

OP802SL Datasheet

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DiGi Electronics Part Number	OP802SL-DG
Manufacturer	TT Electronics/Optek Technology
Manufacturer Product Number	OP802SL
Description	SENSOR PHOTO 890NM TOP TO206AA
Detailed Description	Phototransistors 890nm Top View TO-206AA, TO-18 -3 Metal Can

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Purchase and inquiry

Manufacturer Product Number:

OP802SL

Series:

-

Voltage - Collector Emitter Breakdown (Max):

30 V

Current - Dark (Id) (Max):

100 nA

Viewing Angle:

-

Mounting Type:

Through Hole

Operating Temperature:

-65°C ~ 125°C

Manufacturer:

TT Electronics/Optek Technology

Product Status:

Obsolete

Current - Collector (Ic) (Max):

50 mA

Wavelength:

890nm

Power - Max:

250 mW

Orientation:

Top View

Package / Case:

TO-206AA, TO-18-3 Metal Can

Environmental & Export classification

RoHS Status:

ROHS3 Compliant

REACH Status:

REACH Unaffected

HTSUS:

8541.49.7080

Moisture Sensitivity Level (MSL):

1 (Unlimited)

ECCN:

EAR99

NPN Phototransistor

OP800SL Series, OP800WSL Series

OP830SL Series, OP830WSL Series



Features:

- TO-18 hermetically sealed package
- Mechanically and spectrally matched to OP130 and OP230 LEDs
- TX and TXV process available (see Hi-Rel section)
- Choice of narrow or wide receiving angle
- Variety of sensitivity ranges
- Enhanced temperature range

Description:

Each device in this series consists of a NPN silicon phototransistor mounted in a hermetically sealed TO-18 package that offers high power dissipation and superior hostile environment operation. The **OP800SL, OP804SL, OP805SL** and **OP830SL** devices have a narrow receiving angle that provides excellent on-axis coupling and a bonded base lead that enables conventional transistor biasing. The **OP800WSL, OP801WSL, OP802WSL** and **OP830WSL** all have a wide receiving angle that provides relatively even reception over a large area.

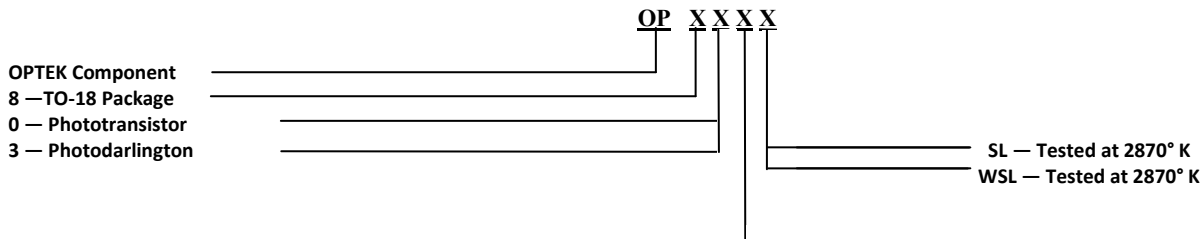
Devices are 100% production tested using an infrared light source for close correlation with OPTEK’s GaAs and GaAIAs emitters. *The OP800SL and devices are mechanically and spectrally matched to OP130 and OP230 series LEDs. The OP800WSL devices are mechanically and spectrally matched to OP130W and OP230W series devices.*

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

Applications:

- Space-limited applications
- Hostile environment applications
- Applications requiring high power dissipation

Part Number Guide — OPXXX



Part Description:

- OP80_SL** = TO-18 dome lens, phototransistor
0, 4 and 5 sensitivity levels
tested with 2870° K light source
- OP80_WSL** = TO-18 flat lens, phototransistor
0 through 2 sensitivity levels
tested with 2870° K light source
- OP830SL** = TO-18 dome lens, photodarlington
tested with 2870° K light source
- OP830WSL** = TO-18 flat lens, photodarlington
tested with 2870° K light source



