SDP8436

Silicon Phototransistor

FEATURES

- Side-looking plastic package
- 18° (nominal) acceptance angle
- Enhanced coupling distance
- Internal visible light rejection filter
- Low profile for design flexibility
- Wide sensitivity ranges
- Mechanically matched to SEP8736 infrared emitting diode

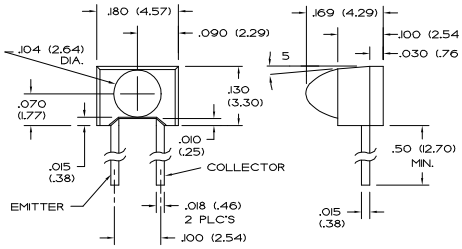
INFRA-82.TIF

DESCRIPTION

The SDP8436 is an NPN silicon phototransistor molded in a black plastic package which combines the mounting advantages of a side-looking package with the narrow acceptance angle and high optical gain of a T- 1 package. The SDP8436 is designed for those applications which require longer coupling distances than standard side- looking devices can provide, such as touch screens. The device is also well suited to applications in which adjacent channel crosstalk could be a problem. The package is highly transmissive to the IR source energy while it provides effective shielding against visible ambient light.

OUTLINE DIMENSIONS in inches (mm)

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



DIM_019.ds4

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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
SDP8436-001		0.50				H=1 mW/cm² (1)
SDP8436-002		4.00		10.0		
SDP8436-003		7.00		17.5		
SDP8436-004		12.5				
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=0.1 mA H=1 mW/cm²
Angular Response (2)	Ø		18		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 an IRED with a peak wavelength of 880 nm.
2. Angular response is defined as the total included angle between the half sensitivity points.

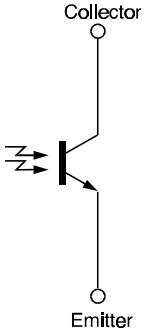
ABSOLUTE MAXIMUM RATINGS

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

Collector-Emitter Voltage	30 V
Emitter-Collector Voltage	5 V
Power Dissipation	100 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 0.78 mW/°C.

SCHEMATIC



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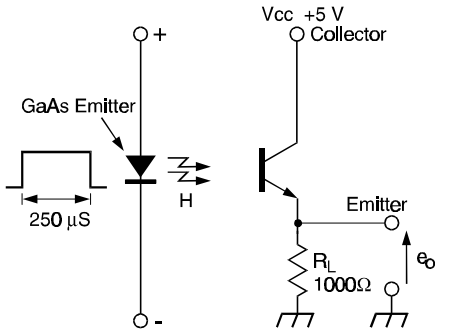
SWITCHING TIME TEST CIRCUIT

cir_015.cdr



SWITCHING WAVEFORM

cir_004.cdr

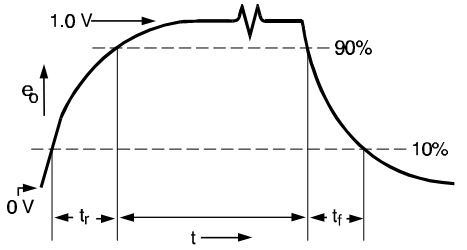


Fig. 1 Responsivity vs Angular Displacement

gra_013.ds4

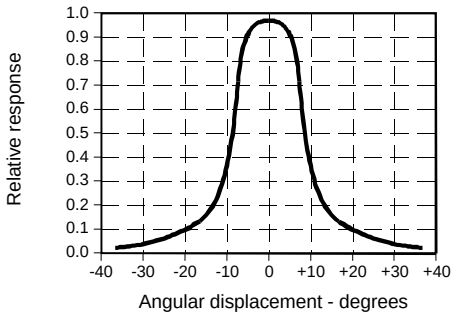


Fig. 2 Collector Current vs Ambient Temperature

gra_039.ds4

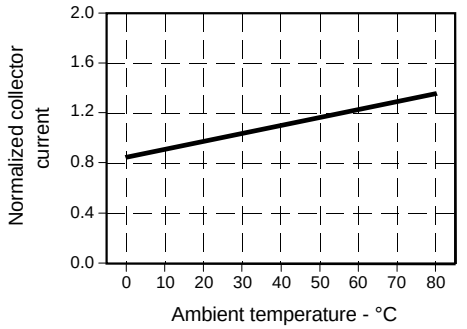


Fig. 3 Dark Current vs Temperature

gra_301.cdr

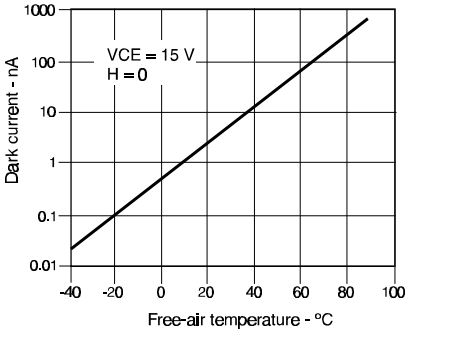


Fig. 4 Non-Saturated Switching Time vs Load Resistance

gra_041.ds4

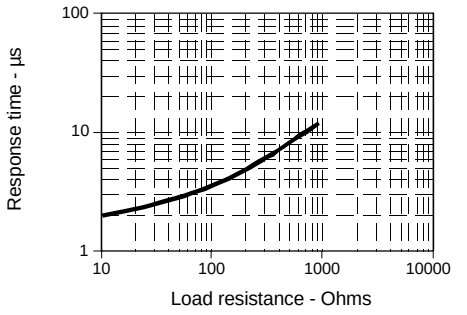


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Fig. 5 Spectral Responsivity

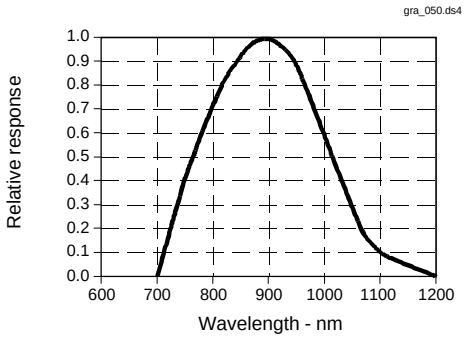
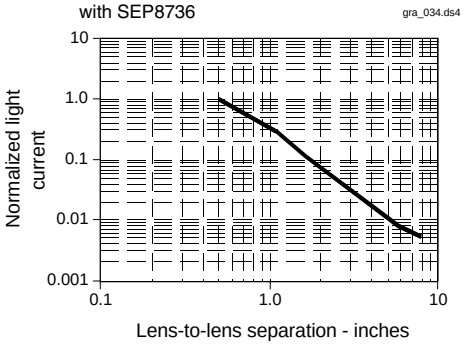


Fig. 6 Coupling Characteristics with SEP8736



All Performance Curves Show Typical Values