HOA088X/089X

Transmissive Sensor

FEATURES

- Phototransistor output
- Four mounting configurations
- Accurate position sensing
- 0.125 in.(3.18 mm) slot width
- Choice of detector aperture
- 24.0 in.(610 mm) min. 26 AWG UL 1429 wire leads
- Choice of opaque or IR transmissive housings

DESCRIPTION

The HOA088X/089X series consists of an infrared emitting diode facing an NPN silicon phototransistor encased in a black thermoplastic housing. Phototransistor switching takes place whenever an opaque object passes through the slot between emitter and detector. This series allows the user to choose from available options: (1) mounting tab configuration, (2) detector aperture size, (3) electro-optical characteristics, and (4) housing materials.

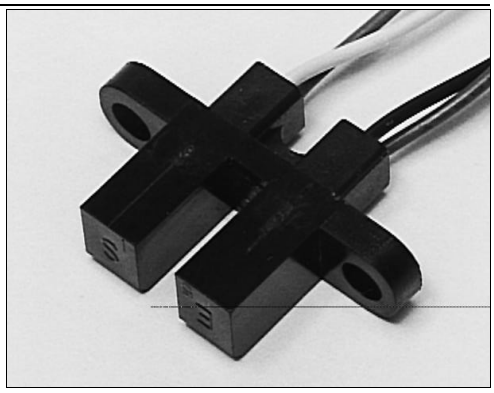
All devices employ a built-in strain relief for maximum wire attachment strength. The HOA088X series utilizes an IR transmissive polysulfone housing which features smooth optical faces without external aperture openings; this feature is desirable when aperture blockage from airborne contaminants is a possibility. The HOA089X series employs an opaque polysulfone housing with aperture openings for use in applications in which maximum rejection of ambient light is important and in situations where maximum position resolution is desired. The HOA088X/089X series employs plastic molded components. For additional component information see SEP8506 and SDP8406.

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

The detector to emitter lead spacing is 0.32 in.(8.13 mm) for all versions. Wire color code and functions are:

Red - IRED Anode	White - Detector Collector
Black - IRED Cathode	Green - Detector Emitter

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



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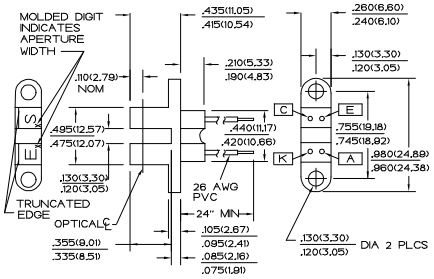
OUTLINE DIMENSIONS in inches (mm)

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

Package T



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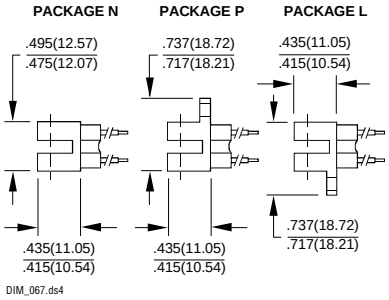
Packages N/P/L



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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 mA
Reverse Leakage Current	I_R			10	µA	V_R=3 V
DETECTOR						
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	30			V	I_C=100 µA
Emitter-Collector Breakdown Voltage	$V_{(BR)ECO}$	5.0			V	I_E=100 µA
Collector Dark Current	I_{CEO}			100	nA	V_{CE}=10 V, I_F=0
COUPLED CHARACTERISTICS						
On-State Collector Current	$I_{C(ON)}$				mA	
Parameter A (HOA0880/0890)		0.5				V_{CE}=10, I_F=20 mA
Parameter B (HOA0881/0891)		1.0				V_{CE}=5 V, I_F=10 mA
Parameter C (HOA0882/0892)		1.8				V_{CE}=0.6, I_F=20 mA
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$				V	
Parameter A (HOA0880/0890)				0.4		I_C=0.4 mA, I_F=20 mA
Parameter B (HOA0881/0891)				0.4		I_C=0.8 mA, I_F=10 mA
Parameter C (HOA0882/0892)				0.6		I_C=1.8 mA, I_F=20 mA
Rise And Fall Time	t_r, t_f		15		µs	V_{CC}=5 V, I_C=1 mA R_L=1000 Ω

