

# HOA7720/7730

## Connectorized Transmissive Optoschmitt Sensor

### FEATURES

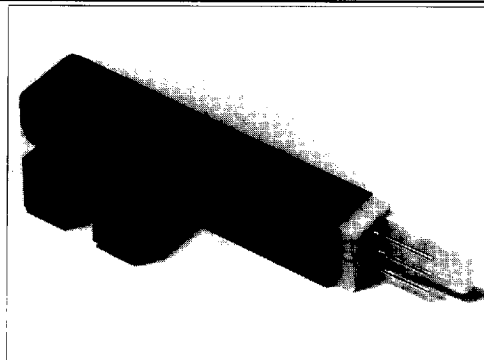
- Direct TTL interface
- No interface circuits required
- Inverting logic
- Two device output options
- High resolution
- 0.118 in.(3.00 mm) slot width

### DESCRIPTION

The HOA7720/7730 Series 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 and Schmitt trigger with two output configurations. The user can choose from available options of totem pole (HOA7720-M22) or open collector (HOA7730-M22) output. The totem pole output is well suited for applications which require fast transition times. The open collector allows the output of the sensor to interface with circuit elements driven by supply voltages other than Vcc supply. The inverting logic provides a high output when the optical path is interrupted, and a low output when the path is clear. The infrared emitting diode is biased internally eliminating the need for any external circuitry. Interconnection is simplified through the use of an integral Molex three pin connector.

Both emitter and detector have a 0.020 in.(.508 mm) x 0.070 in.(1.78 mm) vertical aperture. The narrow aperture is ideal for use in applications in which maximum rejection of ambient light is important, and maximum position resolution is desired. The HOA7720/7730 series employ plastic molded components. For additional component information see SEP8506, SDP8014 and SDP8314.

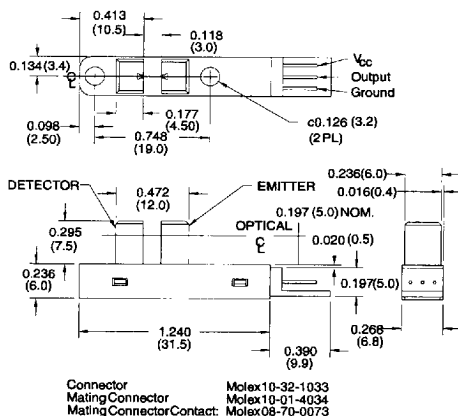
Housing material is opaque polycarbonate. Housings are soluble in chlorinated hydrocarbons and ketones. Recommended cleaning agents are methanol and isopropanol.



INFRA-85.TIF

### OUTLINE DIMENSIONS in inches (mm)

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



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# HOA7720-M22

## Connectorized Transmissive Optoschmitt Sensor Totem-Pole Output

### ELECTRICAL CHARACTERISTIC (-40°C to +70°C unless otherwise noted)

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	TEST CONDITIONS
Operating Supply Voltage	V <sub>CC</sub>	4.5		5.5	V	T <sub>A</sub> =25°C
Supply Current	I <sub>CC</sub>			40	mA	V <sub>CC</sub> =5.5 V
Low Level Output Voltage	V <sub>OL</sub>			0.4	V	V <sub>CC</sub> =4.5 V, I <sub>OL</sub> =12.8 mA
High Level Output Voltage	V <sub>OH</sub>	2.4			V	V <sub>CC</sub> =4.5 V, I <sub>OH</sub> =-800 µA (2)
Short Circuit Output Current	I <sub>OS</sub>	-20		-100	mA	V <sub>CC</sub> =5.25 V, Output=GND
Hysteresis (3)	HYST		50		%	
Propagation Delay, Low-High, High-Low	t <sub>PLH</sub> , t <sub>PHL</sub>		5		µs	V <sub>CC</sub> =5 V
Output Rise Time, Output Fall Time	t <sub>r</sub> , t <sub>f</sub>		70		ns	RL=8 TTL Loads

#### Notes

1. It is recommended that a bypass capacitor, 0.1 µF typical, be added between V<sub>CC</sub> and GND near the device in order to stabilize power supply line.
2. Output is HI when the optical path is interrupted.
3. 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
Power Dissipation	220 mW
Supply Voltage	5.5 V
Supply Current	40 mA
Low Level Output Current	12.8 mA
Duration of Output Short to V <sub>CC</sub> or Ground	1.0 sec

