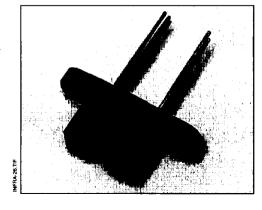
Transmissive Optoschmitt Sensor

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 Ω (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:

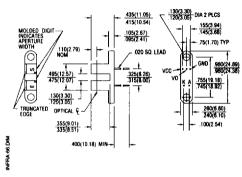
Buffer - Output is LO when input excitation is zero. Inverter - Output is HI when input excitation is zero.

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

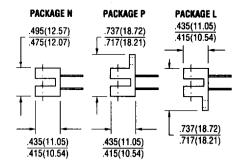
OUTLINE DIMENSIONS in inches (mm)

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

Package T



Packages N/P/N





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Transmissive Optoschmitt Sensor

ELECTRICAL CHARACTERISTICS (25°C unless otherwise noted)

PARAMÉTER	SYMBOL	MIN	TYP	MAX	UNITS	TEST CONDITIONS.
IR EMITTER			- A			B. G. C. Lander
Forward Voltage	VF			1.6	V	I _F =20 mA
Reverse Leakage Current	I _R			10	μΑ	V _R =3 V
DETECTOR			. 1			Hg of
Operating Supply Voltage	Vcc	4.5		12	V	
Low Level Supply Current	lcc _L	4.0		12	mA	V _{CC} =5 V
		5.0		15		V _{CC} =12 V
High Level Supply Current	Іссн	2.0	111	. 10	mA i	V _{CC} =5 V
		3,0		12		Vcc=12 V
Low Level Output Voltage	Vol				v	I _{OL} =12.8 mA
HOA0961/0971				0.4		l _F =0 mA
HOA0963/0973				0.4		l _F =20 mA
High Level Output Voltage	Von				V	lo u= 0
HOA0961/0971	1	2.4				I⊫20 mA
HOA0963/0973	1	2.4		•		/ Ip=0 mA
Propagation Delay, Low-High	telH		5		μs	V _{CC} =5 V, I _F =20 mA
Propagation Delay, High-Low	t _{PHL}		5	-	μ8	Vcc=5 V, I _F =20 mA
Rise Time	tr		60	,	ns	R _L =390 Ω, C _L =50 pF
Fall Time	t _i		6		ns	RL=390 Ω, CL=50 pF
COUPLED CHARACTERISTICS						•
IRED Trigger Current	let				mA	V _{CC} =5 V
All Series				20		

Notes:

ABSOLUTE MAXIMUM RATINGS

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

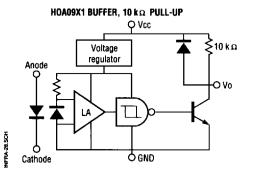
Operating Temperature Range	-40°C to 70°C
Storage Temperature Range	-40°C to 85°C
Soldering Temperature (5 sec)	240°C
IR EMITTER	
Power Dissipation	100 mW ⁽¹⁾
Reverse Voltage	3 V
Continuous Forward Current	50 mA
DETECTOR	
Supply Voltage	12 V ⁽²⁾
Output Sink Current	18 mA
Duration of Output	
Short to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

Notes

- 1. Derate linearly at 0.78 mW/°C 25°C.
- 2. Derate linearly from 25°C to 5.5 V at 70°C.

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SCHEMATIC





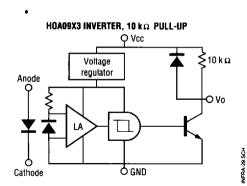


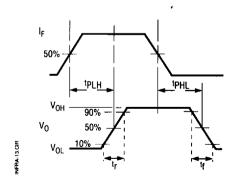
It is recommended that a by-pass capacitor, 0.1 μF typical, be added between V_{CC} and GND near the device in order to stabilize
power supply line.

Transmissive Optoschmitt Sensor

SCHEMATIC

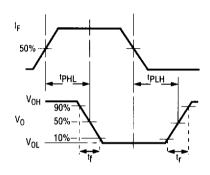
SWITCHING WAVEFORM FOR BUFFERS





SWITCHING WAVEFORM FOR INVERTERS

Fig. 1 IRED Forward Bias Characteristics



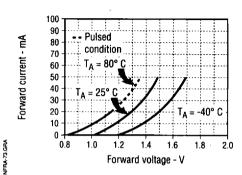
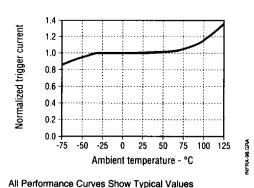


Fig. 2 IRED Trigger Current vs Temperature





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Transmissive Optoschmitt Sensor

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 = 0.050 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) 3 = Inverter, output low with light on Aperture length is 0.060 in. (1.52 mm) **Mounting Configuration** L = Single mounting tab, emitter side N = No mounting tabs P = Single mounting tab, detector side

T = Two mounting tabs

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