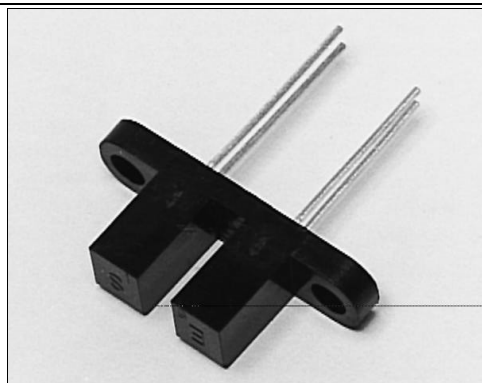


Transmissive Sensor

- 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



INFR-33.TIF

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.

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

Figure 1 is a technical drawing of a 2 PLCS (2 Pin Lead Ceramic Substrate). It includes a top view and a side view. The top view shows a rectangular substrate with a central circular feature. Dimensions are provided for various features, including lead spacing, aperture width, and truncated edges. The side view shows the profile of the substrate, including the height and thickness of the leads.

Key features and dimensions shown in the drawing:

- MOLDED DIRT INDICATES APERTURE WIDTH**: Label for the central circular feature.
- TRUNCATED EDGE**: Label for the edge of the substrate.
- OPTICAL**: Label for the central circular feature.
- LEAD SPACING**: Dimensions for the spacing between leads.
- 2 PLCS**: Label for the substrate type.

Dimensions and values:

- Top view dimensions: 1002.789, 4356(0.05), 4510(0.54), 305(0.61), 0892.49, 1003.30, 1003.05, 489(0.57), 4792(0.07), 1003.30, 1003.05, 3759(0.09), 3758(0.59), 3758(0.59).
- Side view dimensions: 1003.30, 1003.05, 1002.54, 8902.4(89), 8902.4(38), 7559(8.9), 745(8.92).
- Lead spacing dimensions: 2295.72, 2295.48, 2295.72, 2295.48, 2295.72, 2295.48, 2295.72, 2295.48.

Notes:

1. LEAD SPACING FOR HOA0885, HOA0886, HOA0887, HOA0875, HOA0876, HOA0877, HOA0878, HOA0879.
2. LEAD SPACING FOR HOA0880, HOA0881, HOA0882, HOA0870, HOA0871, HOA0872.

DIM 041a.cdr

PACKAGE N

.495(12.57)
.475(12.07)

.435(11.05)
.415(10.54)

PACKAGE P

.737(18.72)
.717(18.21)

.435(11.05)
.415(10.54)

PACKAGE L

.435(11.05)
.415(10.54)

.737(18.72)
.717(18.21)

DIM 41b.ds4

HOA086X/087X

Transmissive Sensor

ELECTRICAL CHARACTERISTICS (25°C unless otherwise noted)

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	TEST CONDITIONS
IR EMITTER						
Forward Voltage	V_F			1.6	V	$I_F=20\text{ mA}$
Reverse Leakage Current	I_R			10	μA	$V_R=3\text{ V}$
DETECTOR						
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	30			V	$I_C=100\text{ }\mu\text{A}$
Emitter-Collector Breakdown Voltage	$V_{(BR)ECO}$	5.0			V	$I_E=100\text{ }\mu\text{A}$
Collector Dark Current	I_{CE0}			100	nA	$V_{CE}=10\text{ V}, I_F=0$
COUPLED CHARACTERISTICS						
On-State Collector Current	$I_{C(ON)}$				mA	
Parameter A (HOA0860/0865/0870/0875)		0.5				$V_{CE}=10, I_F=20\text{ mA}$
Parameter B (HOA0861/0866/0871/0876)		1.0				$V_{CE}=5\text{ V}, I_F=10\text{ mA}$
Parameter C (HOA0862/0867/0872/0877)		1.8				$V_{CE}=0.6, I_F=20\text{ mA}$
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$				V	
Parameter A (HOA0860/0865/0870/0875)			0.4			$I_C=0.4\text{ mA}, I_F=20\text{ mA}$
Parameter B (HOA0860/0866/0871/0876)			0.4			$I_C=0.8\text{ mA}, I_F=10\text{ mA}$
Parameter C (HOA0862/0867/0872/0877)			0.6			$I_C=1.8\text{ mA}, I_F=20\text{ mA}$
Rise And Fall Time	t_r, t_f		15		μs	$V_{CC}=5\text{ V}, I_C=1\text{ mA}$ $R_L=1000\text{ }\Omega$

