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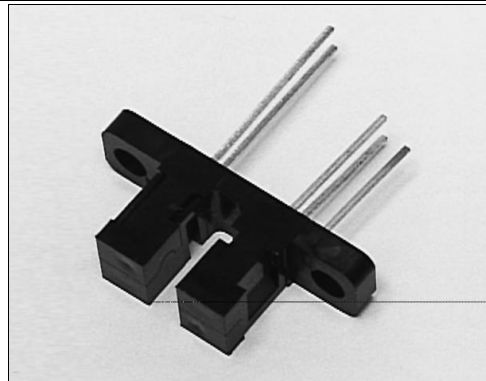


HOA2003

Transmissive Optoschmitt Sensor

FEATURES

- Direct TTL interface
- Buffer logic
- 0.010 in.(2.54 mm) offset detector leads
- 0.125 in.(3.18 mm) slot width
- Accurate position sensing
- Dust protective housing



INFRA-42.TIF

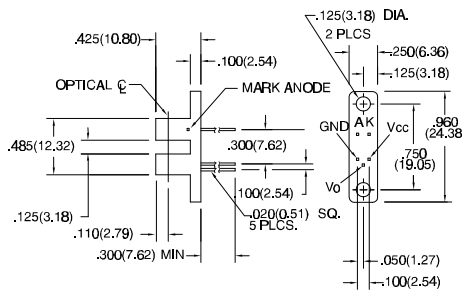
DESCRIPTION

The HOA2003 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 interrupted. The HOA2003 utilizes an IR transmissive polysulfone housing which features smooth optical faces without external aperture openings; this feature is desirable when aperture blockage from airborne contaminants is a possibility. The detector has a 0.010 in.(.254 mm) x 0.040 in.(1.02 mm) vertical aperture which is ideal for use in applications in which maximum position resolution is desired. The HOA2003 employs plastic molded components. For additional component information see SEP8506 and SDP8600.

Housing material is polysulfone. 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_064.d54

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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	10		V	
Low Level Supply Current	$I_{CC(L)}$	4.0	12		mA	$V_{CC}=5\text{ V}$
Low Level Supply Current		5.0	15			$V_{CC}=12\text{ V}$
High Level Supply Current	$I_{CC(H)}$	2.0	10		mA	$V_{CC}=5\text{ V}$
High Level Supply Current		3.0	12			$V_{CC}=12\text{ V}$
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	t_{PLH}		5		μs	$V_{CC}=5\text{ V}, I_F=20\text{ mA}$
Propagation Delay, High-Low	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		15		ns	$R_L=390\ \Omega, C_L=50\text{ pF}$
COUPLED CHARACTERISTICS						
IRET Trigger Current	I_{FT}		20		mA	$V_{CC}=5\text{ V}$
HOA2003-001						

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)

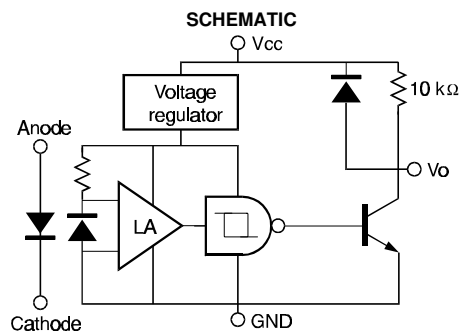
Operating Temperature Range	-40°C to 70°C
Storage Temperature Range	-40°C to 85°C
Soldering Temperature (5 sec)	240°C

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.



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HOA2003

Transmissive Optoschmitt Sensor

SWITCHING WAVEFORM

cir_013.cdr

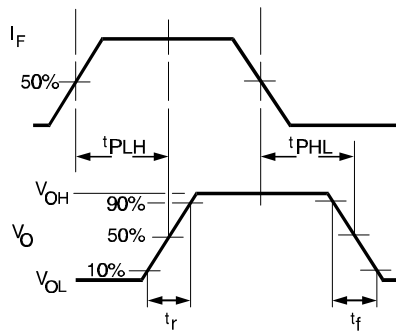


Fig. 2 IRED Trigger Current vs Temperature

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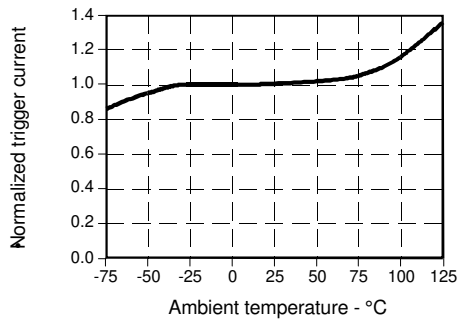
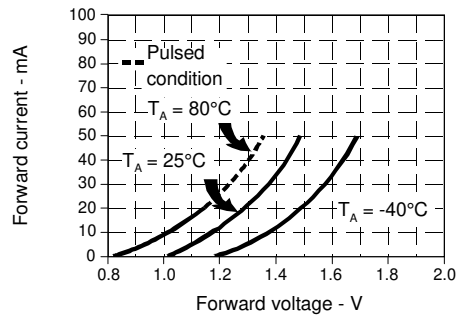


Fig. 1 IRED Forward Bias Characteristics

gra_073.ds4



All Performance Curves Show Typical Values

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