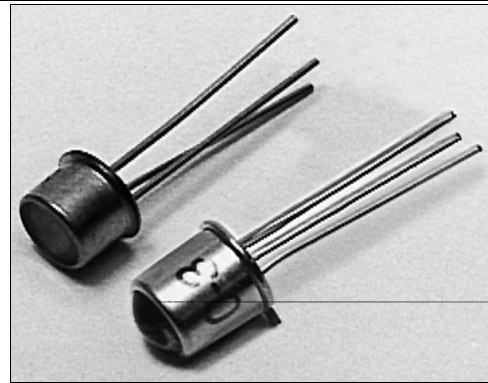


# SD3410/5410

## Silicon Photodarlington

### FEATURES

- TO-46 metal can package
- Choice of flat window or lensed package
- 90° or 12° (nominal) acceptance angle option
- Wide operating temperature range (-55°C to +125°C)
- Wide sensitivity ranges
- Mechanically and spectrally matched to SE3450/5450, SE3455/5455 and SE3470/5470 infrared emitting diodes



INFRA-17.TIF

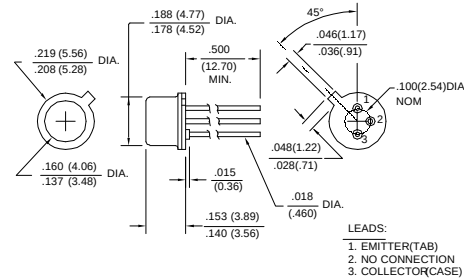
### DESCRIPTION

The SD3410/5410 series consists of an NPN silicon photodarlington mounted in a TO-46 metal can package. The SD3410 has flat window cans providing a wide acceptance angle, while the SD5410 has glass lensed cans providing a narrow acceptance angle. The TO-46 packages are ideally suited for operation in hostile environments.

### OUTLINE DIMENSIONS in inches (mm)

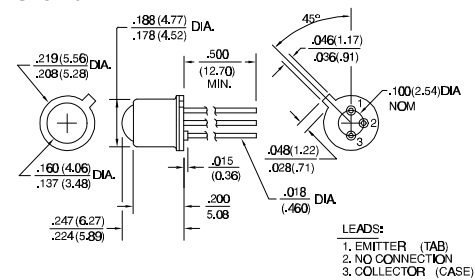
|           |                |              |
|-----------|----------------|--------------|
| Tolerance | 3 plc decimals | ±0.005(0.12) |
|           | 2 plc decimals | ±0.020(0.51) |

#### SD3410



DIM\_021.ds4

#### SD5410



DIM\_21b.ds4

# SD3410/5410

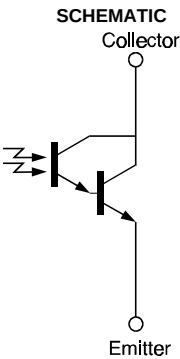
Silicon Photodarlington

| ELECTRICAL CHARACTERISTICS (25°C unless otherwise noted)              |               |                          |          |     |               |                                                                     |
|-----------------------------------------------------------------------|---------------|--------------------------|----------|-----|---------------|---------------------------------------------------------------------|
| PARAMETER                                                             | SYMBOL        | MIN                      | TYP      | MAX | UNITS         | TEST CONDITIONS                                                     |
| Light Current<br>SD3410-001<br>SD3410-002<br>SD3410-003<br>SD3410-004 | $I_L$         | 0.6<br>2.0<br>4.0<br>8.0 |          |     | mA            | $V_{CE}=5\text{ V}$<br>$H=2\text{ mW/cm}^2$ (1)                     |
| Light Current<br>SD5410-001<br>SD5410-002<br>SD5410-003               | $I_L$         | 2.0<br>4.0<br>8.0        |          |     | mA            | $V_{CE}=5\text{ V}$<br>$H=0.2\text{ mW/cm}^2$ (1)                   |
| Collector Dark Current                                                | $I_{CE0}$     |                          |          | 250 | nA            | $V_{CE}=10\text{ V}$ , $H=0$                                        |
| Collector-Emitter Breakdown Voltage                                   | $V_{(BR)CEO}$ | 15                       |          |     | 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<br>SD3410<br>SD5410              | $V_{CE(SAT)}$ |                          |          | 1.1 | V             | $I_C=1\text{ mA}$<br>$H=2\text{ mW/cm}^2$<br>$H=0.2\text{ mW/cm}^2$ |
| Angular Response (2)<br>SD3410<br>SD5410                              | $\emptyset$   |                          | 90<br>12 |     | degr.         | $I_F=\text{Constant}$                                               |
| Rise And Fall Time                                                    | $t_r, t_f$    |                          | 75       |     | $\mu\text{s}$ | $V_{CC}=5\text{ V}$ , $I_L=1\text{ mA}$<br>$R_L=100\text{ }\Omega$  |

