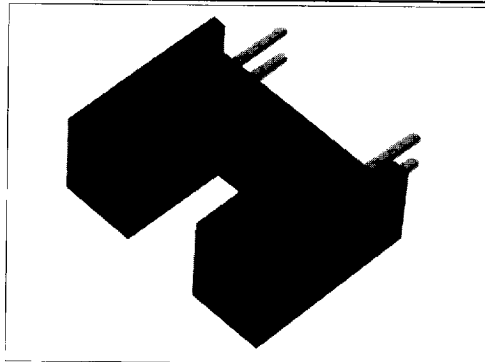


# HOA1886

## Transmissive Sensor

### FEATURES

- Choice of phototransistor or photodarlington output
- Ambient light and dust protective filter
- 0.200 in.(5.08 mm) slot width



INFRA-76.TIF

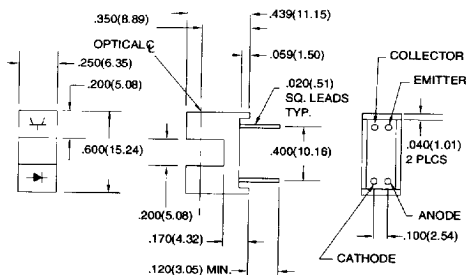
### DESCRIPTION

The HOA1886 series consists of an infrared emitting diode facing an NPN silicon phototransistor (HOA1886-011, -012) or photodarlington (HOA1886-013) encased in a black thermoplastic housing with IR transmissive inserts which form the optical windows. This arrangement provides excellent protection against ambient light while eliminating aperture openings which could be clogged by airborne contaminants. Detector switching takes place whenever an opaque object passes through the slot between emitter and detector. The HOA1886 series employs plastic molded components and has a 0.050 in.(1.27 mm) x 0.060 in.(1.52 mm) vertical aperture in front of the detector. For additional component information see SEP8506/8706, SDP8406, and SDP8106.

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

### OUTLINE DIMENSIONS in inches (mm)

|           |                |                   |
|-----------|----------------|-------------------|
| Tolerance | 3 plc decimals | $\pm 0.010(0.25)$ |
|           | 2 plc decimals | $\pm 0.020(0.51)$ |



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# HOA1886

## Transmissive Sensor

### ELECTRICAL CHARACTERISTIC (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<br>HOA1886-011, -012<br>HOA1886-013           | $V_{(BR)CEO}$ | 30<br>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 Dark Current<br>HOA1886-011, -012<br>HOA1886-013                        | $I_{CEO}$     |                   |                   | 100<br>250 | nA            | $V_{CE}=10\text{ V}$<br>$I_F=0$                                                                                   |
| <b>COUPLED CHARACTERISTICS</b>                                                    |               |                   |                   |            |               |                                                                                                                   |
| On-State Collector Current<br>HOA1886-011<br>HOA1886-012<br>HOA1886-013           | $I_{C(ON)}$   | 0.3<br>1.8<br>4.0 |                   |            | mA            | $V_{CE}=5\text{ V}$<br>$I_F=20\text{ mA}$                                                                         |
| Collector-Emitter Saturation Voltage<br>HOA1886-011<br>HOA1886-012<br>HOA1886-013 | $V_{CE(SAT)}$ |                   | 0.4<br>0.4<br>1.1 |            | V             | $I_F=20\text{ mA}$<br>$I_C=40\text{ }\mu\text{A}$<br>$I_C=230\text{ }\mu\text{A}$<br>$I_C=500\text{ }\mu\text{A}$ |
| Rise And Fall Time<br>HOA1886-011, -012<br>HOA1886-013                            | $t_r, t_f$    |                   | 15<br>75          |            | $\mu\text{s}$ | $V_{CC}=5\text{ V}, I_C=1\text{ mA}$<br>$R_L=1000\text{ }\Omega$<br>$R_L=100\text{ }\Omega$                       |

### 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                 |

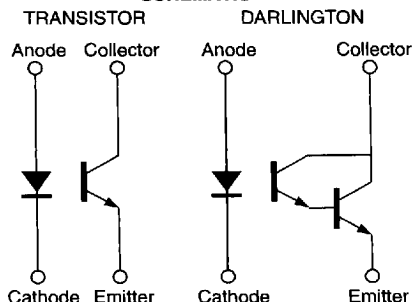
### DETECTOR

|                           |                       |
|---------------------------|-----------------------|
| Collector-Emitter Voltage | 30 V                  |
| Emitter-Collector Voltage | 5 V                   |
| Power Dissipation         | 100 mW <sup>(1)</sup> |

### Notes

1. Derate linearly at 0.78 mW/°C above 25°C.

### SCHEMATIC



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