

NPN Plastic Silicon Phototransistor

OP593, OP598, OP793, OP798 Series



Electrical Specifications

Absolute Maximum Ratings ($T_A = 25^\circ\text{C}$ unless otherwise noted)	
Storage and Operating Temperature Range	-40°C to $+100^\circ\text{C}$
Collector-Emitter Voltage	30 V
Emitter-Collector Voltage	5 V
Continuous Collector Current	50 mA
Lead Soldering Temperature [1/16 inch (1.6 mm) from case for 5 seconds with soldering iron]	$260^\circ\text{C}^{(1)}$
Power Dissipation	$250\text{ mW}^{(2)}$

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					$V_{CE} = 5\text{ V}$. Light source is an unfiltered GaAlAs LED with a peak emission wavelength of 890 nm and $E_{e(APT)}$ of 1.7 mW/cm^2 average within a .250" diameter aperture.
	OP593A	3.0	-	4	mA	
	OP593B	2.0	-	4		
	OP593C	1.0	-	4		
	OP598A	7.5	-	10		
	OP598B	5.0	-	10		
	OP598C	2.5	-	10		
	OP598C	2.45	-	10		
	OP793A		-	7.50		
	OP793B	1.65	-	4.55		
	OP793C	0.90	-	3.05		
	OP793D	0.90	-	7.50		
	OP798A	4.90	-	15.00		
	OP798B	3.30	-	9.20		
OP798C	1.90	-	6.10			
OP798D	1.90	-	15.00			
I_{CEO}	Collector-Dark Current	-	-	100	nA	$V_{CE} = 10\text{ V}$, $E_E = 0$
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage	30	-	-	V	$I_C = 100\ \mu\text{A}$
$V_{(BR)ECO}$	Emitter-Collector Breakdown Voltage	5	-	-	V	$I_E = 100\ \mu\text{A}$
$V_{CE(SAT)}$	Collector-Emitter Saturation Voltage	-	-	0.40	V	$I_C = 0.4\text{ mA}$, $E_E = 1.7\text{ mW/cm}^2$

General Note
TT Electronics reserves the right to make changes in product specification without notice or liability. All information is subject to TT Electronics' own data and is considered accurate at time of going to print.

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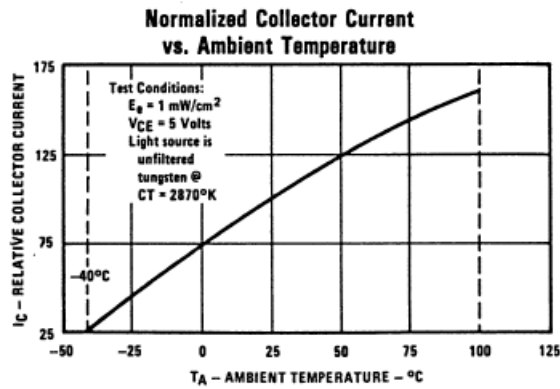
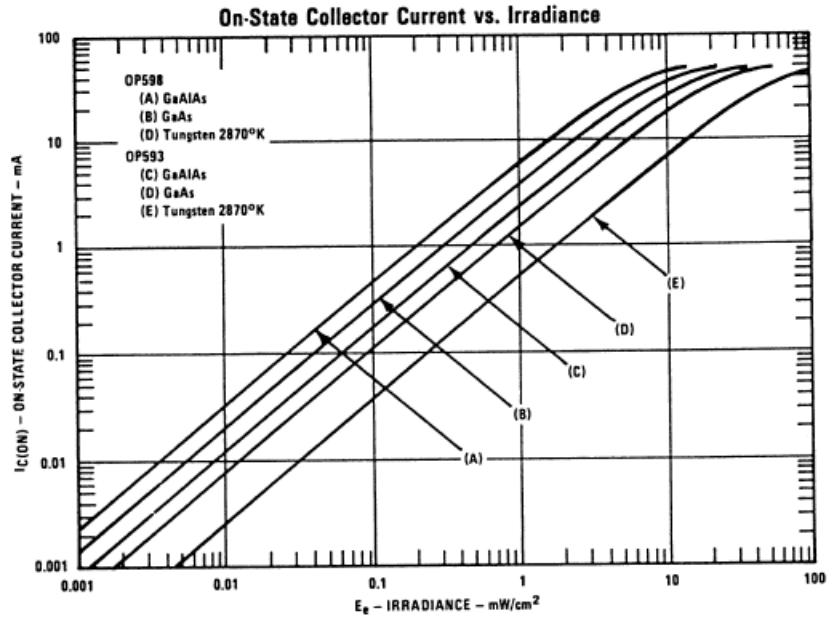
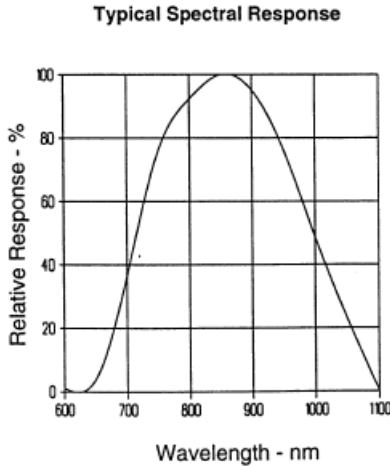
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Performance

