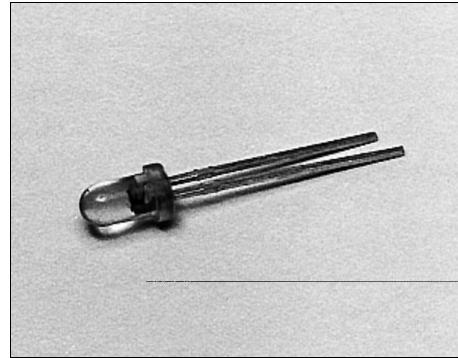


SDP8405

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



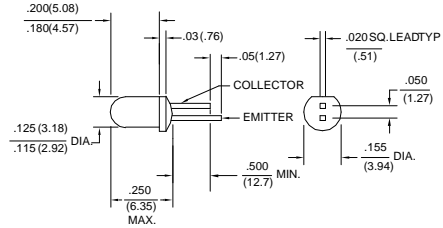
INFRA-22.TIF

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)



DIM_100.dwg

SDP8405

Silicon Phototransistor

ELECTRICAL CHARACTERISTICS (25°C unless otherwise noted)

| PARAMETER | SYMBOL | MIN | TYP | MAX | UNITS | TEST CONDITIONS |
|--------------------------------------|---------------|------|-----|------|---------------|--|
| Light Current | I_L | | | | mA | $V_{CE}=5\text{ V}$ $H=5\text{ mW/cm}^2$ (1) |
| SDP8405-001 | | 1.00 | | | | |
| SDP8405-002 | | 7.00 | | 14.0 | | |
| SDP8405-003 | | 12.0 | | 24.0 | | |
| Light Current | I_L | | | | mA | $V_{CE}=5\text{ V}$ $H=0.25\text{ mW/cm}^2$ (2) |
| SDP8405-011 | | 0.16 | | | | |
| 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 | $V_{CE}=15\text{ V}, H=0$ |
| 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 | $I_C=I_L/8$ $H=5\text{ mW/cm}^2$ $H=0.25\text{ mW/cm}^2$ |
| SDP8405-001 to -003 | | | | | | |
| SDP8405-011 to -015 | | | | | | |
| Angular Response (3) | \emptyset | | 20 | | degr. | $I_F=\text{Constant}$ |
| Rise And Fall Time | t_r, t_f | | 15 | | μs | $V_{CC}=5\text{ V}, I_L=1\text{ mA}$ $R_L=1000\text{ }\Omega$ |

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.

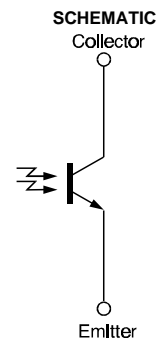
ABSOLUTE MAXIMUM RATINGS

(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.



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

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SDP8405

Silicon Phototransistor

SWITCHING TIME TEST CIRCUIT

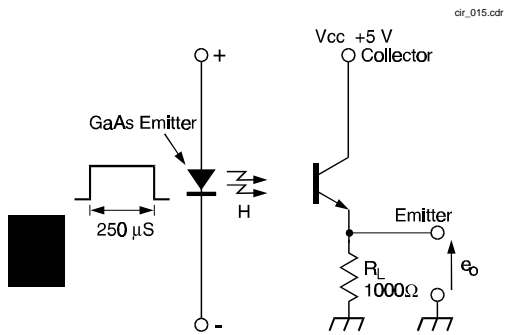


Fig. 1 Responsivity vs Angular Displacement

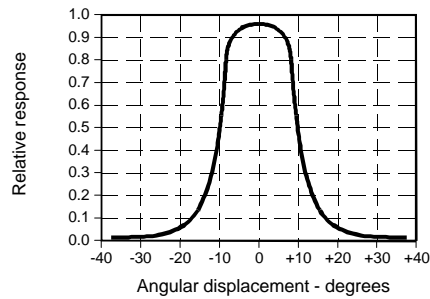
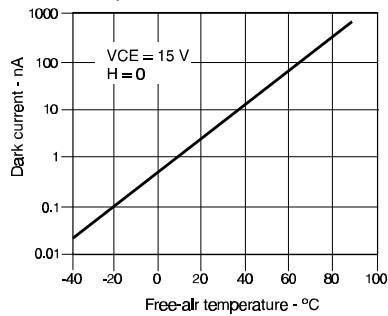


Fig. 3 Dark Current vs Temperature



SWITCHING WAVEFORM

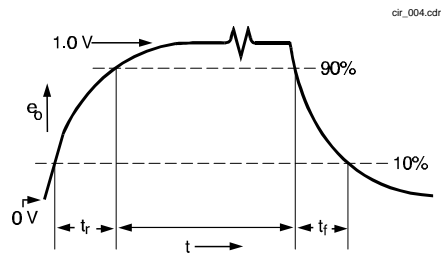


Fig. 2 Collector Current vs Ambient Temperature

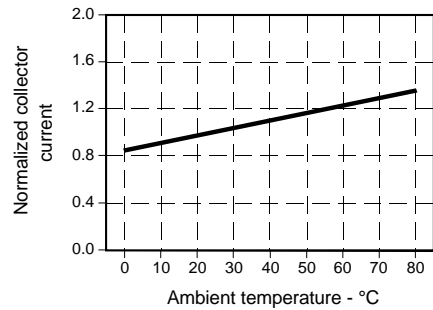
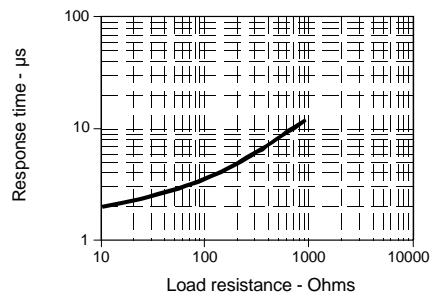


Fig. 4 Non-Saturated Switching Time vs Load Resistance



SDP8405

Silicon Phototransistor

Fig. 5 Spectral Responsivity

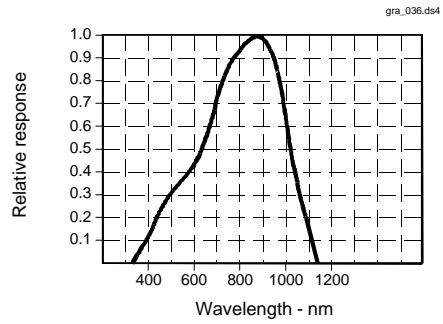
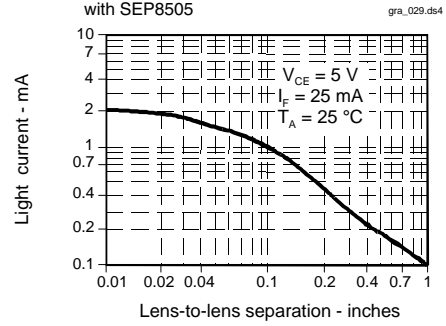


Fig. 6 Coupling Characteristics with SEP8505



All Performance Curves Show Typical Values

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