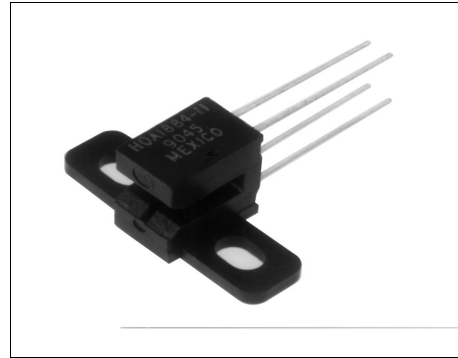


# HOA1884

## Transmissive Sensor

### FEATURES

- Choice of phototransistor or photodarlington output
- Side mount package
- Accurate position sensing
- 0.125 in.(3.18 mm) slot width



INFRA-75.TIF

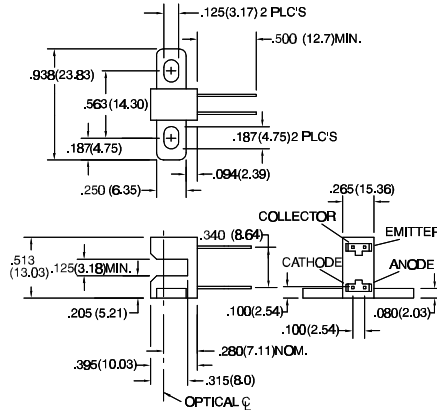
### DESCRIPTION

The HOA1884 series consists of an infrared emitting diode facing an NPN silicon phototransistor (HOA1884-011, -012) or photodarlington (HOA1884-013) encased in a black thermoplastic housing. Detector switching takes place whenever an opaque object passes through the slot between emitter and detector. The side mounting package is useful in applications in which the interruptive element is parallel to the mounting plane. Both emitter and detector have a 0.020 in.(.508 mm) x 0.040 in.(1.02 mm) vertical aperture. The HOA1884 series employs plastic molded components. For additional component information see SEP8506, SDP8406, and SDP8106.

Housing material is polyester. Housings are soluble in chlorinated hydrocarbons and ketones. Recommended cleaning agents are methanol and isopropanol.

### OUTLINE DIMENSIONS in inches (mm)

Tolerance 3 plc decimals ±0.010(0.25)  
2 plc decimals ±0.020(0.51)



DIM\_054.cdr

# HOA1884

## Transmissive Sensor

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

| PARAMETER                            | SYMBOL        | MIN | TYP | MAX | UNITS         | TEST CONDITIONS   |
|--------------------------------------|---------------|-----|-----|-----|---------------|---|
| <b>IR EMITTER</b>                    |               |     |     |     |               |   |
| Forward Voltage                      | $V_F$         |     |     | 1.6 | V             | $I_F=20\text{ mA}$  |
| Reverse Leakage Current              | $I_R$         |     |     | 10  | $\mu\text{A}$ | $V_R=3\text{ V}$  |
| <b>DETECTOR</b>                      |               |     |     |     |               |   |
| Collector-Emitter Breakdown Voltage  | $V_{(BR)CEO}$ |     |     |     | V             | $I_C=100\ \mu\text{A}$  |
| HOA1884-011, -012                    |               | 30  |     |     |               |   |
| HOA1884-013                          |               | 15  |     |     |               |   |
| Emitter-Collector Breakdown Voltage  | $V_{(BR)ECO}$ | 5.0 |     |     | V             | $I_E=100\ \mu\text{A}$  |
| Collector Dark Current               | $I_{CEO}$     |     |     |     | nA            | $V_{CE}=10\text{ V}$<br>$I_F=0$   |
| HOA1884-011, -012                    |               |     |     | 100 |               |   |
| HOA1884-013                          |               |     |     | 250 |               |   |
| <b>COUPLED CHARACTERISTICS</b>       |               |     |     |     |               |   |
| On-State Collector Current           | $I_{C(ON)}$   |     |     |     | mA            | $V_{CE}=5\text{ V}$<br>$I_F=20\text{ mA}$   |
| HOA1884-011                          |               | 0.3 |     |     |               |   |
| HOA1884-012                          |               | 1.8 |     |     |               |   |
| HOA1884-013                          |               | 4.0 |     |     |               |   |
| Collector-Emitter Saturation Voltage | $V_{CE(SAT)}$ |     |     |     | V             | $I_F=20\text{ mA}$<br>$I_C=40\ \mu\text{A}$<br>$I_C=230\ \mu\text{A}$<br>$I_C=500\ \mu\text{A}$ |
| HOA1884-011                          |               |     |     | 0.4 |               |   |
| HOA1884-012                          |               |     |     | 0.4 |               |   |
| HOA1884-013                          |               |     |     | 1.1 |               |   |
| Rise And Fall Time                   | $t_r, t_f$    |     |     |     | $\mu\text{s}$ | $V_{CC}=5\text{ V}, I_C=1\text{ mA}$<br>$R_L=1000\ \Omega$<br>$R_L=100\ \Omega$                 |
| HOA1884-011, -012                    |               |     | 15  |     |               |   |
| HOA1884-013                          |               |     | 75  |     |               |   |