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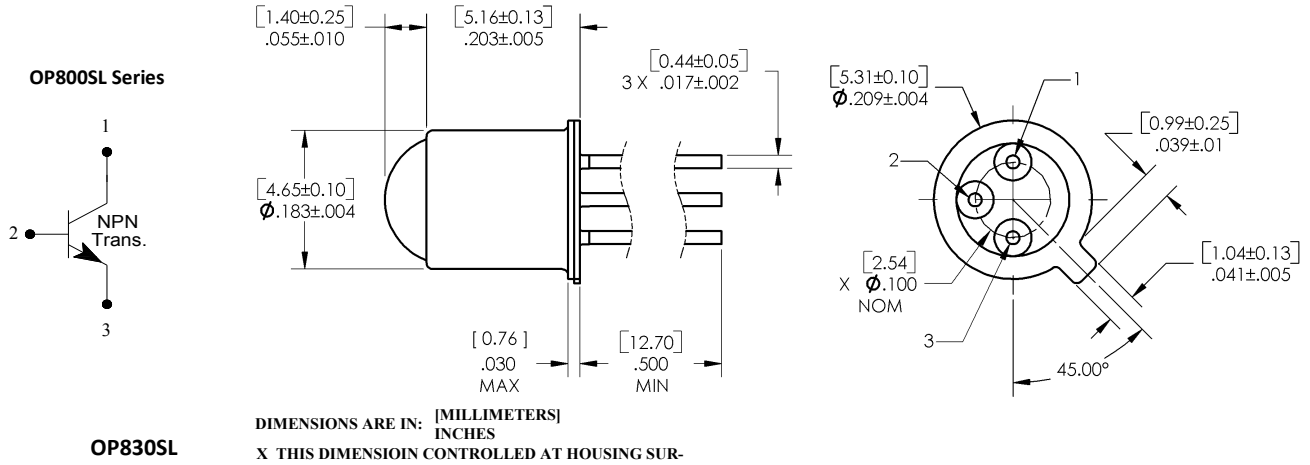
NPN Phototransistor

