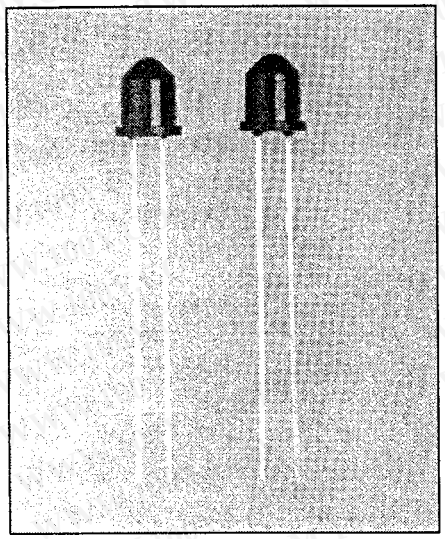
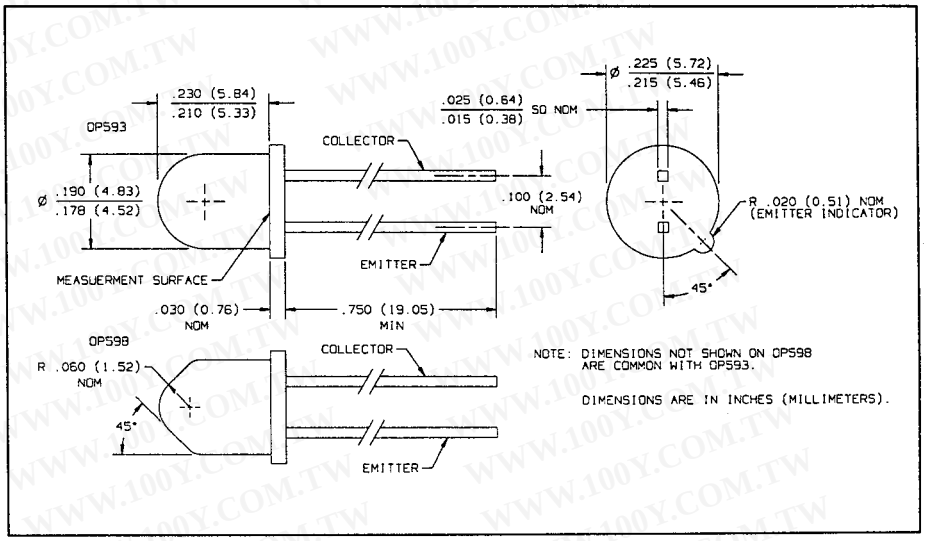
勝 特 力 材 料 886-3-5753170
胜特力电子(上海) 86-21-54151736
胜特力电子(深圳) 86-755-83298787
Http://www.100y.com.tw

Product Bulletin OP593A
June 1996

OPTEK

NPN Plastic Silicon Phototransistors
Types OP593, OP598 Series





Features

- Wide receiving angle
- Variety of sensitivity ranges
- TO-18 equivalent package style

Description

The OP593/598 series consist of NPN silicon phototransistors molded in dark blue epoxy packages. The wide receiving angle provides relatively even reception over a large area. These devices are 100% production tested using infrared light for close correlation with Optek's GaAs and GaAlAs emitters.

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

Collector-Emitter Voltage	30 V
Emitter-Collector Voltage	5.0 V
Continuous Collector Current	50 mA
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	250 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.

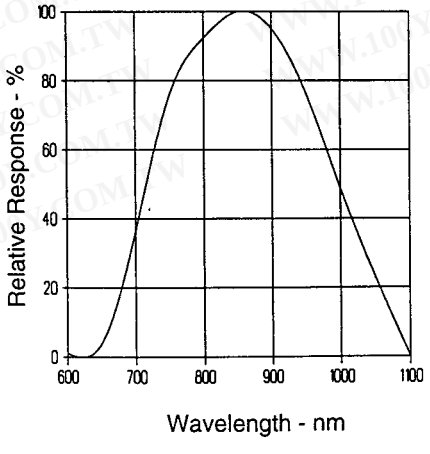
(2) Derate linearly 3.33 mW/° C above 25° C.