OP593, OP598



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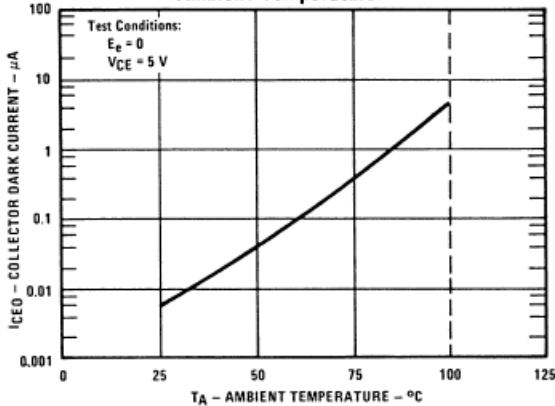
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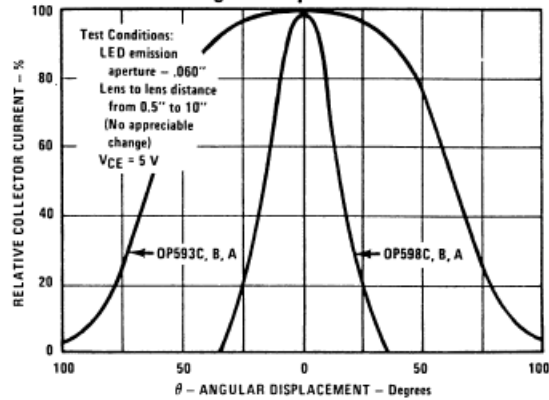
Performance

OP593, OP598

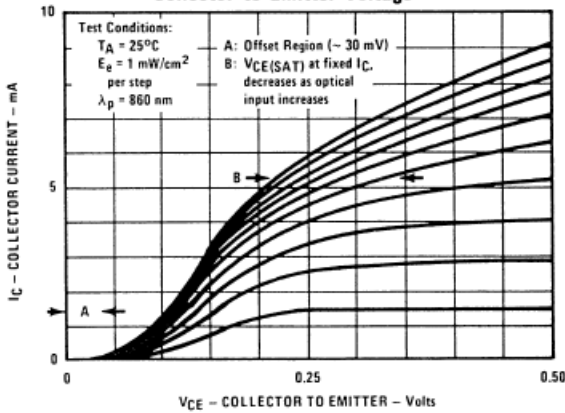
Collector Dark Current vs. Ambient Temperature



