#### **Transmissive Sensor**

#### **FEATURES**

- Phototransistor output
- · Accurate position sensing
- · Four mounting configurations
- 0.125 in.(3.18 mm) slot width
- Choice of detector aperture
- · Choice of opaque or IR transmissive housings



#### DESCRIPTION

The HOA086X/087X series consists of an infrared emitting diode facing an NPN silicon phototransistor encased in a black thermoplastic housing. The 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 configurations, (2) lead spacing, (3) electro-optical characteristics, (4) detector aperture size, and (5) housing materials.

The HOA086X 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 HOA087X 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 HOA086X/087X 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.

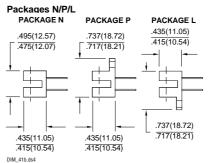
To specify the complete product characteristics, see the PART NUMBER GUIDE.

#### **OUTLINE DIMENSIONS** in inches (mm)

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

# Package T - DIA 2 PLCS

DIM 041a cdr



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#### ELECTRICAL CHARACTERISTICS (25°C unless otherwise noted)

PARAMETER (20	SYMBOL	MIN	TYP	MAX	UNITS	TEST CONDITIONS
	STINIBUL	IVIIIN	ITP	WAX	UNITS	TEST CONDITIONS
IR EMITTER						
Forward Voltage	V <sub>F</sub>			1.6	V	I <sub>F</sub> =20 mA
Reverse Leakage Current	IR			10	μΑ	V <sub>R</sub> =3 V
DETECTOR						
Collector-Emitter Breakdown Voltage	V <sub>(BR)</sub> ceo	30			V	Ic=100 μA
Emitter-Collector Breakdown Voltage	V <sub>(BR)ECO</sub>	5.0			V	I <sub>E</sub> =100 μA
Collector Dark Current	ICEO			100	nA	V <sub>CE</sub> =10 V, I <sub>F</sub> =0
COUPLED CHARACTERISTICS						
On-State Collector Current	Ic(on)				mA	
Parameter A		0.5				V <sub>CE</sub> =10, I <sub>F</sub> =20 mA
(HOA0860/0865/0870/0875)						, .
Parameter B		1.0				Vce=5 V, I <sub>F</sub> =10 mA
(HOA0861/0866/0871/0876)						, ,
Parameter C		1.8				Vc==0.6. I==20 mA
(HOA0862/0867/0872/0877)						102 515, 11 25 1111
Collector-Emitter Saturation Voltage	VCE(SAT)				V	
Parameter A	VOE(SKI)			0.4	·	Ic=0.4 mA, I <sub>F</sub> =20 mA
(HOA0860/0865/0870/0875)				0.4		10-0.4 1101, 17-20 1101
Parameter B				0.4		lc=0.8 mA, l <sub>F</sub> =10 mA
(HOA0860/0866/0871/0876)				0.4		1C=0.0 111A, 1F= 10 111A
Parameter C				0.6		lc=1.8 mA, l <sub>F</sub> =20 mA
				0.6		IC= 1.0 IIIA, IF=20 IIIA
(HOA0862/0867/0872/0877)			45			V 5)/ L d == 0
Rise And Fall Time	t <sub>r</sub> , t <sub>f</sub>		15		μs	Vcc=5 V, lc=1 mA
		l				$R_L=1000 \Omega$

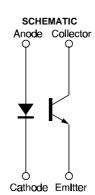
#### **ABSOLUTE MAXIMUM RATINGS**

(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 <sup>(1)</sup>
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



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#### **Transmissive Sensor**

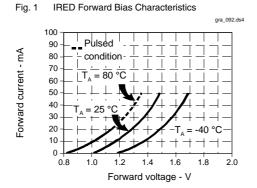
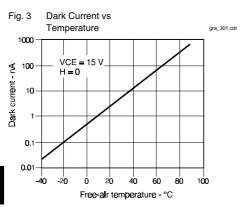
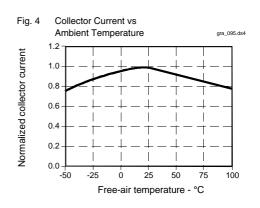


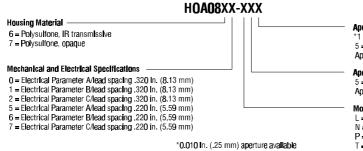
Fig. 2 Non-Saturated Switching Time vs Load Resistance Response time -+1+1+ ЦШЩ 三丰田田 TI TIT TITIIIIТПП 1000 100 10 Load resistance - Ohms





All Performance Curves Show Typical Values

#### **PART NUMBER GUIDE**



with electrical Parameter A only

#### Aperture Width In Front Of Detector

\*1 = 0.010 ln. (0.25 mm) 5 = 0.050 ln. (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

New June 20 High Table (New York)

New York Tabl

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