Notes  
1. The radiation source is a tungsten lamp operating at a color temperature of 2870°K.  
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                          | 15 V           |
| Emitter-Collector Voltage                          | 5 V            |
| Power Dissipation                                  | 150 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  
1. Derate linearly from 25°C free-air temperature at the rate of 1.43 mW/°C.



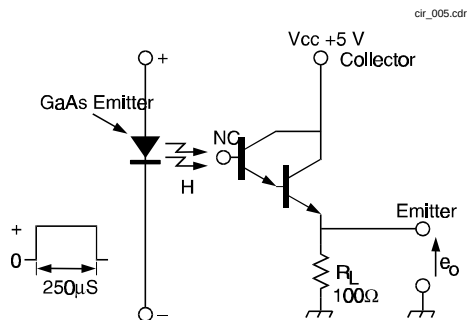
Honeywell reserves the right to make changes in order to improve design and supply the best products possible.

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# SD3410/5410

## Silicon Photodarlington

SWITCHING TIME TEST CIRCUIT



SWITCHING WAVEFORM

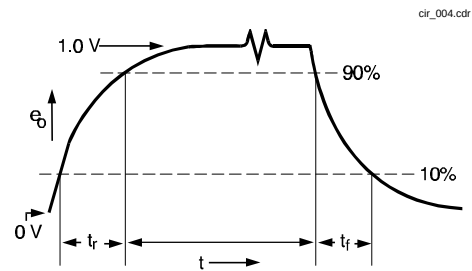


Fig. 1 Responsivity vs Angular Displacement (SD3410)

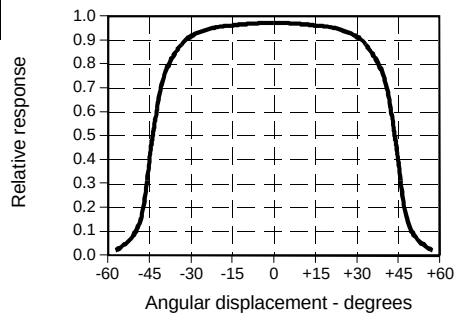


Fig. 2 Responsivity vs Angular Displacement (SD5410)

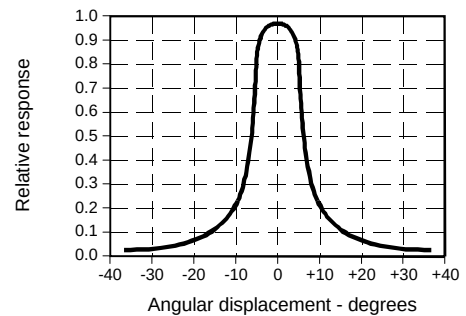


Fig. 3 Non-Saturated Switching Time vs Load Resistance

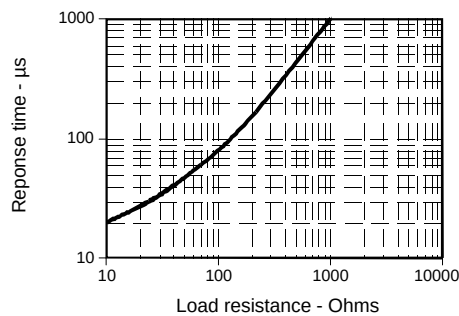
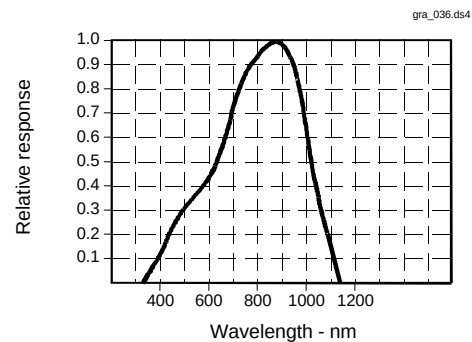


Fig. 4 Spectral Responsivity



All Performance Curves Show Typical Values

# SD3410/5410

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