OP800SL Series, OP800WSL Series

OP830SL Series, OP830WSL Series

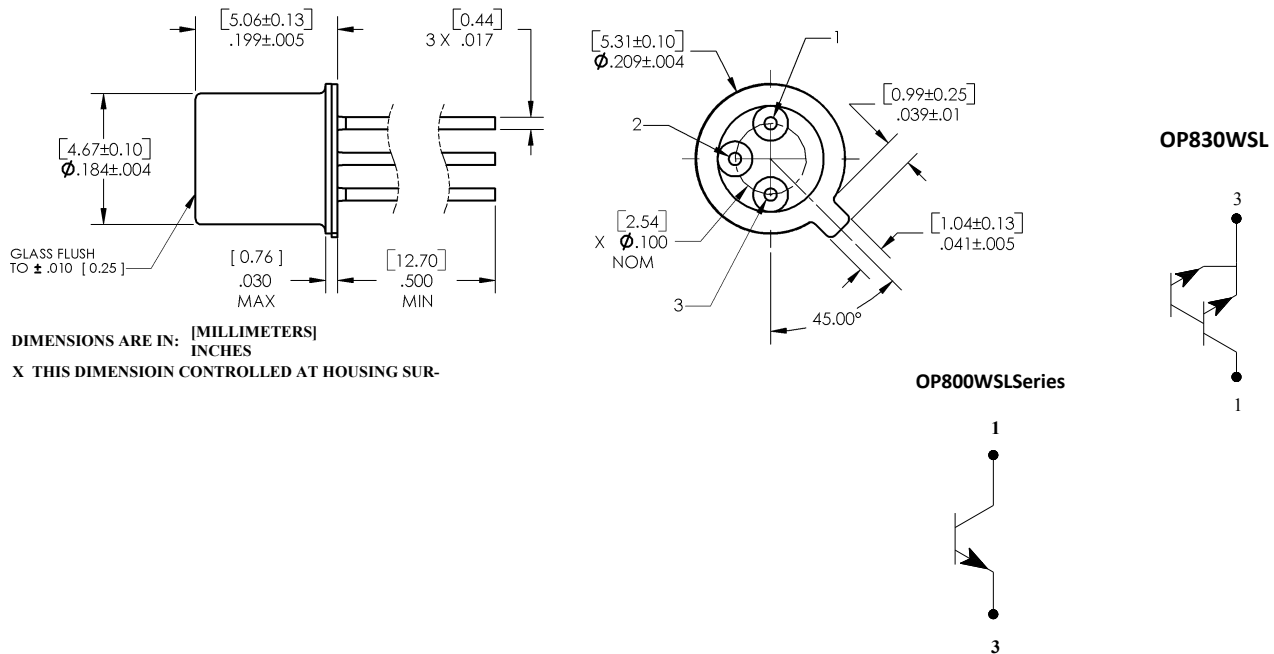


OP800SL, OP830SL



Pin #	OP80X_ _ _	OP830_ _ _
1	Collector	Collector
2	Base	—
3	Emitter	Emitter

OP800WSL, OP830WSL



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NPN Phototransistor

OP800SL Series, OP800WSL Series

OP830SL Series, OP830WSL Series



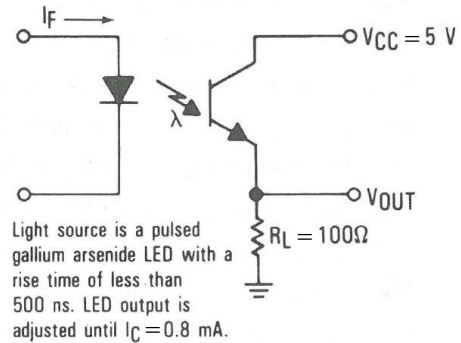
Electrical Specifications

Absolute Maximum Ratings ($T_A = 25^\circ\text{C}$ unless otherwise noted)	
Storage Temperature Range	-65°C to $+150^\circ\text{C}$
Operating Temperature Range	-65°C to $+125^\circ\text{C}$
Collector-Base Voltage (applies to OP800SL only - does not apply to OP800WSL)	30 V
Collector-Emitter Voltage OP800 (SL, WSL) OP830 (SL, WSL)	30 V 15 V
Emitter-Base Voltage (applies to OP800 (SL, WSL) only)	5 V
Emitter-Collector Voltage (applies to all OP800 and OP830 devices)	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	$250\text{ mW}^{(2)}$

Notes:

1. RMA flux is recommended. Duration can be extended to 10 seconds maximum when flow soldering. A maximum 20 grams force may be applied to the leads when soldering.
2. Derate linearly $2.5\text{ mW}/^\circ\text{C}$ above 25°C .
3. Junction temperature maintained at 25°C .
4. Light source is an unfiltered tungsten bulb operating at $CT = 2870\text{ K}$.

Switching Time Test Circuit



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NPN Phototransistor

OP800SL Series, OP800WSL Series

OP830SL Series, OP830WSL Series



Electrical Specifications

Electrical Characteristics (T _A = 25° C unless otherwise noted)						
SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS	TEST CONDITIONS
I _{C(ON)} ⁽³⁾	On-State Collector Current	0.5	-	-	mA	V _{CE} = 5 V, E _E = 5 mW/cm ²⁽³⁾⁽⁴⁾
	OP800SL	7.0	-	22		
	OP804SL	15	-	-		
	OP805SL	0.3	-	3		
	OP800WSL	0.5	-	2		
	OP801WSL	2.5	-	3		
	OP802WSL					
	OP830SL	15	-	-		V _{CE} = 5 V, E _E = 0.5 mW/cm ²⁽³⁾⁽⁴⁾
	OP830WSL	4	-	-		
I _{CEO}	Collector Dark Current	-	-	100	nA	V _{CE} = 10 V, E _E = 0
	OP800 (SL, WSL)	-	-	1		
	OP830 (SL, WSL)	-	-	1		
V _{(BR)CEO}	Collector-Emitter Breakdown Voltage	30	-	-	V	I _C = 100 μA
	OP800 (SL, WSL)	15	-	-		
	OP830 (SL, WSL)					
V _{(BR)CBO}	Collector-Base Breakdown Voltage [applies to OP800SL only]	30	-	-	V	I _C = 100 μA
V _{(BR)ECO}	Emitter-Collector Breakdown Voltage	5.0	-	-	V	I _E = 100 μA
V _{(BR)EBO}	Emitter-Base Breakdown Voltage [applies to OP800SL only]	5.0	-	-	V	I _E = 100 μA
V _{CE(SAT)} ⁽³⁾	Collector-Emitter Saturation Voltage	-	-	0.4	V	I _C = 0.15 mA, E _E = 0.5 mW/cm ²⁽⁴⁾ I _C = 0.4 mA, E _E = 5 mW/cm ²⁽⁴⁾ I _C = 0.15 mA, E _E = 0.5 mW/cm ²⁽⁴⁾ I _C = 1.0 mA, E _E = 0.5 mW/cm ²⁽⁴⁾
	OP800WSL	-	-	0.4		
	OP800SL	-	-	1.2		
	OP830SL	-	-	1.2		
	OP830WSL	-	-	1.2		
t _r	Rise Time	-	7	-	μs	V _{CC} = 5 V, I _C = 0.80 mA, R _L = 100 Ω (See Test Circuit)
t _f	Fall Time	-	7	-	μs	

