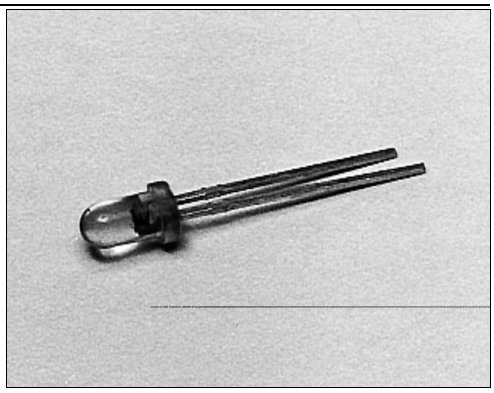
SDP8405

Silicon Phototransistor

FEATURES

- T-1 plastic package
- 20° (nominal) acceptance angle
- Consistent optical properties
- Wide sensitivity ranges
- Mechanically and spectrally matched to SEP8505 and SEP8705 infrared emitting diodes



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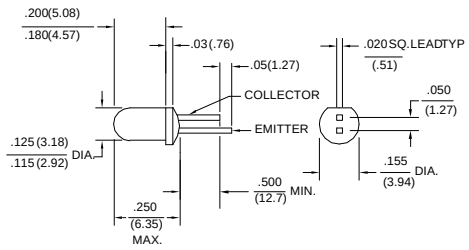
DESCRIPTION

The SDP8405 is an NPN silicon phototransistor transfer molded in a T-1 clear plastic package. Transfer molding of this device assures superior optical centerline performance compared to other molding processes. Lead lengths are staggered to provide a simple method of polarity identification.

OUTLINE DIMENSIONS in inches (mm)

Tolerance	3 plc decimals	±0.005(0.12)
	2 plc decimals	±0.020(0.51)



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ELECTRICAL CHARACTERISTICS (25°C unless otherwise noted)

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	TEST CONDITIONS
Light Current	I_L				mA	V_{CE}=5 V
SDP8405-001		1.00				H=5 mW/cm² (1)
SDP8405-002		7.00		14.0		
SDP8405-003		12.0		24.0		
Light Current	I_L				mA	V_{CE}=5 V
SDP8405-011		0.16				H=0.25 mW/cm² (2)
SDP8405-012		0.16		0.46		
SDP8405-013		0.32		0.92		
SDP8405-014		0.64		1.85		
SDP8405-015		1.25				
Collector Dark Current	I_{CEO}			100	nA	V_{CE}=15 V, H=0
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	30			V	I_C=100 µA
Emitter-Collector Breakdown Voltage	$V_{(BR)ECO}$	5.0			V	I_E=100 µA
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$			0.4	V	$I_C=I_L/8$
SDP8405-001 to -003						H=5 mW/cm²
SDP8405-011 to -015						H=0.25 mW/cm²
Angular Response (3)	Ø		20		degr.	I_F=Constant
Rise And Fall Time	t_r, t_f		15		µs	V_{CC}=5 V, I_L=1 mA
						R_L=1000 Ω

Notes
1. The radiation source is a tungsten lamp operating at a color temperature of 2870°K.
2. The radiation source is an IRED with a peak wavelength of 935 nm.
3. Angular response is defined as the total included angle between the half sensitivity points.

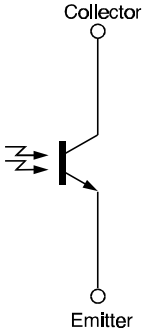
ABSOLUTE MAXIMUM RATINGS

(25°C Free-Air Temperature unless otherwise noted)

Collector-Emitter Voltage	30 V
Emitter-Collector Voltage	5 V
Power Dissipation	70 mW (1)
Operating Temperature Range	-40°C to 85°C
Storage Temperature Range	-40°C to 85°C
Soldering Temperature (5 sec)	240°C

Notes
1. Derate linearly from 25°C free-air temperature at the rate of 0.18 mW/°C.

