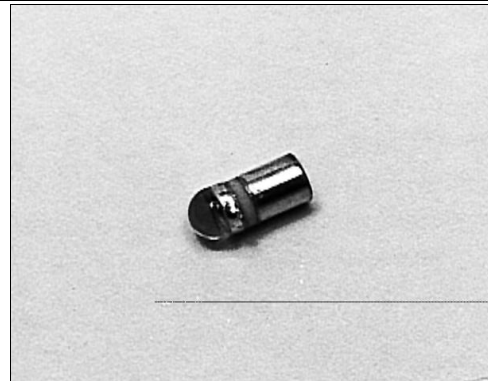


# SD2440

## Silicon Phototransistor

### FEATURES

- Miniature, hermetically sealed, pill style, metal can package
- 48° acceptance angle
- Wide operating temperature range (-55°C to +125°C)
- Ideal for direct mounting to printed circuit boards
- Wide sensitivity ranges
- Mechanically and spectrally matched to SE2460 and SE2470 infrared emitting diodes



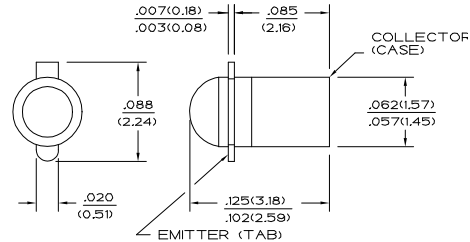
INFRA-1.TIF

### DESCRIPTION

The SD2440 is an NPN silicon phototransistor mounted in a hermetically sealed glass lensed metal can package. This package directly mounts in a double sided PC board.

### OUTLINE DIMENSIONS in inches (mm)

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



# SD2440

## Silicon Phototransistor

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

| PARAMETER   | SYMBOL        | MIN                      | TYP | MAX | UNITS         | TEST CONDITIONS   |
|---|---------------|--------------------------|-----|-----|---------------|---|
| Light Current<br>SD2440-001<br>SD2440-002<br>SD2440-003<br>SD2440-004 | $I_L$         | 0.5<br>2.0<br>4.0<br>7.0 |     |     | mA            | $V_{CE}=5\text{ V}$<br>$H=20\text{ mW/cm}^2$ (1)                    |
| 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             | $I_C=I_L/8$<br>$H=20\text{ mW/cm}^2$                                |
| Angular Response (2)  | $\varnothing$ |                          | 48  |     | degr.         | $I_F=\text{Constant}$   |
| Rise And Fall Time  | $t_r, t_f$    |                          | 15  |     | $\mu\text{s}$ | $V_{CC}=5\text{ V}$ , $I_L=1\text{ mA}$<br>$R_L=1000\text{ }\Omega$ |

Notes

- The radiation source is a tungsten lamp operating at a color temperature of 2870°K.
- Angular response is defined as the total included angle between the half sensitivity points.

### ABSOLUTE MAXIMUM RATINGS

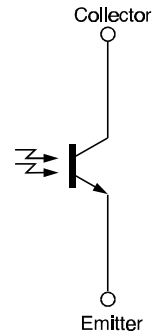
(25°C Free-Air Temperature unless otherwise noted)

|                                |                |
|--------------------------------|----------------|
| Collector-Emitter Voltage      | 30 V           |
| Emitter-Collector Voltage      | 5 V            |
| Power Dissipation              | 125 mW (1)     |
| Operating Temperature Range    | -55°C to 125°C |
| Storage Temperature Range      | -65°C to 150°C |
| Soldering Temperature (10 sec) | 260°C          |

Notes

- Derate linearly from 25°C free-air temperature at the rate of 1.19 mW/°C.