Notes:

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3. Junction temperature maintained at 25° C.
4. Light source is an unfiltered tungsten bulb operating at CT = 2870 K or equivalent infrared source.

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NPN Phototransistor

OP800SL Series, OP800WSL Series

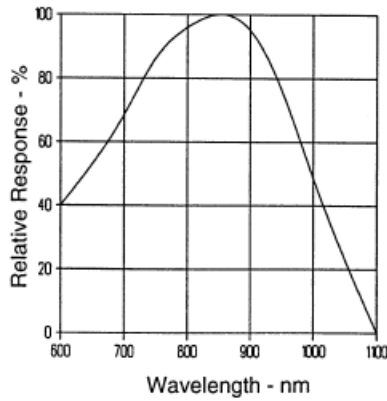
OP830SL Series, OP830WSL Series



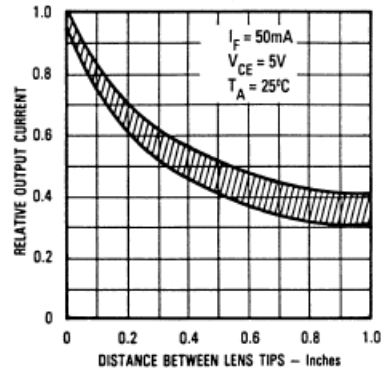
Performance

OP800SL Series

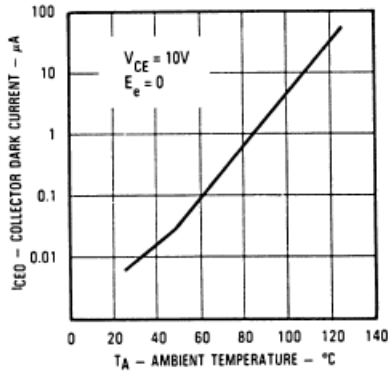
Typical Spectral Response



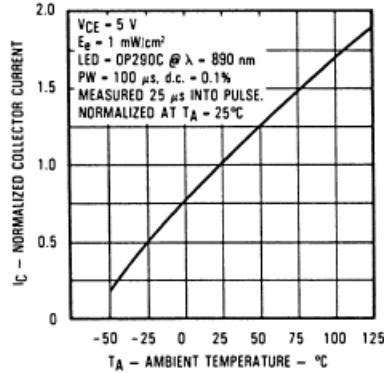
Coupling Characteristics of OP130 and OP800SL



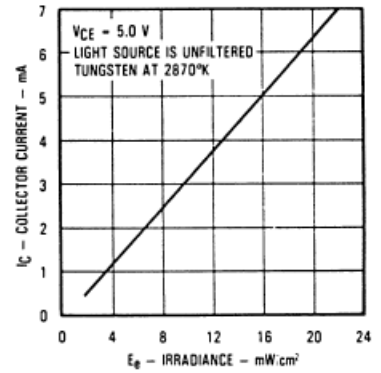
Collector Dark Current vs. Ambient Temperature