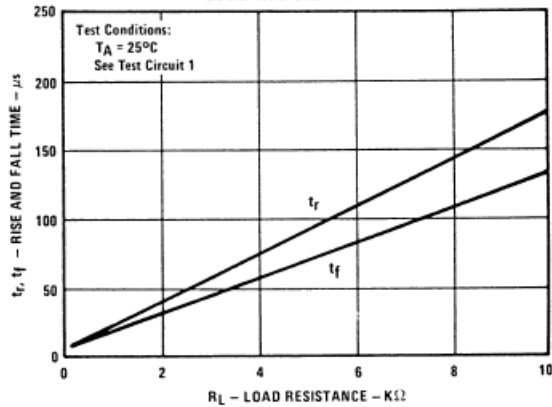
Relative Collector Current vs. Angular Displacement



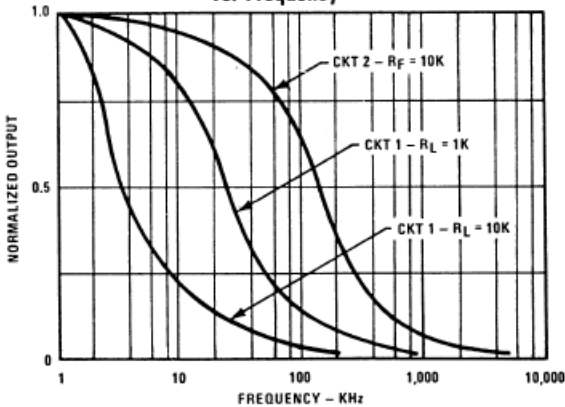
Collector Current vs. Collector to Emitter Voltage



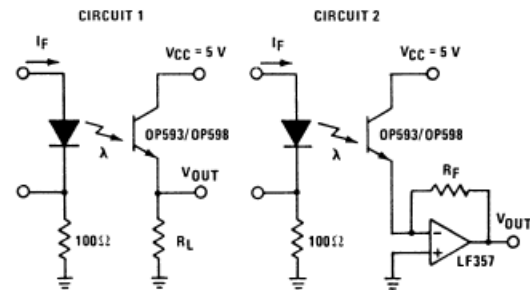
Rise and Fall Time vs. Load Resistance



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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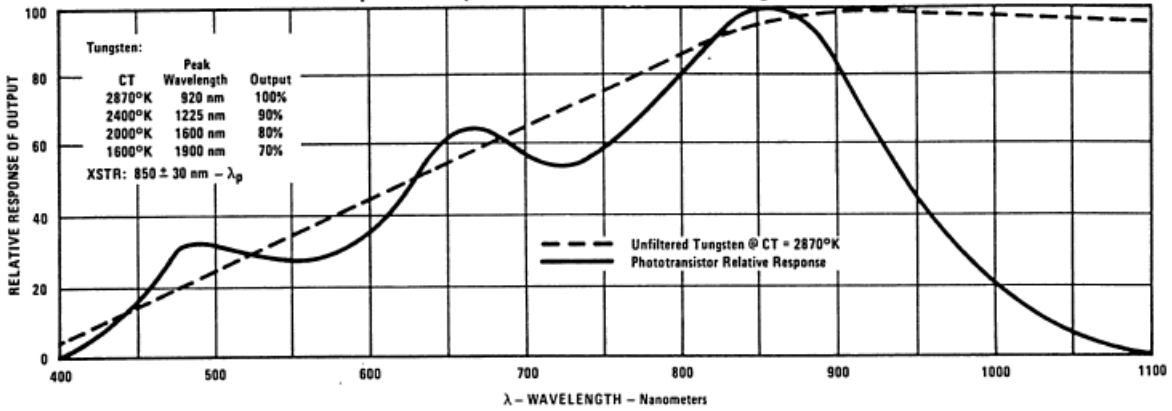
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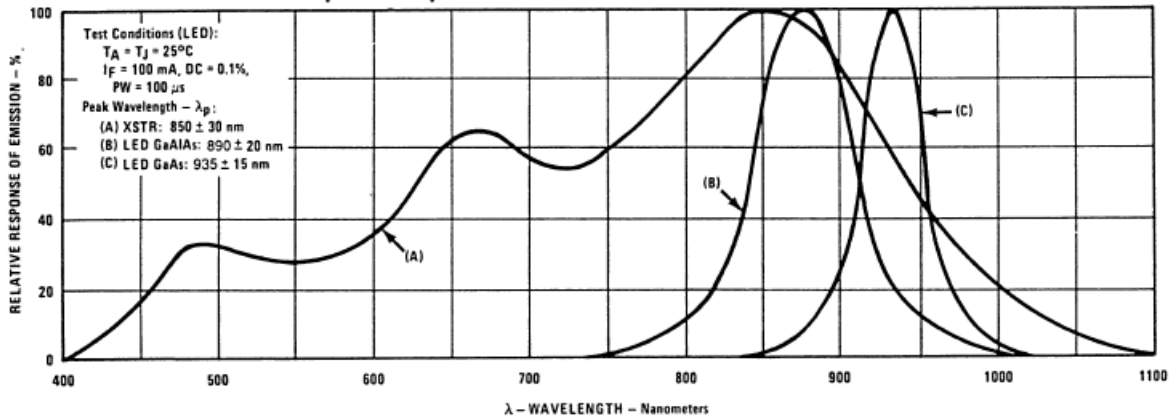