(3) V_{CE} = 5 V. Light source is an unfiltered GaAlAs emitting diode operating at peak emission wavelength of 890 nm and $E_{e(APT)}$ of 1.7 mW/cm^2 average within a .250" dia. aperture.

(4) This dimension is held to within ± 0.005" on the flange edge and may vary up to ± 0.020" in the area of the leads.

Typical Performance Curves

Typical Spectral Response



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Types OP593, OP598 Series

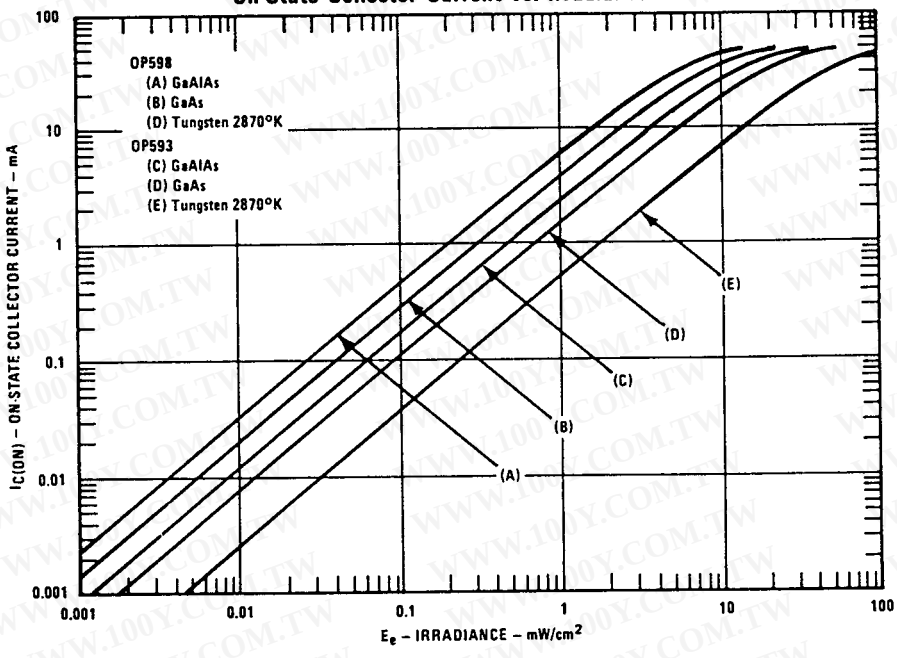
Electrical Characteristics (T_A = 25° C unless otherwise noted)

SYMBOL	PARAMETER		MIN	TYP	MAX	UNITS	TEST CONDITIONS
$I_{C(ON)}$	On-State Collector Current	OP593C	1.0			mA	
		OP593B	2.0		4.0	mA	See Note (3)
		OP593A	3.0			mA	
		OP598C	2.5			mA	
		OP598B	5.0		10	mA	See Note (3)
		OP598A	7.5			mA	
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			V	I_E = 100 µA
$V_{CE(SAT)}$	Collector-Emitter Saturation Voltage				0.40	V	I_C = 0.4 mA, E_e = 1.7 mW/cm^2 (3)