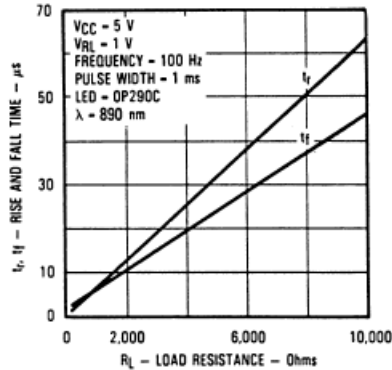
Normalized Collector Current vs. Ambient Temperature



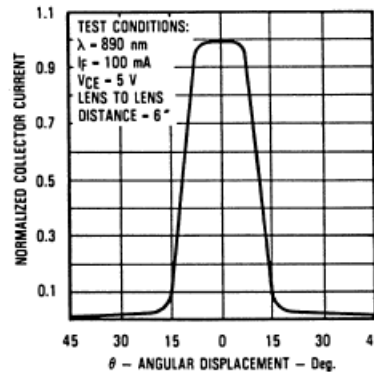
Collector Current vs. Irradiance



Rise and Fall Time vs. Load Resistance



Normalized Collector Current vs. Angular Displacement



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OP800SL Series, OP800WSL Series

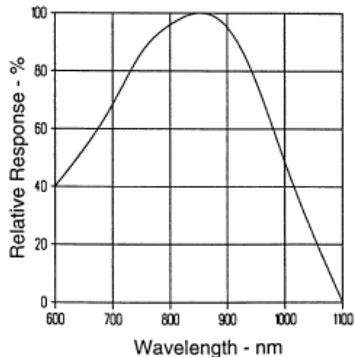
OP830SL Series, OP830WSL Series



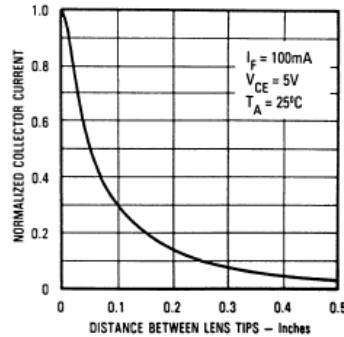
Performance

OP800WSL Series

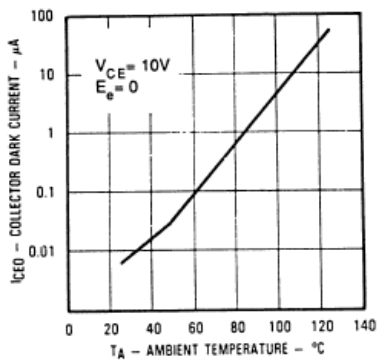
Typical Spectral Response



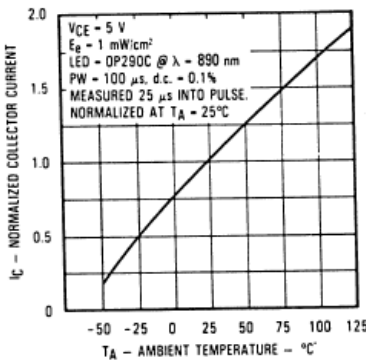
Coupling Characteristics of OP130W and OP800W



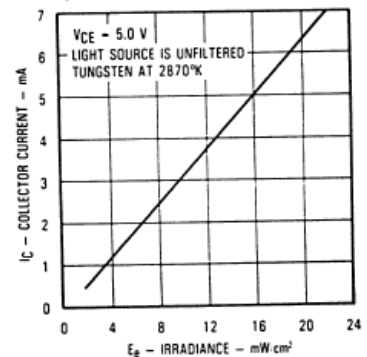
Collector Dark Current vs. Ambient Temperature



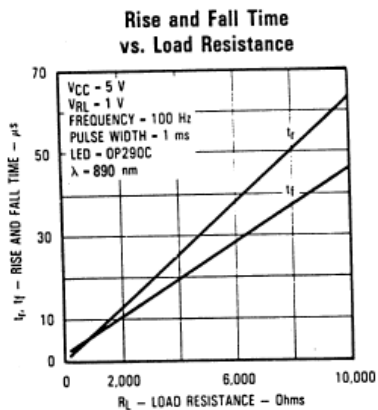
Normalized Collector Current vs. Ambient Temperature