Performance

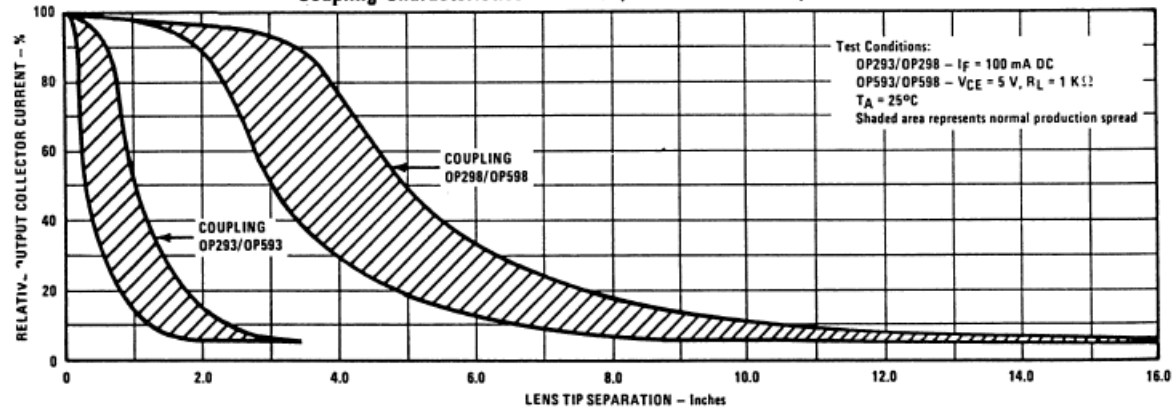
OP593, OP598
Spectral Response of OP593/OP598 vs. Tungsten



Spectral Response of OP593/OP598 vs. GaAlAs and GaAs



Coupling Characteristics of OP293/OP593 and OP298/OP598



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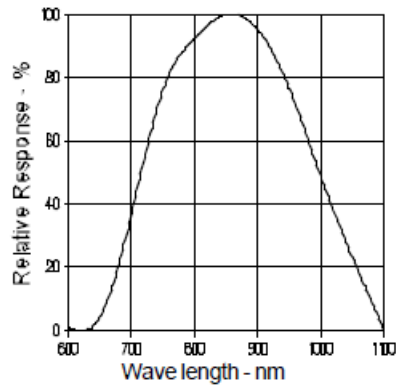
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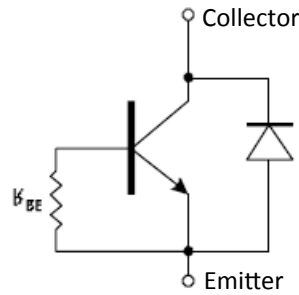
Performance

