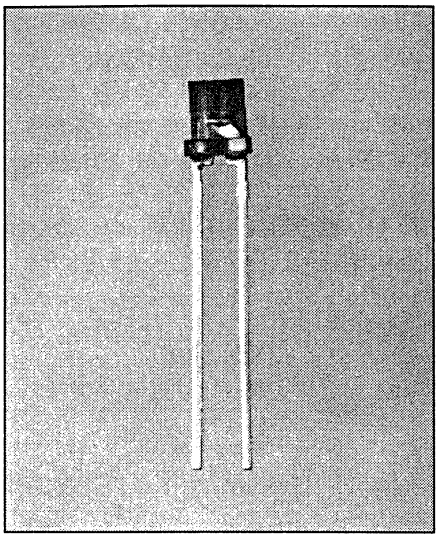
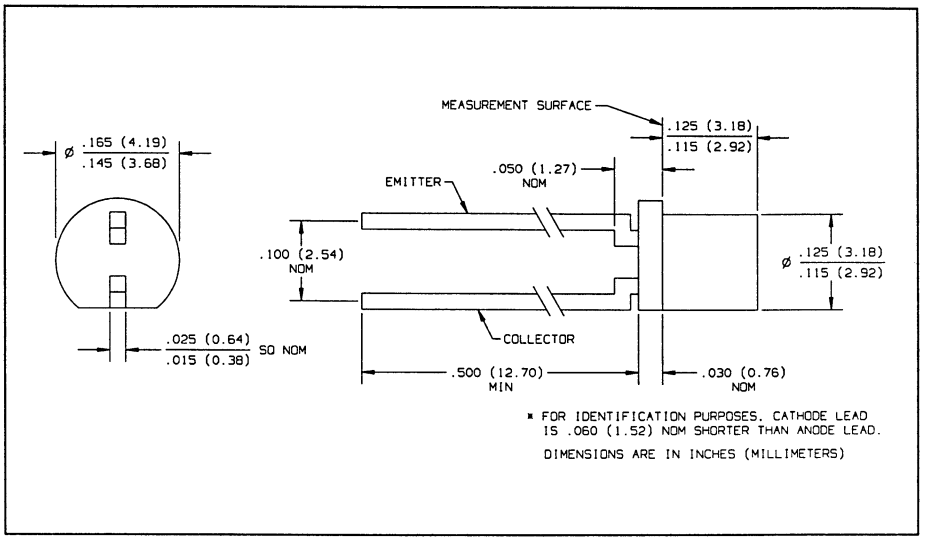
NPN Silicon Phototransistor
Type OP506W





Features

- Wide receiving angle
- T-1 package style
- Small package size for space limited applications

Description

The OP506W consists of an NPN silicon phototransistor molded in a blue tinted plastic package. The wide receiving angle provides relatively even reception over a large area. This device is 100% production tested using infrared light for close correlation with Optek's GaAs and GaAlAs emitters. Lead spacing is 0.100" (2.54 mm).

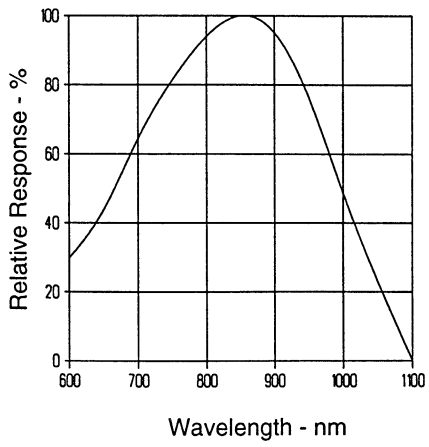
Absolute Maximum Ratings (T_A = 25° C unless otherwise noted)

Collector-Emitter Voltage ..... 30 V
Emitter-Collector Voltage ..... 5.0 V
Storage and Operating Temperature Range ..... -40° C to +100° C
Lead Soldering Temperature [1/16 inch (1.6 mm) from case for 5 sec. with soldering iron] ..... 260° C(1)
Power Dissipation ..... 100 mW(2)

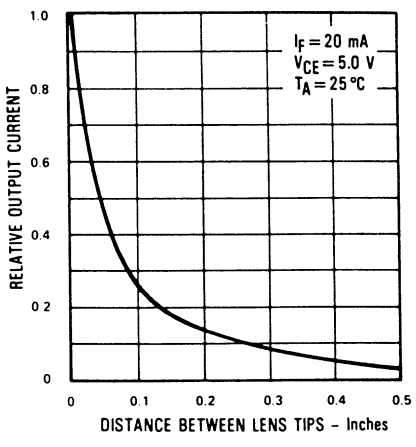
Notes:
(1) RMA flux is recommended. Duration can be extended to 10 sec. max. when flow soldering. Max. 20 grams force may be applied to leads when soldering.
(2) Derate linearly 1.33 mW/° C above 25° C.
(3) Light source is an unfiltered GaAs LED with a peak emission wavelength of 935 nm and a radiometric 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 $I_{CED} = 10^{(0.04\,T_A\,-3.4)}$ where T_A is ambient temperature in ° C.