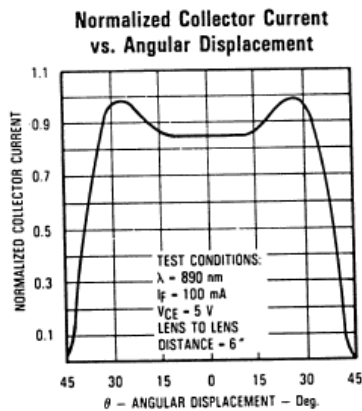
Collector Current vs. Irradiance



Rise and Fall Time vs. Load Resistance



Normalized Collector Current vs. Angular Displacement



Switching Time Test Circuit

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OP800SL Series, OP800WSL Series

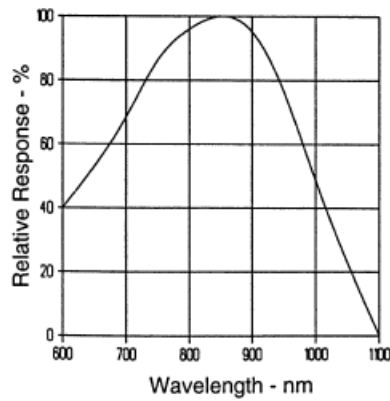
OP830SL Series, OP830WSL Series



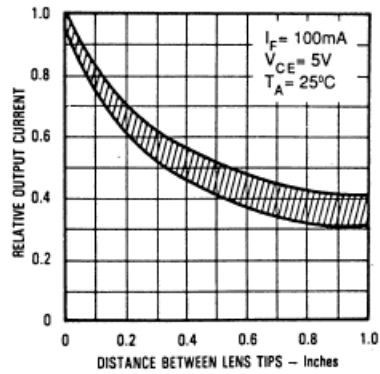
Performance

OP830SL Series

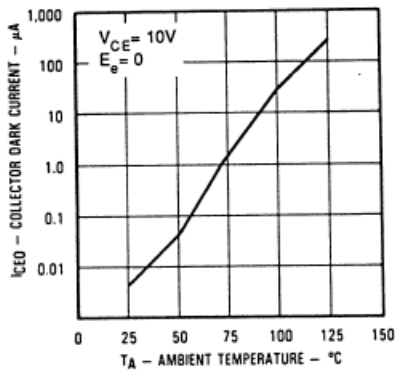
Typical Spectral Response



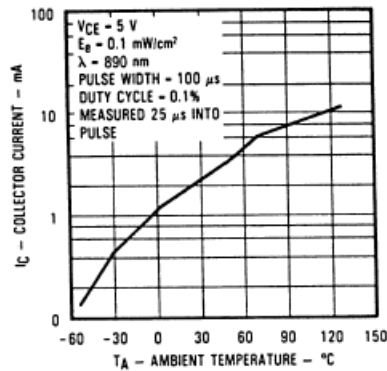
Coupling Characteristics of OP130 and OP830



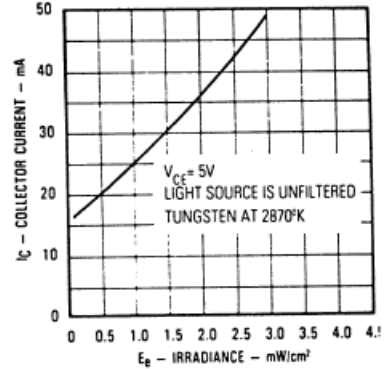
Collector Dark Current vs. Ambient Temperature



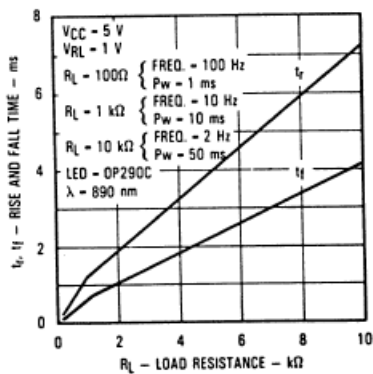
Collector Current vs. Ambient Temperature