### ABSOLUTE MAXIMUM RATINGS

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

|                               |               |
|-------------------------------|---------------|
| Operating Temperature Range   | -40°C to 85°C |
| Storage Temperature Range     | -40°C to 85°C |
| Soldering Temperature (5 sec) | 240°C         |

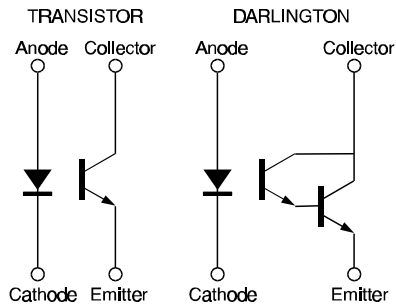
### IR EMITTER

|                            |                       |
|----------------------------|-----------------------|
| Power Dissipation          | 100 mW <sup>(1)</sup> |
| Reverse Voltage            | 3 V                   |
| Continuous Forward Current | 50 mA                 |

### DETECTOR

|                           | TRANS.                | DARLINGTON            |
|---------------------------|-----------------------|-----------------------|
| Collector-Emitter Voltage | 30 V                  | 15 V                  |
| Emitter-Collector Voltage | 5 V                   | 5 V                   |
| Power Dissipation         | 100 mW <sup>(1)</sup> | 100 mW <sup>(1)</sup> |
| Collector DC Current      | 30 mA                 | 30 mA                 |

### SCHEMATIC



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

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327

# HOA1884

## Transmissive Sensor

Fig. 1 IRED Forward Bias Characteristics

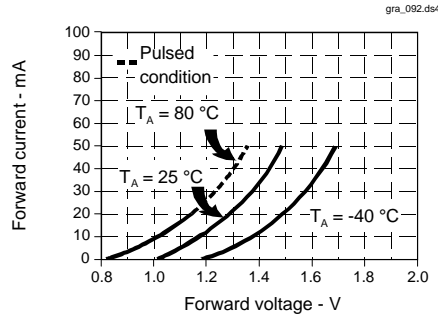


Fig. 2 Non-Saturated Switching Time vs Load Resistance

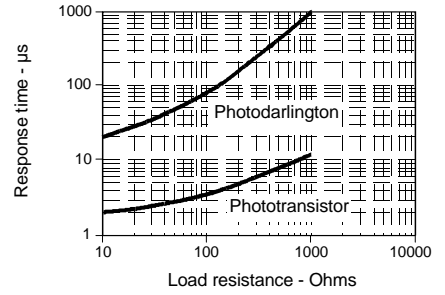


Fig. 3 Dark Current vs Temperature

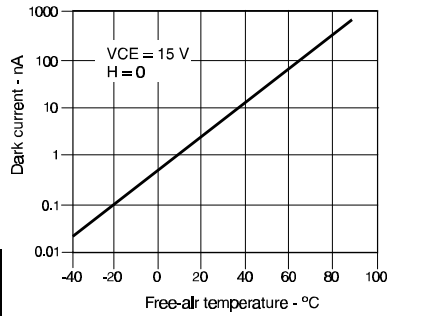
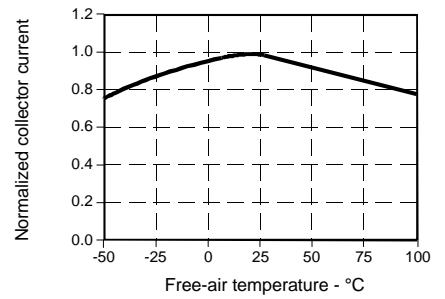


Fig. 4 Collector Current vs Ambient Temperature



All Performance Curves Show Typical Values

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329