ABSOLUTE MAXIMUM RATINGS

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

Operating Temperature Range	-40°C to 85°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	
Collector-Emitter Voltage	30 V
Emitter-Collector Voltage	5 V
Power Dissipation	100 mW (1)
Collector DC Current	30 mA

SCHEMATIC

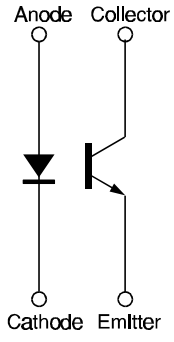

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Fig. 1 IRED Forward Bias Characteristics

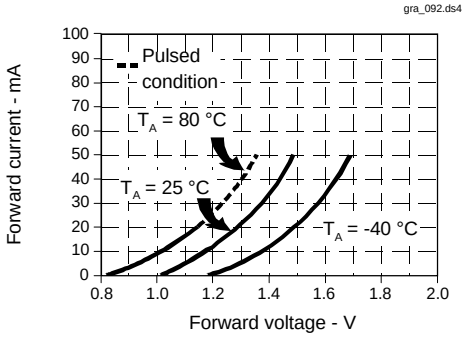


Fig. 2 Non-Saturated Switching Time vs Load Resistance

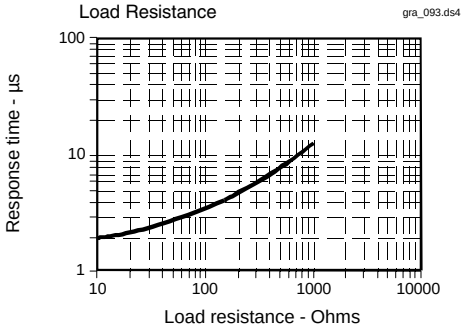


Fig. 3 Dark Current vs Temperature

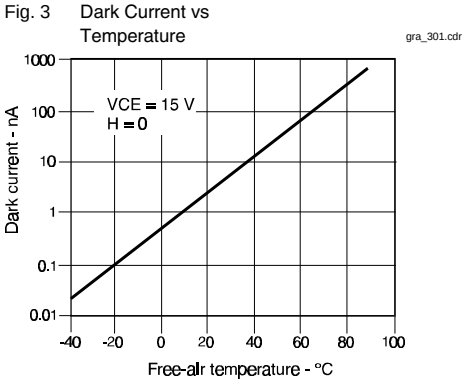
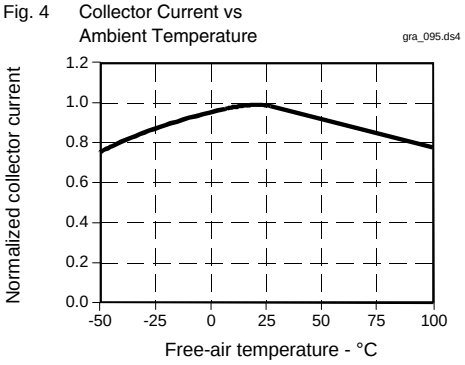


Fig. 4 Collector Current vs Ambient Temperature



All Performance Curves Show Typical Values

PART NUMBER GUIDE

HOA08XX-XXX

Housing Material
8 = Polysulfone, IR transmissive
9 = Polysulfone, opaque

Electrical Specifications
0 = Parameter A
1 = Parameter B
2 = Parameter C

*0.010 in. (.25 mm) aperture available with electrical Parameter A only

Aperture Width In Front Of Detector
*1 = 0.010 in. (0.25 mm)
5 = 0.050 in. (1.27 mm)
Aperture length is 0.060 in. (1.52 mm)

Aperture Width In Front Of IRED
5 = 0.050 in. (1.27 mm)
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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