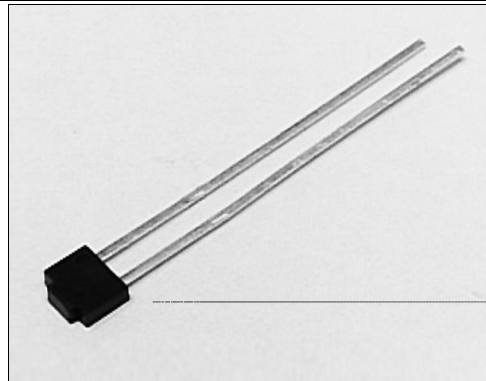


# SDP8407

## Silicon Phototransistor

### FEATURES

- End-looking plastic package
- 135° (nominal) acceptance angle
- Low profile for design flexibility
- Mechanically and spectrally matched to SEP8507 infrared emitting diode



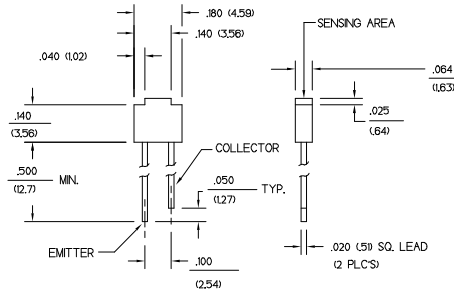
INFRA-16.TIF

### DESCRIPTION

The SDP8407 is an NPN silicon phototransistor molded in an end-looking black plastic package. The chip is positioned to accept radiation from the top of the package. Lead lengths are staggered to provide a simple method of polarity identification.

### OUTLINE DIMENSIONS in inches (mm)

Tolerance 3 plc decimals ±0.008(0.20)  
2 plc decimals ±0.020(0.51)



DIM\_018.dwg

# SDP8407

## Silicon Phototransistor

### ELECTRICAL CHARACTERISTICS (25°C unless otherwise noted)

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	TEST CONDITIONS
Light Current SDP8407-001	$I_L$	0.10			mA	$V_{CE}=5\text{ V}$ $H=1\text{ mW/cm}^2$ <sup>(1)</sup>
Collector Dark Current	$I_{CEO}$			100	nA	$V_{CE}=10\text{ V}$ , $H=0$
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	30			V	$I_C=100\text{ }\mu\text{A}$
Emitter-Collector Breakdown Voltage	$V_{(BR)ECO}$	5.0			V	$I_E=100\text{ }\mu\text{A}$
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$			0.4	V	$I_C=10\text{ }\mu\text{A}$ $H=1\text{ mW/cm}^2$
Angular Response <sup>(2)</sup>	$\emptyset$		135		degr.	$I_F=\text{Constant}$
Rise And Fall Time	$t_r, t_f$		15		$\mu\text{s}$	$V_{CC}=5\text{ V}$ , $I_L=1\text{ mA}$ $R_L=1000\text{ }\Omega$

#### Notes

- The radiation source is an IRED with a peak wavelength of 935 nm.
- Angular response is defined as the total included angle between the half sensitivity points.

### ABSOLUTE MAXIMUM RATINGS

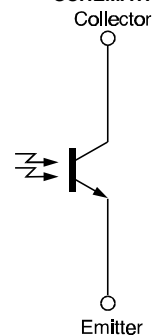
(25°C Free-Air Temperature unless otherwise noted)

Collector-Emitter Voltage	30 V
Emitter-Collector Voltage	5 V
Power Dissipation	100 mW <sup>(1)</sup>
Operating Temperature Range	-40°C to 85°C
Storage Temperature Range	-40°C to 85°C
Soldering Temperature (5 sec)	240°C

#### Notes

- Derate linearly from 25°C free-air temperature at the rate of 0.66 mW/°C.

### SCHEMATIC



Honeywell reserves the right to make changes in order to improve design and supply the best products possible.

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# SDP8407

## Silicon Phototransistor

### SWITCHING TIME TEST CIRCUIT

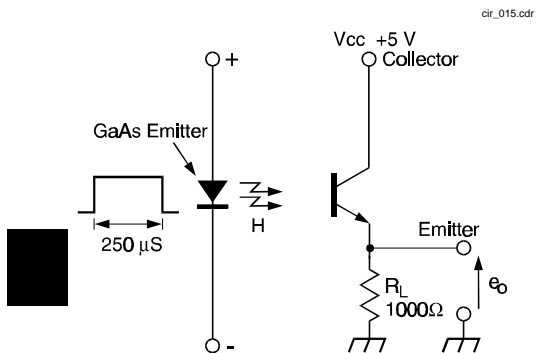


Fig. 1 Responsivity vs Angular Displacement

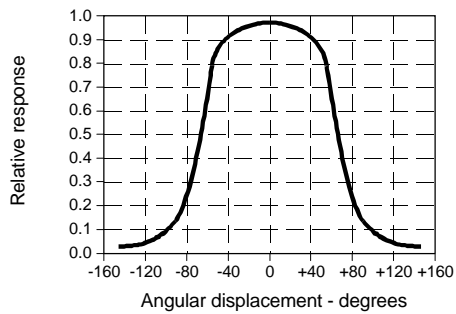
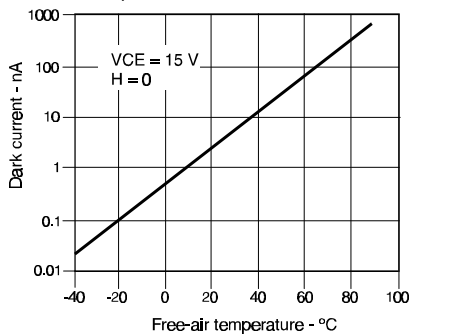


Fig. 3 Dark Current vs Temperature



All Performance Curves Show Typical Values

### SWITCHING WAVEFORM

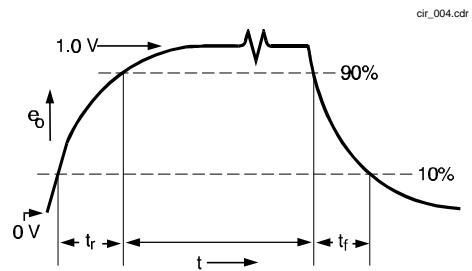


Fig. 2 Collector Current vs Ambient Temperature

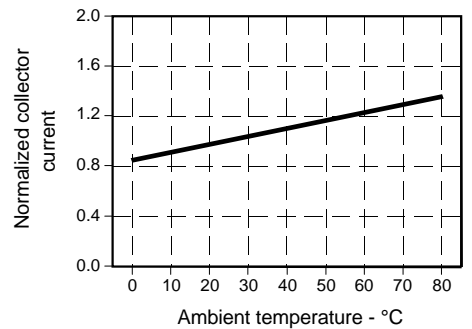
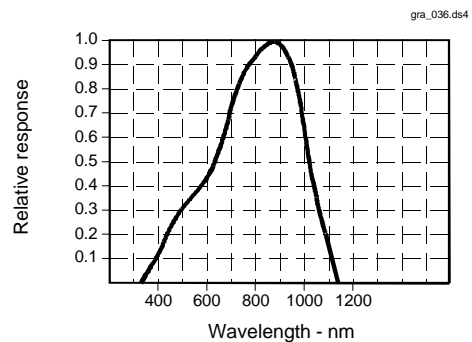


Fig. 4 Spectral Responsivity



**SDP8407**  
Silicon Phototransistor

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