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

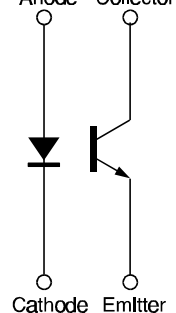
IR EMITTER

Power Dissipation	100 mW ⁽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



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

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HOA086X/087X

Transmissive Sensor

Fig. 1 IRED Forward Bias Characteristics

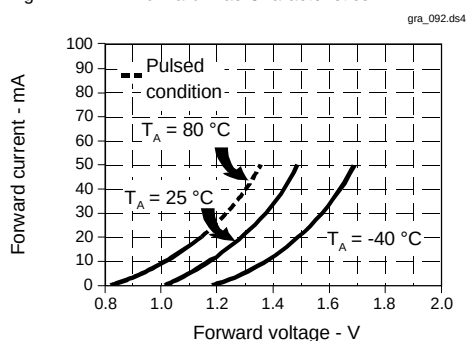


Fig. 2 Non-Saturated Switching Time vs Load Resistance

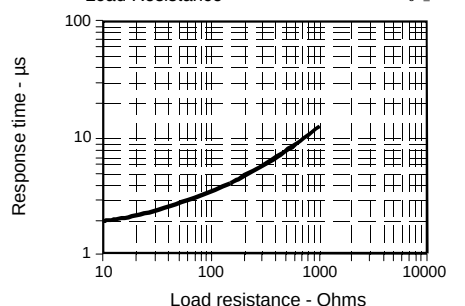


Fig. 3 Dark Current vs Temperature

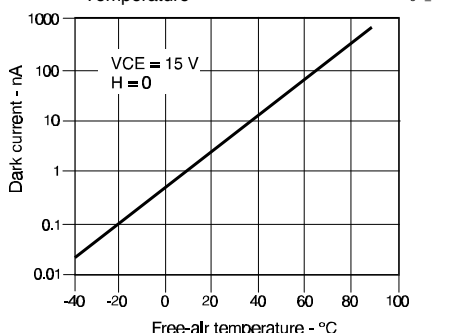
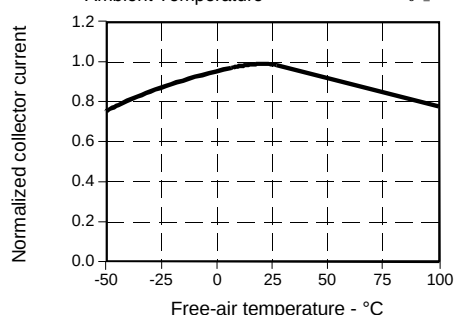


Fig. 4 Collector Current vs Ambient Temperature



All Performance Curves Show Typical Values

PART NUMBER GUIDE

HOA08XX-XXX

Housing Material

6 = Polysulfone, IR transmissive
7 = Polysulfone, opaque

Mechanical and Electrical Specifications

0 = Electrical Parameter A/lead spacing .320 in. (8.13 mm)
1 = Electrical Parameter B/lead spacing .320 in. (8.13 mm)
2 = Electrical Parameter C/lead spacing .320 in. (8.13 mm)
5 = Electrical Parameter A/lead spacing .220 in. (5.59 mm)
6 = Electrical Parameter B/lead spacing .220 in. (5.59 mm)
7 = Electrical Parameter C/lead spacing .220 in. (5.59 mm)

*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 = 0.060 in. (1.27 mm)
Aperture length is 0.060 in. (1.52 mm)

Aperture Width In Front Of IRED

5 = 0.060 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

HOA086X/087X

Transmissive Sensor

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

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277