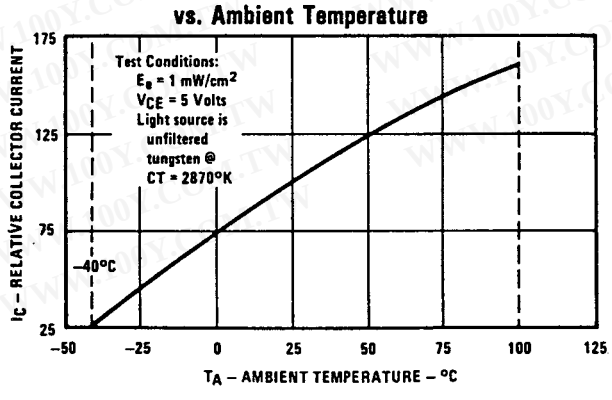
PHOTOSENSORS

Typical Performance Curves

On-State Collector Current vs. Irradiance



Normalized Collector Current vs. Ambient Temperature



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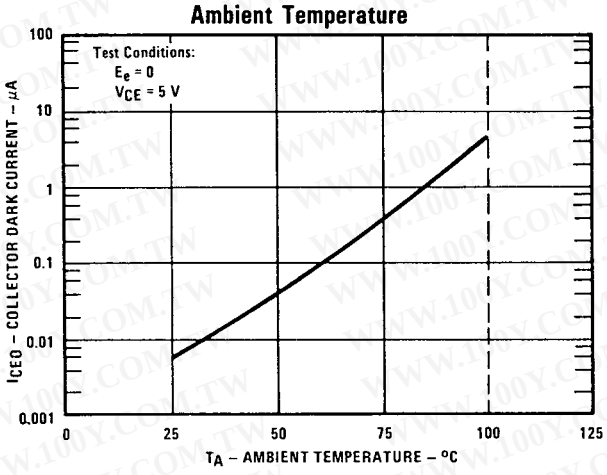
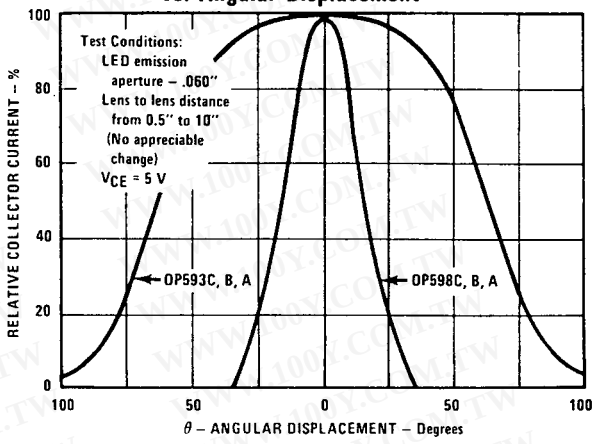
Typical Performance Curves

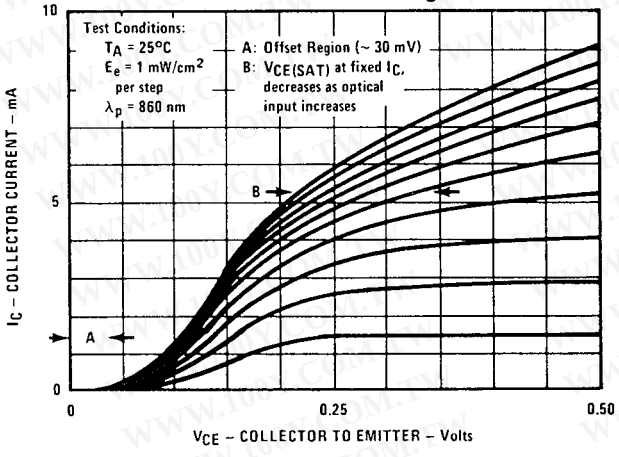
Collector Dark Current vs. Ambient Temperature



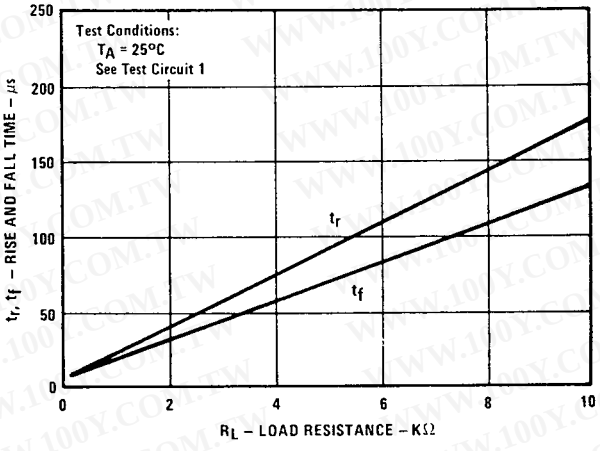
Relative Collector Current vs. Angular Displacement