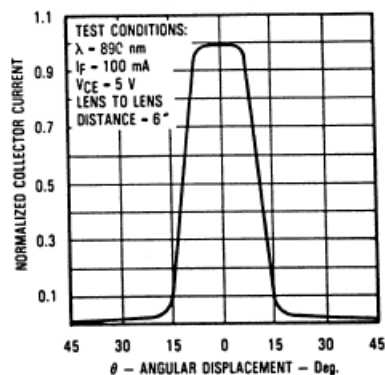
Collector Current vs. Irradiance



Rise and Fall Time vs. Load Resistance



Normalized Collector Current vs. Angular Displacement



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NPN Phototransistor

OP800SL Series, OP800WSL Series

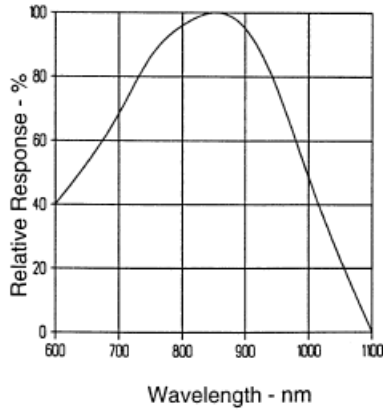
OP830SL Series, OP830WSL Series



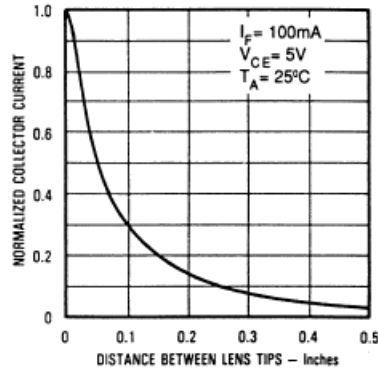
Performance

OP830WSL Series

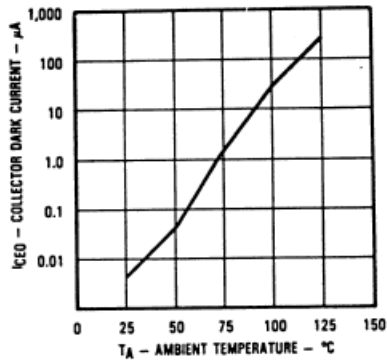
Typical Spectral Response



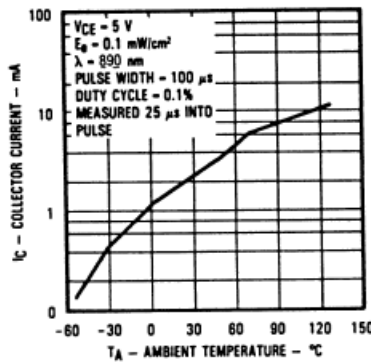
Coupling Characteristics of OP130W and OP830WSL



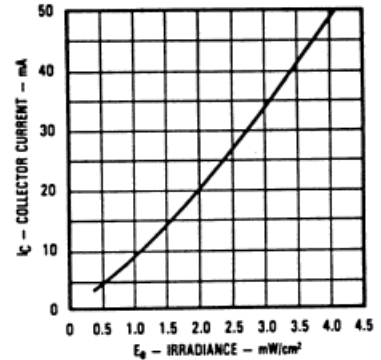
Collector Dark Current vs. Ambient Temperature



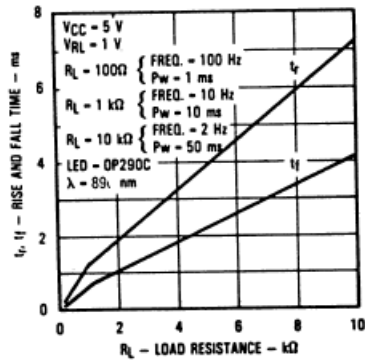
Collector Current vs. Ambient Temperature



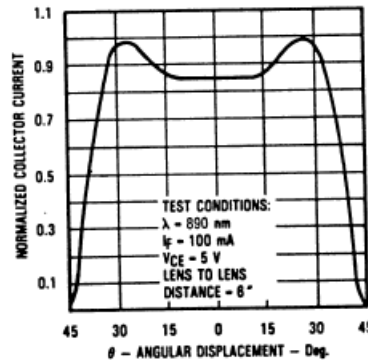
Collector Current vs. Irradiance



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