitter Voltage	30 V
Emitter-Collector Voltage	5 V
Collector Current	20 mA
Power Dissipation	75 mW(2)

Electrical Characteristics (T_A = 25°C unless otherwise noted)

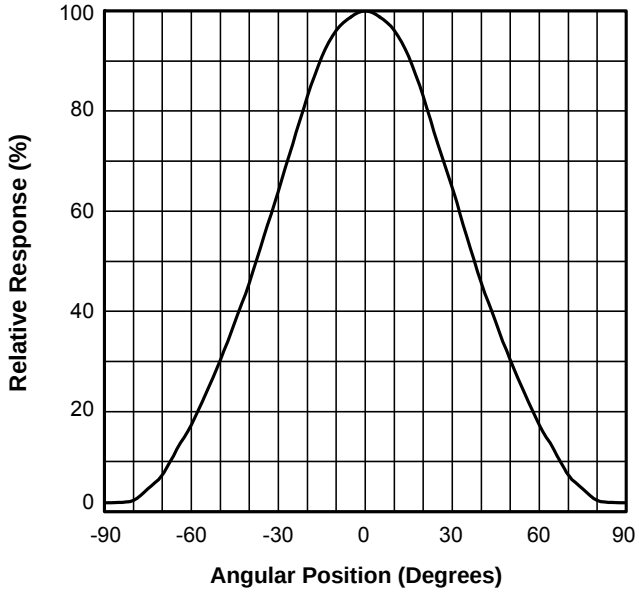
SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS	TEST CONDITIONS
$I_{C(ON)}$	On-State Collector Current	1.0	-	-	mA	V_{CE} = 5.0 V, E_E = 5.0 mW/cm$^{2(3)}$
$V_{CE(SAT)}$	Collector-Emitter Saturation Voltage	-	-	0.4	V	I_C = 100 µA, E_E = 2.0 mW/cm$^{2(3)}$
I_{CE0}	Collector-Emitter Dark Current	-	-	100	nA	V_{CE} = 5.0 V, E_E = 0$^{(4)}$
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage	30	-	-	V	I_C = 100 µA
$V_{(BR)ECO}$	Emitter-Collector Breakdown Voltage	5	-	-	V	I_E = 100 µA
t_r, t_f	Rise Time , Fall Time	-	15	-	µs	I_C = 1 mA, R_L = 1 KΩ

Notes:
1. Solder time less than 5 seconds at temperature extreme.
2. Derate linearly at 2.17 mW/° C above 25° C.
3. $E_{E(APT)}$ 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.
4. To calculate typical collector dark current in µA, use the formula $I_{CEO} = 10^{(0.04\ Ta-3.4)}$ where T_a is the ambient temperature in ° C.

Relative Response vs Wavelength



Relative Response vs Angular Position



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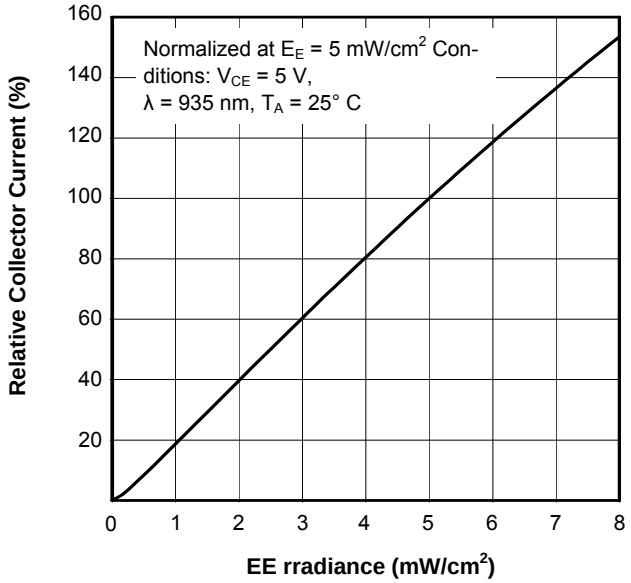
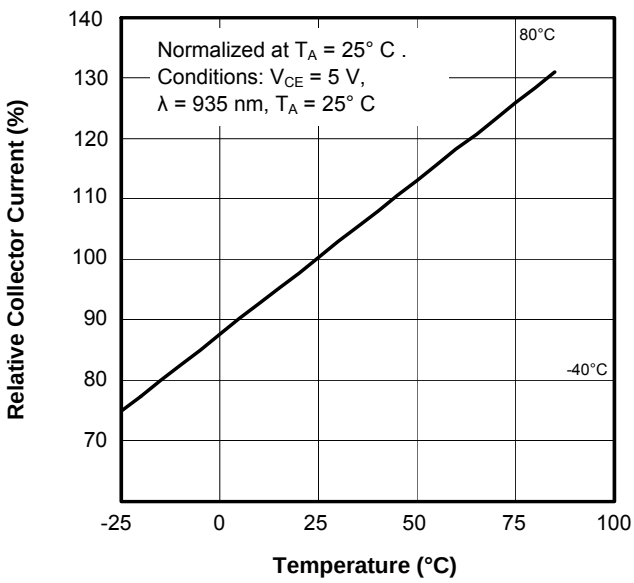
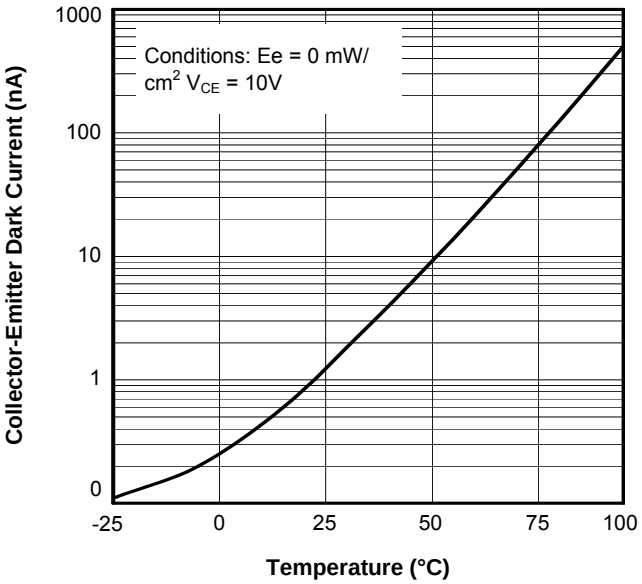
Relative On-State Collector Current vs Irradiance



Relative On-State Collector Current vs Temperature



Collector-Emitter Dark Current vs Temperature



Relative On-State Collector Current vs Collector-Emitter Voltage