OP793, OP798

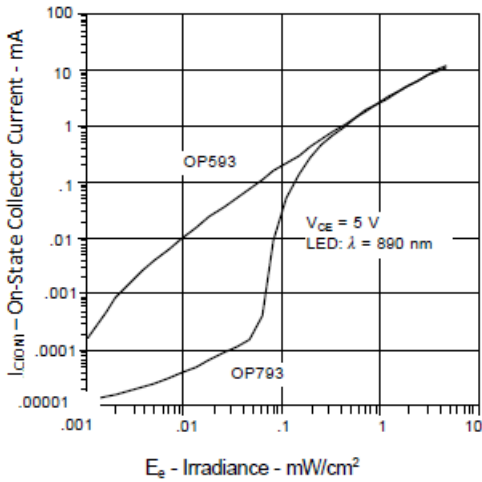
Typical Spectral Response



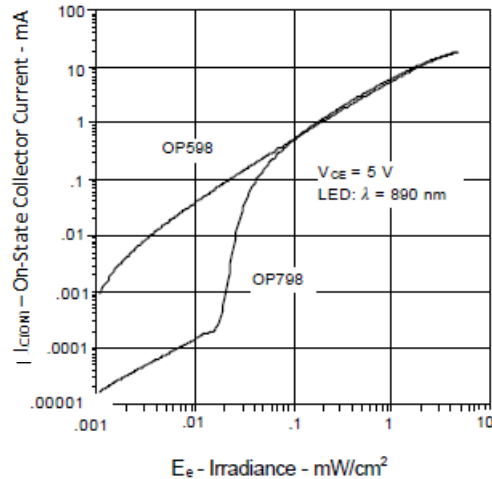
Schematic



On-State Collector Current vs. Irradiance



On-State Collector Current vs. Irradiance



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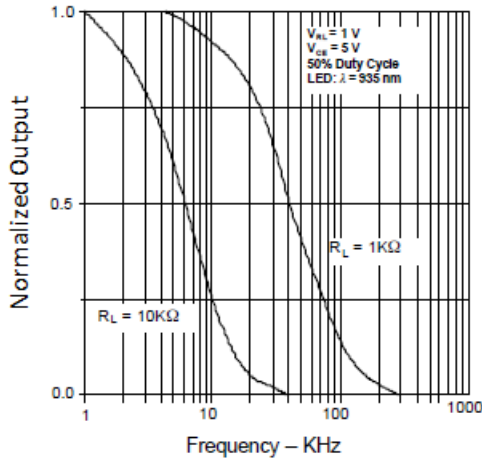
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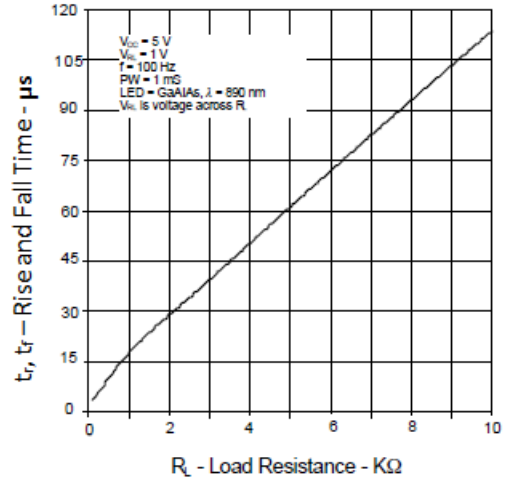
Performance

OP793, OP798

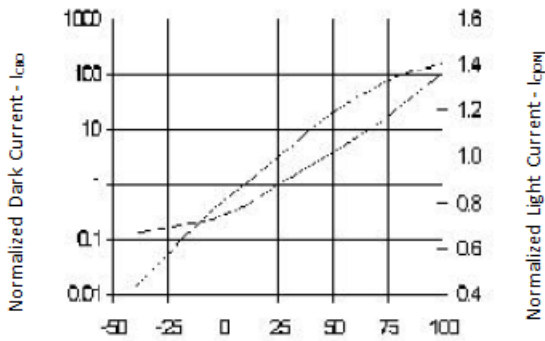
Normalized Output vs. Frequency



Typical Rise and Fall Time vs. Load Resistance



Normalized Light and Dark Current vs. Ambient Temperature



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