### SCHEMATIC



# SD2440

## Silicon Phototransistor

SWITCHING TIME TEST CIRCUIT

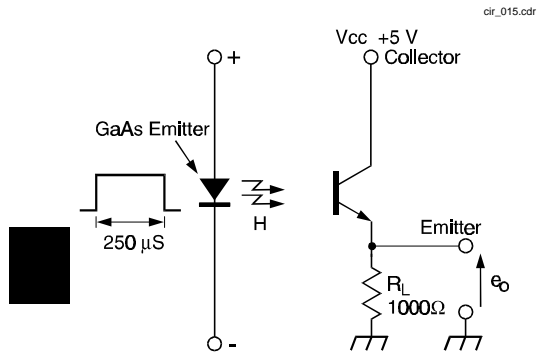


Fig. 1 Responsivity vs Angular Displacement

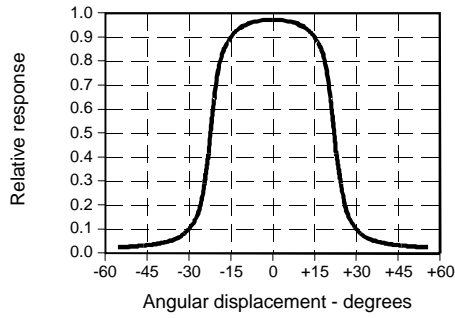
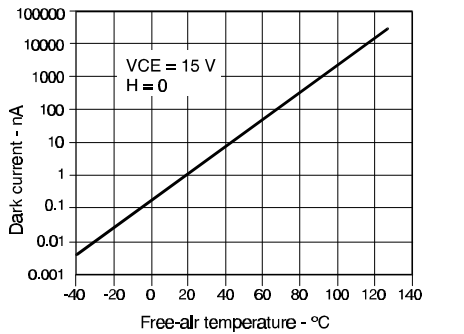


Fig. 3 Dark Current vs Temperature



SWITCHING WAVEFORM

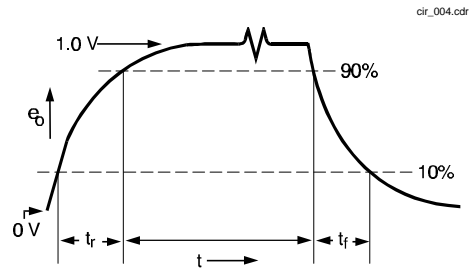


Fig. 2 Collector Current vs Ambient Temperature

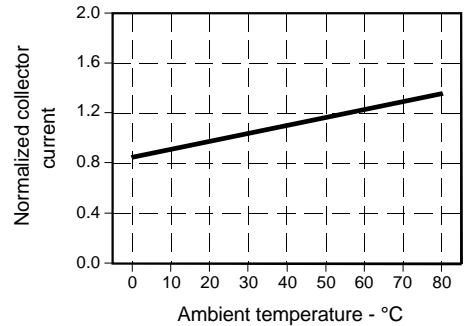
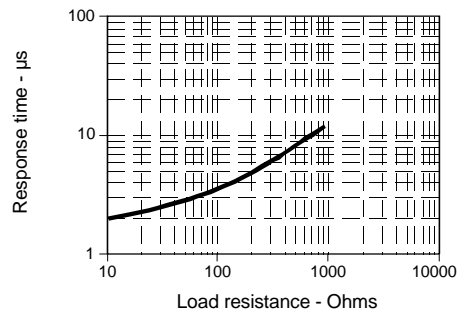


Fig. 4 Non-Saturated Switching Time vs Load Resistance



# SD2440

## Silicon Phototransistor

Fig. 5 Spectral Responsivity

gra\_036.ds4

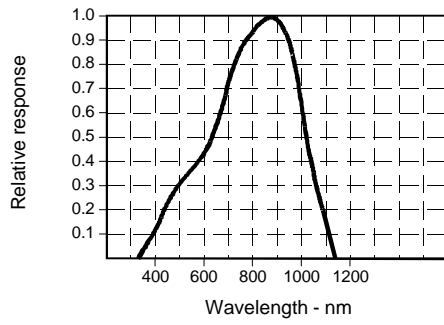
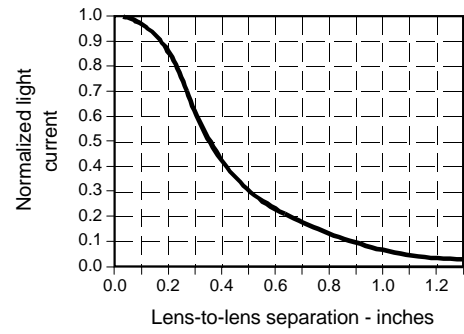


Fig. 6 Coupling Characteristics with SE2460

gra\_015.ds4



All Performance Curves Show Typical Values