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# HOA7730-M22

Connectorized Transmissive Optoschmitt Sensor  
Open-Collector Output

## ELECTRICAL CHARACTERISTIC (-40°C to +70°C unless otherwise noted)

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	TEST CONDITIONS
Operating Supply Voltage	V <sub>CC</sub>	4.5		5.5	V	T <sub>A</sub> =25°C
Supply Current	I <sub>CC</sub>			40	mA	V <sub>CC</sub> =5.5 V
Low Level Output Voltage	V <sub>OL</sub>			0.4	V	V <sub>CC</sub> =4.5 V, I <sub>OL</sub> =12.8 mA
High Level Output Current	I <sub>OH</sub>			100	μA	V <sub>CC</sub> =5.5 V V <sub>OH</sub> =28 V
Hysteresis (3)	HYST		50		%	
Propagation Delay, Low-High, High-Low	t <sub>PLH</sub> , t <sub>PHL</sub>		5		μs	V <sub>CC</sub> =5 V
Output Rise Time, Output Fall Time	t <sub>r</sub> , t <sub>f</sub>		70		ns	R <sub>L</sub> =390Ω

### Notes

1. It is recommended that a bypass capacitor, 0.1 μF typical, be added between V<sub>CC</sub> and GND near the device in order to stabilize power supply line.
2. Output is HI when the optical path is interrupted.
3. 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
Power Dissipation	220 mW
Supply Voltage	5.5 V
Supply Current	40 mA
Low Level Output Current	12.8 mA
Duration of Output	
Short to V <sub>CC</sub> or Ground	1.0 sec.
Applied Output Voltage	35 V

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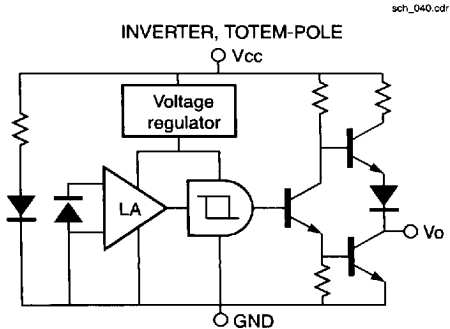
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# HOA7720/7730

## Connectorized Transmissive Optoschmitt Sensor

### SCHEMATICS FOR HOA7720/7730



### SWITCHING WAVEFORM FOR INVERTERS

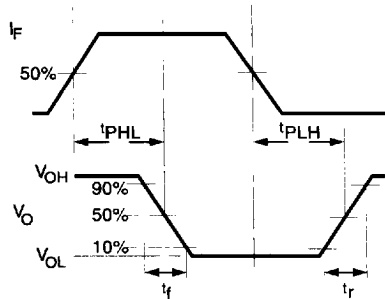
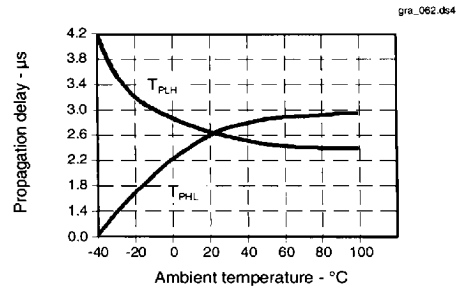


Fig. 2 Delay Time vs Temperature



All Performance Curves Show Typical Values

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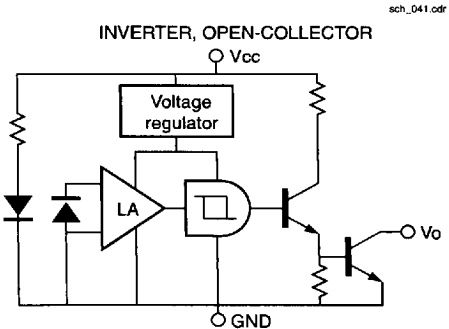
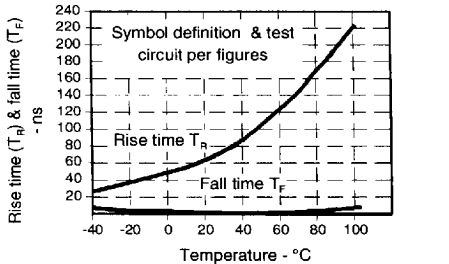


Fig. 1 Output Rise Time ( $t_r$ ) and Output Fall Time ( $t_f$ ) vs Temperature



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