SCHEMATIC



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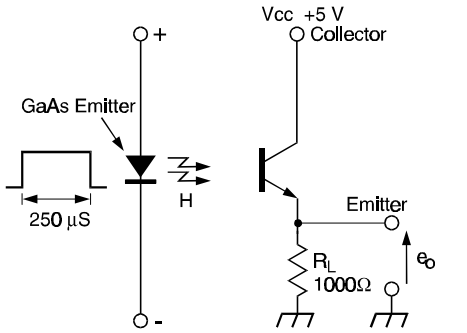
SWITCHING TIME TEST CIRCUIT

cir_015.cdr



SWITCHING WAVEFORM

cir_004.cdr

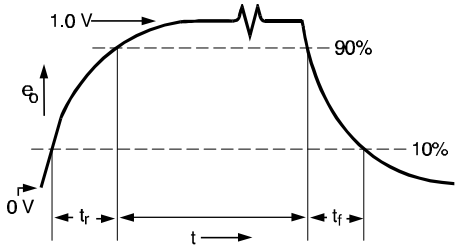


Fig. 1 Responsivity vs Angular Displacement

gra_047.ds4

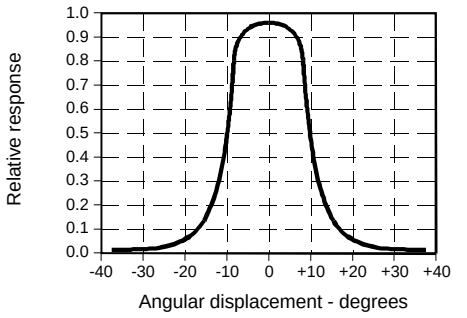


Fig. 2 Collector Current vs Ambient Temperature

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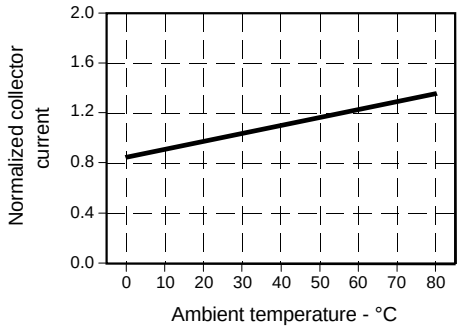

Fig. 3 Dark Current vs Temperature

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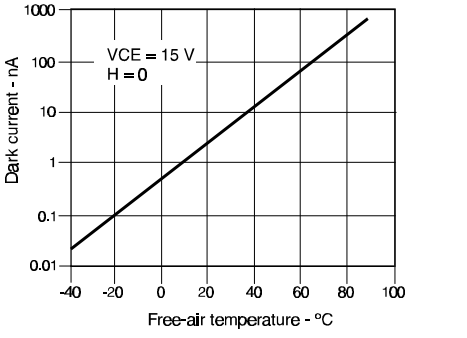

Fig. 4 Non-Saturated Switching Time vs Load Resistance

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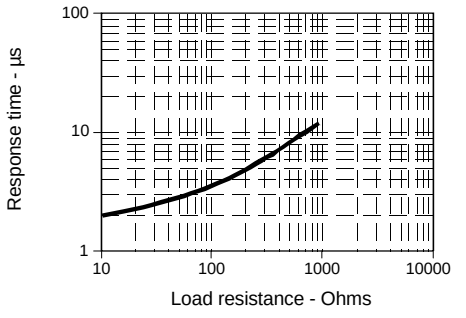

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Fig. 5 Spectral Responsivity

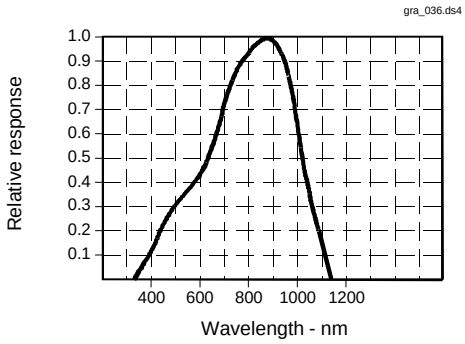
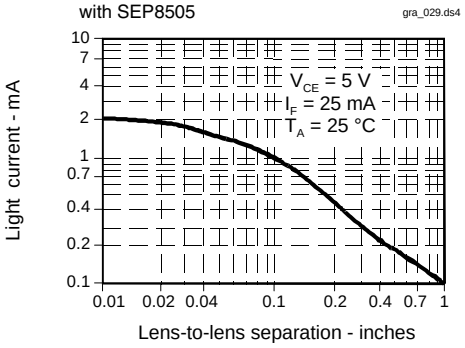


Fig. 6 Coupling Characteristics with SEP8505



All Performance Curves Show Typical Values

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Authorized Distributor

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