

HOA2005

Transmissive Optoschmitt Sensor

FEATURES

- Direct TTL interface
- Buffer logic
- Side mount package
- Ambient light and dust protective filter
- Accurate position sensing
- 0.010 in.(0.25mm) aperture windows
- 0.125 in.(3.18 mm) slot width
- 24.0 in.(610 mm) min. 26 AWG UL 1429 wire leads

DESCRIPTION

The HOA2005 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 kΩ (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 blocked. 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 0.010 in.(.25 mm) x .060 in.(1.52 mm) vertical aperture. This feature is ideal for use in applications in which maximum position resolution is desired.

All devices employ a built-in strain relief for maximum wire attachment strength. The sensor housing contains IR transmissive optical windows. This arrangement provides excellent protection against ambient light while eliminating aperture openings which could be clogged by airborne contaminants. The HOA2005 series employs plastic molded components. For additional component information see SEP8506, and SDP8600.

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

Wire color and functions are:

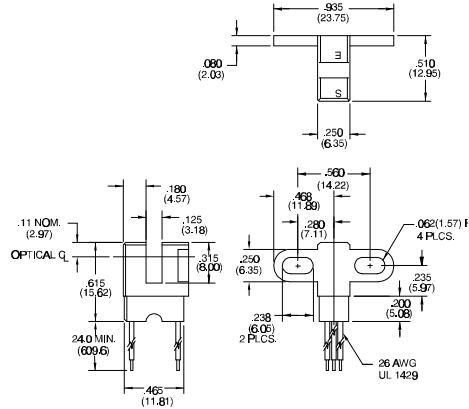
- Red - IRED Anode
- Black - IRED Cathode
- Green - Detector Ground
- White - Detector Vcc
- Blue - Detector Output



INFRA-90.TIF

OUTLINE DIMENSIONS in inches (mm)

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



DIM_063.cdr

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ELECTRICAL CHARACTERISTICS (25°C unless otherwise noted)

| PARAMETER | SYMBOL | MIN | TYP | MAX | UNITS | TEST CONDITIONS |
|---------------------------------------|-----------------------|-----|-----|-----|---------------|---|
| IR EMITTER | | | | | | |
| Forward Voltage | V_F | | 1.6 | | V | $I_F=20\text{ mA}$ |
| Reverse Leakage Current | I_R | | 10 | | μA | $V_R=3\text{ V}$ |
| DETECTOR | | | | | | |
| Operating Supply Voltage | V_{CC} | 4.5 | 12 | | V | |
| Low Level Supply Current | I_{CCL} | 4.0 | 12 | | mA | $V_{CC}=5\text{ V}$ $V_{CC}=12\text{ V}$ |
| High Level Supply Current | I_{CCH} | 2.0 | 10 | | mA | $V_{CC}=5\text{ V}$ $V_{CC}=12\text{ V}$ |
| Low Level Output Voltage | V_{OL} | | 0.4 | | V | $I_{OL}=12.8\text{ mA}$, $I_F=0\text{ mA}$ |
| High Level Output Voltage | V_{OH} | 2.4 | | | V | $I_{OH}=0$, $I_F=20\text{ mA}$ |
| Hysteresis ⁽²⁾ | HYST | | 10 | | % | |
| Propagation Delay, Low-High, High-Low | t_{PLH} , t_{PHL} | | 5 | | μs | $V_{CC}=5\text{ V}$, $I_F=20\text{ mA}$ |
| Rise Time | t_r | | 60 | | ns | $R_L=390\ \Omega$, $C_L=50\text{ pF}$ |
| Fall Time | t_f | | 6 | | ns | $R_L=390\ \Omega$, $C_L=50\text{ pF}$ |
| COUPLED CHARACTERISTICS | | | | | | |
| IRED Trigger Current HOA2005-001 | I_{FT} | | 20 | | mA | $V_{CC}=5\text{ V}$ |

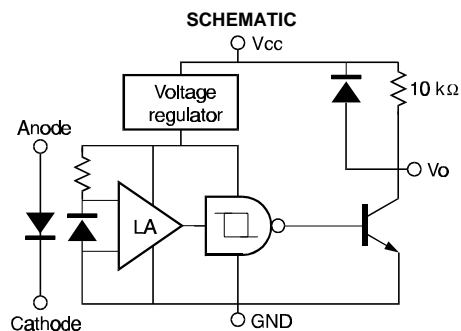
Notes

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.

ABSOLUTE MAXIMUM RATINGS

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

| | |
|-------------------------------|-----------------------|
| Operating Temperature Range | -40°C to 70°C |
| Storage Temperature Range | -40°C to 85°C |
| Soldering Temperature (5 sec) | 240°C |
| IR EMITTER | |
| Power Dissipation | 100 mW ⁽¹⁾ |
| Reverse Voltage | 3 V |
| Continuous Forward Current | 50 mA |
| DETECTOR | |
| Supply Voltage | 12 V ⁽²⁾ |
| Output Sink Current | 18 mA |
| Duration of Output | |
| Short to V_{CC} or Ground | 1.0 sec |



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

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SWITCHING WAVEFORM

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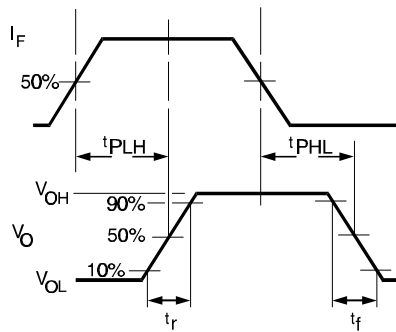


Fig. 2 IRED Forward Bias Characteristics

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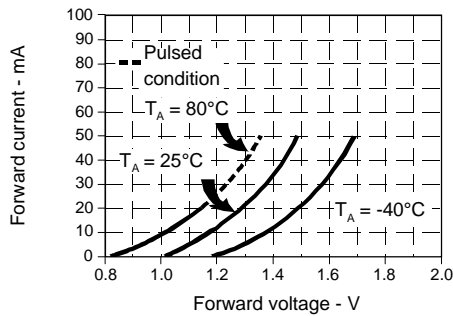


Fig. 1 SWITCHING WAVEFORM

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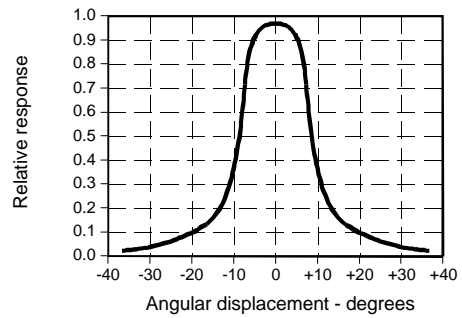
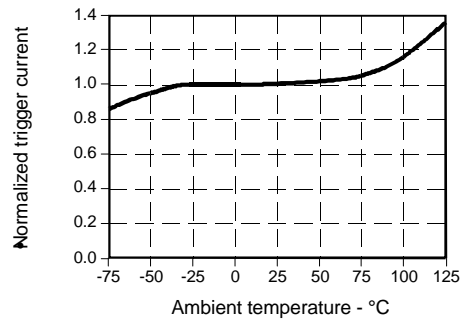


Fig. 3 IRED Trigger Current vs Temperature

gra_098.ds4



All Performance Curves Show Typical Values

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