Typical Performance Curves

Typical Spectral Response



Coupling Characteristics



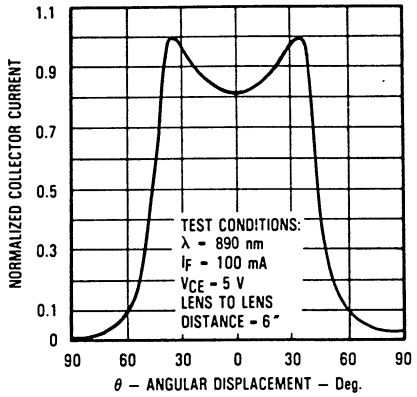
Type OP506W

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

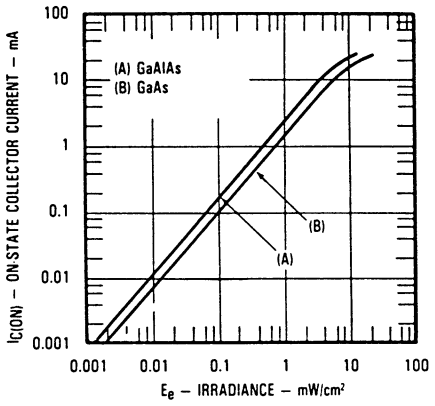
SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS	TEST CONDITIONS
$I_{C(ON)}$	On-State Collector Current	100			µA	V_{CE} = 5 V, E_e = 0.75 mW/cm^2(3)
I_{CEO}	Collector Dark Current			100	nA	V_{CE} = 10 V, E_e = 0
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage	30			V	I_C = 100 µA
$V_{(BR)ECO}$	Emitter-Collector Breakdown Voltage	5.0			V	I_E = 100 µA
$V_{CE(SAT)}$	Collector-Emitter Saturation Voltage			0.40	V	IC = 50 µA, E_e = 0.75 mW/cm^2(3)

Typical Performance Curves

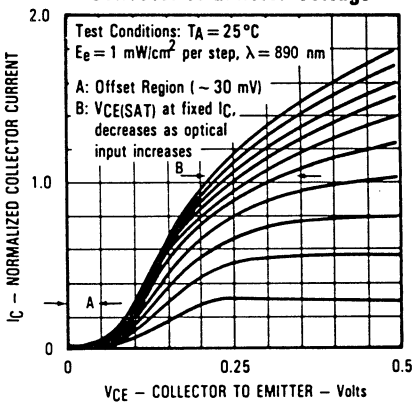
Normalized Collector Current vs. Angular Displacement



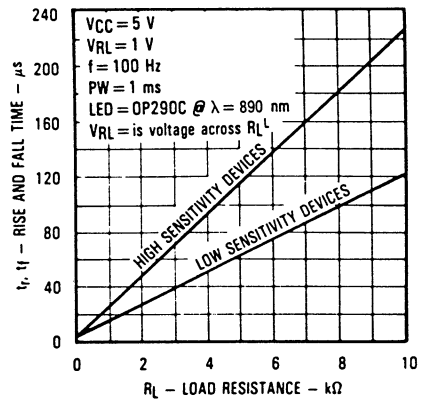
On-State Collector Current vs Irradiance



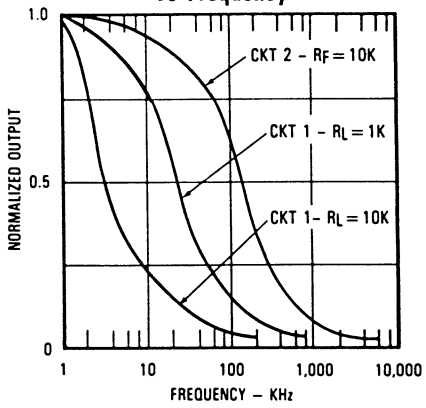
Normalized Collector Current vs Collector-to-Emitter Voltage



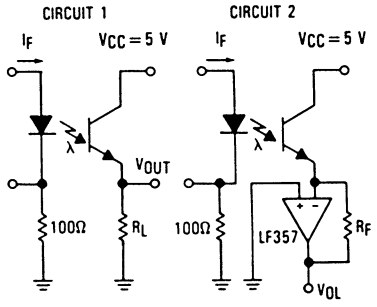
Rise and Fall Time vs Load Resistance



Normalized Output vs Frequency



Switching Time Test Circuit



Test Conditions:
Light source is pulsed LED with t_r and t_f ≤ 500 ns.
I_F is adjusted for V_{OUT} = 1 Volt.

PHOTOSENSORS