

# 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



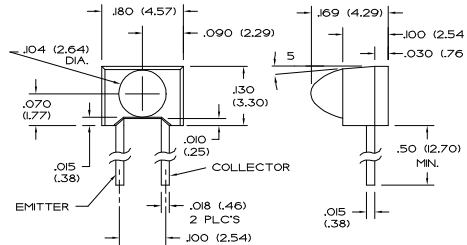
INFRA-82.TIF

### 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.dwg

# SDP8436

## Silicon Phototransistor

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

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	TEST CONDITIONS
Light Current	$I_L$				mA	$V_{CE}=5\text{ V}$ $H=1\text{ mW/cm}^2$ <sup>(1)</sup>
SDP8436-001		0.50				
SDP8436-002		4.00	10.0			
SDP8436-003		7.00	17.5			
SDP8436-004		12.5				
Collector Dark Current	$I_{CEO}$			100	nA	$V_{CE}=15\text{ V}$ , $H=0$
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	$I_C=0.1\text{ mA}$ $H=1\text{ mW/cm}^2$
Angular Response <sup>(2)</sup>	$\varnothing$		18		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 880 nm.
- Angular response is defined as the total included angle between the half sensitivity points.

### ABSOLUTE MAXIMUM RATINGS

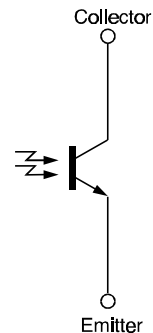
(25°C Free-Air Temperature unless otherwise noted)

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 0.78 mW/°C.

### SCHEMATIC



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

# Honeywell

# SDP8436

## Silicon Phototransistor

SWITCHING TIME TEST CIRCUIT

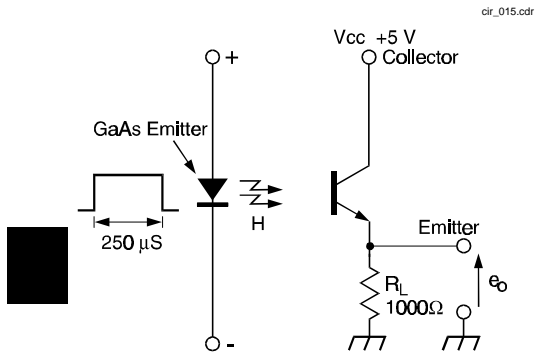


Fig. 1 Responsivity vs Angular Displacement

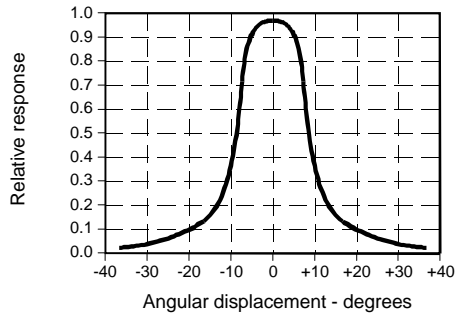
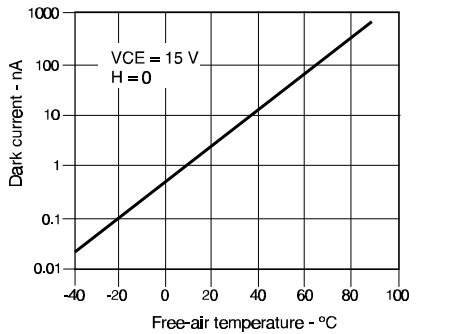


Fig. 3 Dark Current vs Temperature



SWITCHING WAVEFORM

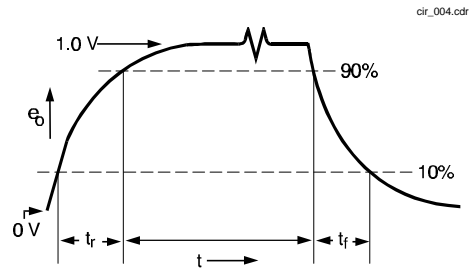


Fig. 2 Collector Current vs Ambient Temperature

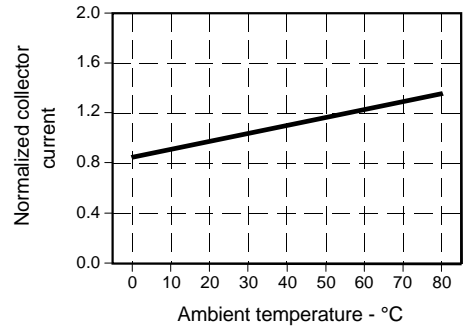
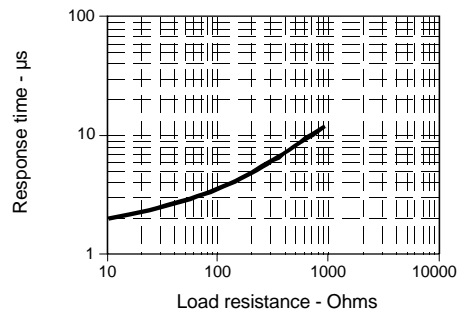


Fig. 4 Non-Saturated Switching Time vs Load Resistance



# SDP8436

Silicon Phototransistor

Fig. 5 Spectral Responsivity

gra\_050.ds4

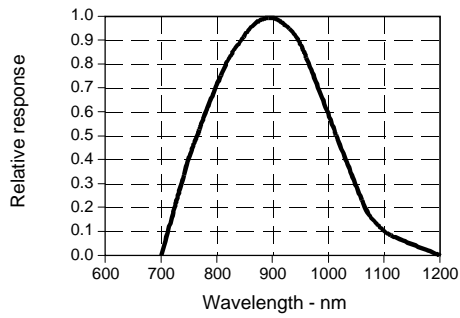
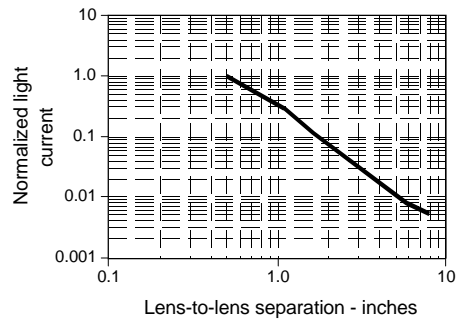


Fig. 6 Coupling Characteristics with SEP8736

gra\_034.ds4



All Performance Curves Show Typical Values