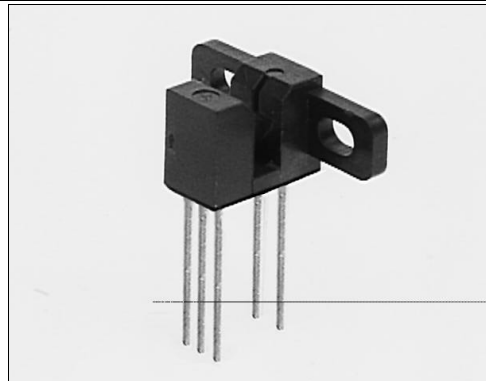


HOA2004

Transmissive Optoschmitt Sensor

FEATURES

- Direct TTL interface
- Buffer logic
- Side mount package
- 0.125 in.(3.18 mm) slot width



INFRA-67.TIF

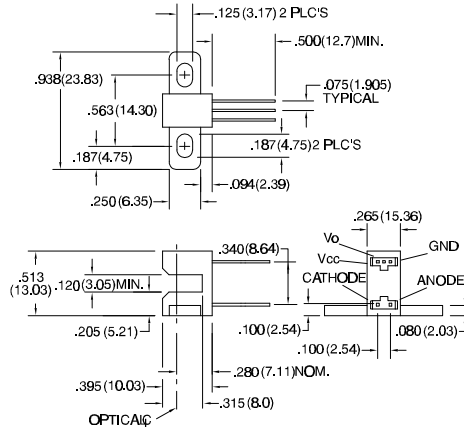
DESCRIPTION

The HOA2004 consists of an infrared emitting diode facing an Optoschmitt detector encased in a black thermoplastic housing. The photodetector consists of a photodiode, amplifier, voltage regulator, Schmitt trigger and an NPN output transistor with 10 k Ω (nominal) pull-up resistor. The buffer logic provides a high output when the optical path is clear, and a low output when the path is interrupted. 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 narrow aperture is ideal for use in applications in which maximum position resolution is desired. The HOA2004 employs plastic molded components. For additional component information see SEP8506 and SDP8600.

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 $\pm 0.010(0.25)$
2 plc decimals $\pm 0.020(0.51)$



DIM_065.ds4

Transmissive Optoschmitt Sensor

| PARAMETER | SYMBOL | MIN | TYP | MAX | UNITS | TEST CONDITIONS |
|-------------------------------------|-------------------|-----|-----|-----|-------|--|
| IR EMITTER | | | | | | |
| Forward Voltage | V _F | | | 1.6 | V | I _F =20 mA |
| Reverse Leakage Current | I _R | | | 10 | μA | V _R =3 V |
| DETECTOR | | | | | | |
| Operating Supply Voltage | V _{CC} | 4.5 | | 12 | V | |
| Low Level Supply Current | I _{CC L} | 4.0 | | 12 | mA | V _{CC} =5 V |
| Low Level Supply Current | | 5.0 | | 15 | | V _{CC} =12 V |
| High Level Supply Current | I _{CC H} | 2.0 | | 10 | mA | V _{CC} =5 V |
| High Level Supply Current | | 3.0 | | 12 | | V _{CC} =12 V |
| Low Level Output Voltage | V _{OL} | | | 0.4 | V | I _{OL} =12.8 mA, I _F =0 mA |
| High Level Output Voltage | V _{OH} | 2.4 | | | V | I _{OH} =0, I _F =20 mA |
| Hysteresis ⁽²⁾ | HYST | | 10 | | % | |
| Propagation Delay, Low-High | t _{PLH} | | 5 | | μs | V _{CC} =5 V, I _F =20 mA |
| Propagation Delay, High-Low | t _{PHL} | | 5 | | μs | V _{CC} =5 V, I _F =20 mA |
| Rise Time | t _r | | 60 | | ns | R _L =390 Ω, C _L =50 pF |
| Fall Time | t _f | | 15 | | ns | R _L =390 Ω, C _L =50 pF |
| COUPLED CHARACTERISTICS | | | | | | |
| IRED Trigger Current HOA2004-001 | I _{FT} | | | 20 | mA | V _{CC} =5 V |

1. It is recommended that a bypass capacitor, 0.1 μF typical, be added between V_{CC} and GND near the device in order to stabilize power supply line.
2. Hysteresis is defined as the difference between the operating and release threshold intensities, expressed as a percentage of the operate threshold intensity.

| | |
|-------------------------------|---------------|
| Operating Temperature Range | -40°C to 70°C |
| Storage Temperature Range | -40°C to 85°C |
| Soldering Temperature (5 sec) | 240°C |

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

| | |
|------------------------------------|---------------------|
| Supply Voltage | 12 V ⁽²⁾ |
| Output Sink Current | 18 mA |
| Duration of Output | |
| Short to V _{CC} or Ground | 1.0 sec. |

HOA2004

Transmissive Optoschmitt Sensor

SWITCHING WAVEFORM

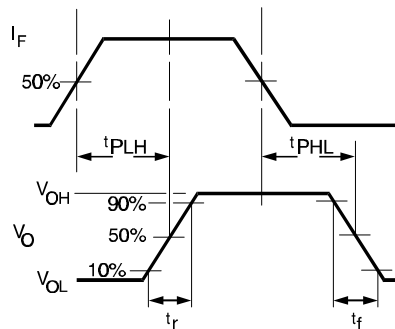
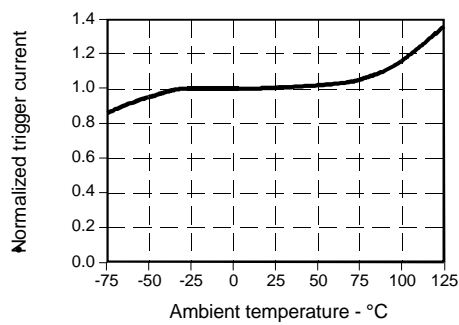
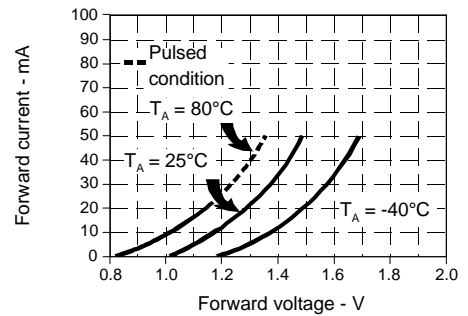


Fig. 2 IRED Trigger Current vs Temperature



All Performance Curves Show Typical Values

Fig. 1 IRED Forward Bias Characteristics



HOA2004

Transmissive Optoschmitt Sensor

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

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