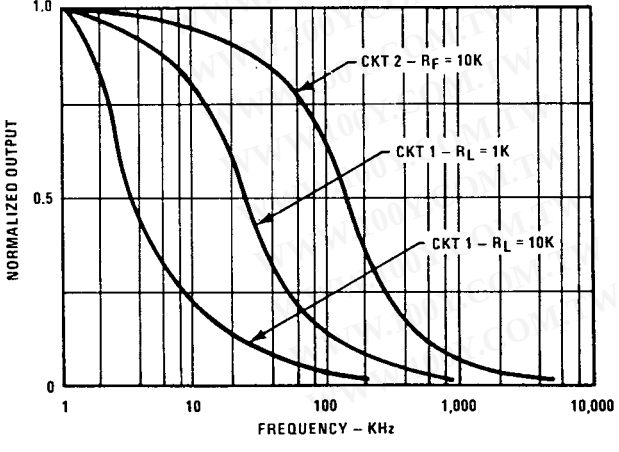
Collector Current vs. Collector to Emitter Voltage



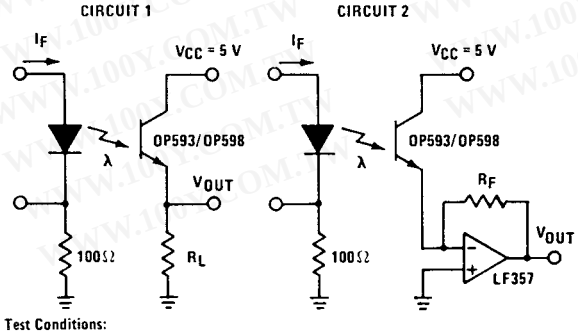
Rise and Fall Time vs. Load Resistance



Normalized Output vs. Frequency



Switching Time Test Circuit



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

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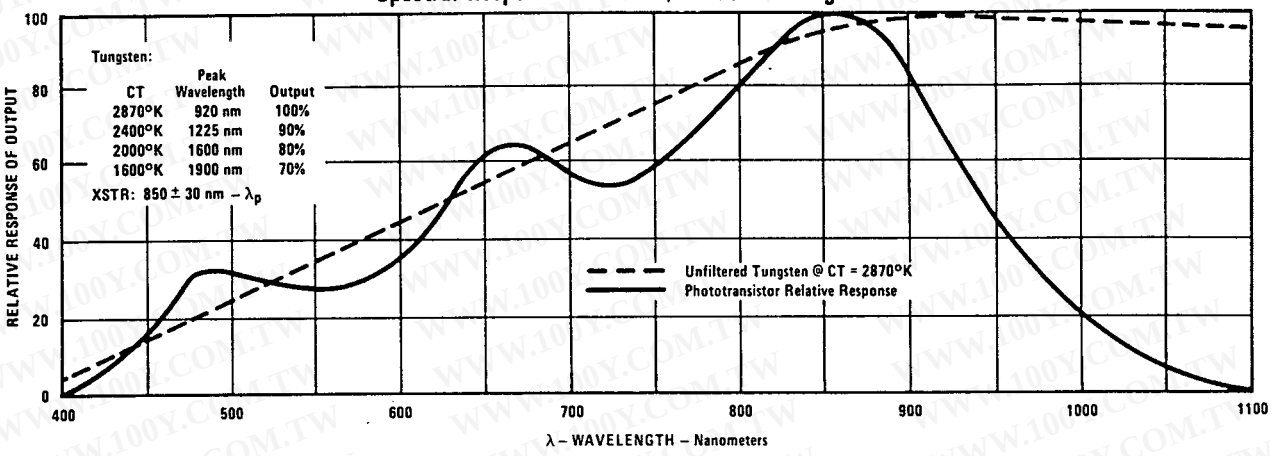
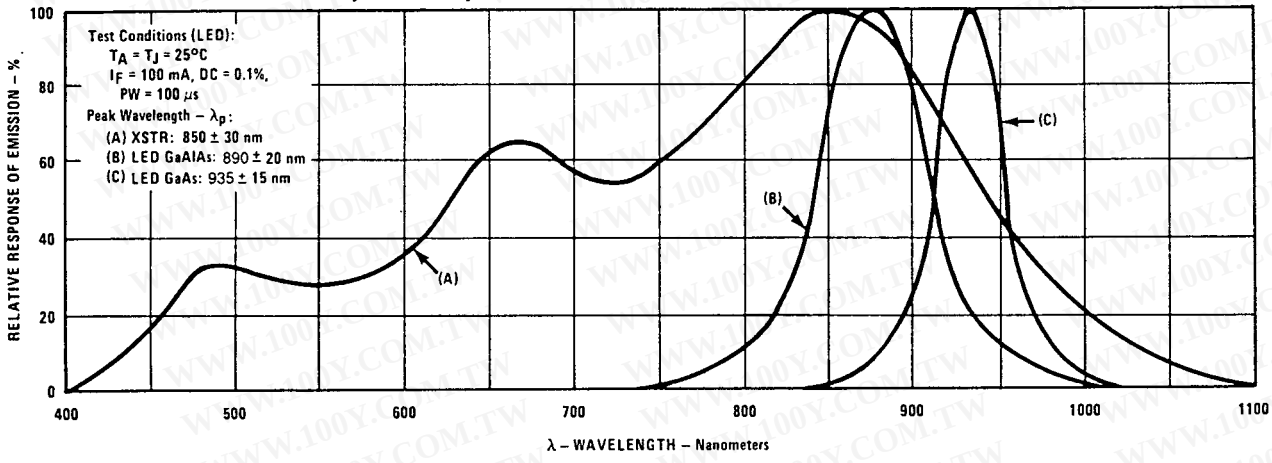
Typical Performance Curves

