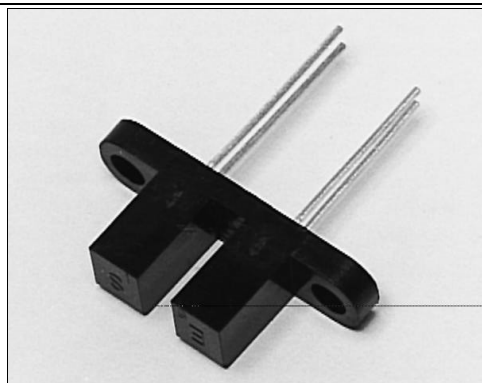


## Transmissive Sensor

- 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



INFRA-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 | $\pm 0.020(0.51)$ |

MOULDED DIET INDICATES APERTURE WIDTH

3002.789 NOM

48952.571

47992.071

1003.330

1003.095

TRUNCATED EDGE

OPTICAL

3398.069

3398.559

4000.80 MN

4359.005

4540.541

3052.671

0892.49

200 SQ. LEAD

3295.72

3295.48

NOTE 1

OR

3295.26

3598.001

NOTE 2

1003.303

1003.095

DM 2 PLCS

3002.541

8902.489

8902.430

7559.89

74518.82

NOTES: 1. LEAD SPACING FOR HOA0885, HOA0886, HOA0887, HOA0875, HOA0876, HOA0878 AND HOA0879

2. LEAD SPACING FOR HOA0860, HOA0861, HOA0862, HOA0870, HOA0871 AND HOA0872

DIM 041a.cdr

DIM 41b.ds4

# HOA086X/087X

## Transmissive Sensor

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

| PARAMETER                               | SYMBOL        | MIN | TYP | MAX | UNITS         | TEST CONDITIONS                                                  |
|-----------------------------------------|---------------|-----|-----|-----|---------------|------------------------------------------------------------------|
| <b>IR EMITTER</b>                       |               |     |     |     |               |                                                                  |
| Forward Voltage                         | $V_F$         |     |     | 1.6 | V             | $I_F=20\text{ mA}$                                               |
| Reverse Leakage Current                 | $I_R$         |     |     | 10  | $\mu\text{A}$ | $V_R=3\text{ V}$                                                 |
| <b>DETECTOR</b>                         |               |     |     |     |               |                                                                  |
| 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            | $V_{CE}=10\text{ V}, I_F=0$                                      |
| <b>COUPLED CHARACTERISTICS</b>          |               |     |     |     |               |                                                                  |
| On-State Collector Current              | $I_{C(ON)}$   |     |     |     | mA            |                                                                  |
| Parameter A<br>(HOA0860/0865/0870/0875) |               | 0.5 |     |     |               | $V_{CE}=10, I_F=20\text{ mA}$                                    |
| Parameter B<br>(HOA0861/0866/0871/0876) |               | 1.0 |     |     |               | $V_{CE}=5\text{ V}, I_F=10\text{ mA}$                            |
| Parameter C<br>(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<br>(HOA0860/0865/0870/0875) |               |     | 0.4 |     |               | $I_C=0.4\text{ mA}, I_F=20\text{ mA}$                            |
| Parameter B<br>(HOA0860/0866/0871/0876) |               |     | 0.4 |     |               | $I_C=0.8\text{ mA}, I_F=10\text{ mA}$                            |
| Parameter C<br>(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  |     | $\mu\text{s}$ | $V_{CC}=5\text{ V}, I_C=1\text{ mA}$<br>$R_L=1000\text{ }\Omega$ |

### 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         |

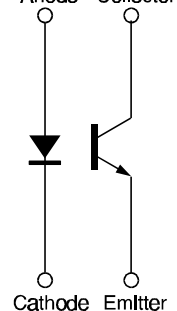
#### IR EMITTER

|                            |                       |
|----------------------------|-----------------------|
| Power Dissipation          | 100 mW <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 <sup>(1)</sup> |
| 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

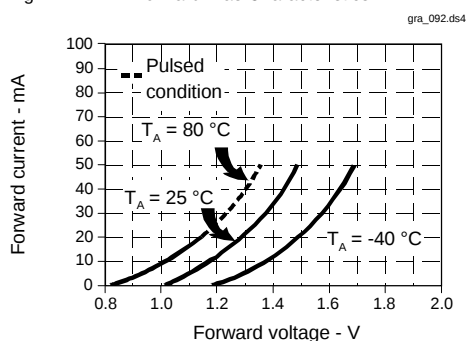


Fig. 2 Non-Saturated Switching Time vs Load Resistance

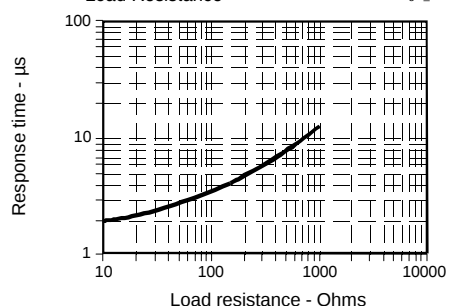


Fig. 3 Dark Current vs Temperature

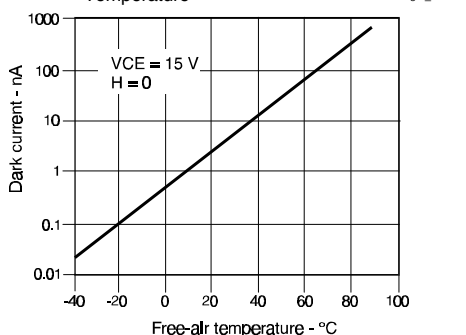
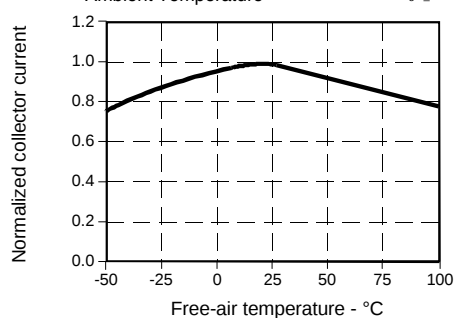


Fig. 4 Collector Current vs Ambient Temperature



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 = 0.050 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

# HOA086X/087X

Transmissive Sensor

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277