Transmissive Optoschmitt Sensor

FEATURES

- · Direct TTL interface
- · Accurate position sensing
- · Four mounting configurations
- Buffer or inverting logic available
- Choice of detector aperture
- 0.125 in.(3.18 mm) slot width

DESCRIPTION

The HOA096X/097X series consists of an infrared emitting diode facing an Optoschmitt detector encased in a black thermoplastic housing. Detector switching takes place whenever an opaque object passes through the slot between emitter and detector. The photodetector consists of a photodiode, amplifier, voltage regulator, Schmitt trigger and an NPN output transistor with 10 $k\Omega$ (nominal) pull-up resistor. The user can choose from available options: (1) detector aperture size, (2) mounting tab configuration, and (3) housing material.

The HOA096X series 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 HOA097X series employs an opaque polysulfone housing with aperture openings for use in applications where maximum rejection of ambient light is important and in situations in which maximum position resolution is desired. The HOA096X/097X series 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.

Device Polarity:

Buffer - Output is LO when optical path is blocked. Inverter - Output is HI when optical path is blocked.

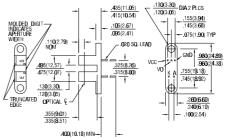
To specify the complete product characteristics, see PART NUMBER GUIDE.



OUTLINE DIMENSIONS in inches (mm)

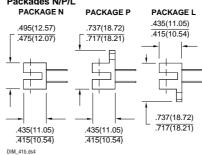
3 plc decimals ±0.010(0.25) 2 plc decimals ±0.020(0.51)

Package T



DIM 066a cdr

Packages N/P/L



Honeywell

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

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ELECTRICAL CHARACTERISTICS (25°C unless otherwise noted)

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	TEST CONDITIONS
IR EMITTER						
Forward Voltage	VF			1.6	V	I _F =20 mA
Reverse Leakage Current	I _R			10	μΑ	V _R =3 V
DETECTOR						
Operating Supply Voltage	Vcc	4.5		10	V	
Low Level Supply Current	Iccl	4.0		12	mA	Vcc=5 V
Low Level Supply Current		5.0		15		Vcc=12 V
High Level Supply Current	Іссн	2.0		10	mA	Vcc=5 V
High Level Supply Current		3.0		12		Vcc=12 V
Low Level Output Voltage	Vol				V	I _{OL} =12.8 mA
HOA0961/0971				0.4		I _F =0 mA
HOA0963/0973				0.4		I _F =20 mA
High Level Output Voltage	Voн				V	I _{он=} 0
HOA0961/0971		2.4				I _F =20 mA
HOA0963/0973		2.4				I _F =0 mA
Hysteresis (2)	HYST		10		%	
Propagation Delay, Low-High	t _{PLH}		5		μs	Vcc=5 V, I _F =20 mA
Propagation Delay, High-Low	t _{PHL}		5		μs	Vcc=5 V, I₅=20 mA
Rise Time	tr		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	lfT				mA	Vcc=5 V
All Series				20		

ABSOLUTE MAXIMUM RATINGS

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

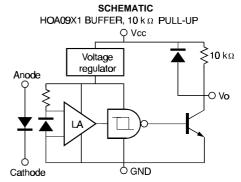
Operating Temperature Range -40°C to 70°C -40°C to 85°C Storage Temperature Range Soldering Temperature (5 sec) 240°C IR EMITTER

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

Supply Voltage Output Sink Current

Short to V_{CC} or Ground

Duration of Output



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12 V (2)

18 mA

1.0 sec.

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.

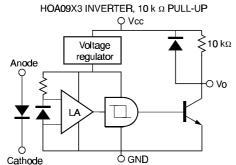
2. Hysteresis is defined as the difference between the operating and release threshold intensities, expressed as a percentage of the

operate threshold intensity.

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SCHEMATIC

SCH_029.cdr



SWITCHING WAVEFORM FOR INVERTERS

cir_011.cdr

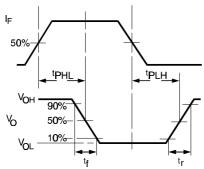
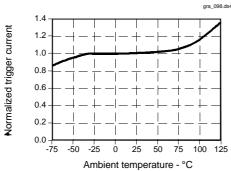


Fig. 2 IRED Trigger Current vs Temperature



All Performance Curves Show Typical Values

SWITCHING WAVEFORM FOR BUFFERS

cir_013.cdr

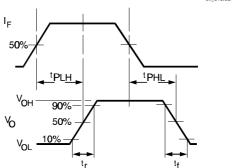
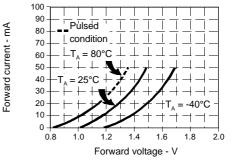


Fig. 1 IRED Forward Bias Characteristics

gra_073.ds4



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PART NUMBER GUIDE **HOA09XX-XXX** Housing Material Aperture Width In Front Of Detector 6 = Polysulfone, IR transmissive 1 = 0.010 in. (0.25 mm) 7 = Polysulfone, opaque 5 = **0.0**50 in. (1.27 mm) Aperture length Is 0.060 In. (1.52 mm) Output Configuration Aperture Width In Front Of IRED 1 = Buffer, output high with light on 5 = 0.050 in. (1.27 mm) Aperture length is 0.060 in. (1.52 mm) 3 = Inverter, output low with light on Aparticle length is 0.000 in (1.32 min) Mounting Configuration L = Single mounting tab, emitter side N = No mounting tabs P = Single mounting tab, detector side T = Two mounting tabs