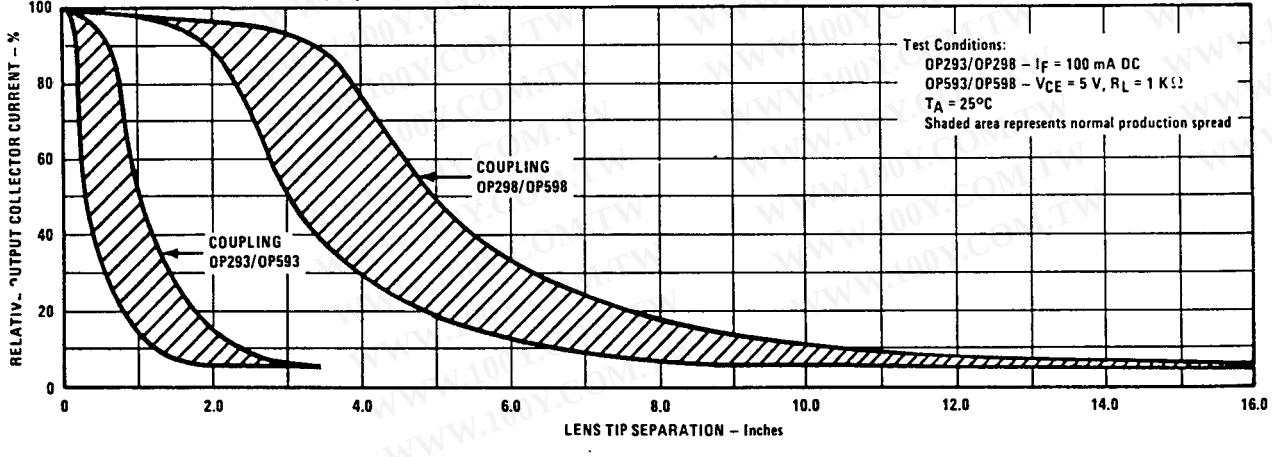
Spectral Response of OP593/OP598 vs. Tungsten



Spectral Response of OP593/OP598 vs. GaAlAs and GaAs



Coupling Characteristics of OP293/OP593 and OP298/OP598



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