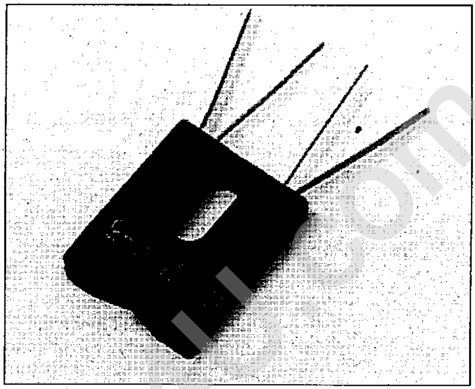
HOA1160

Reflective Sensor

FEATURES

- Choice of phototransistor or photodarlington output
- Focused for maximum response
- Wide operating temperature range (-55°C to +100°C)
- Low profile to facilitate stacking


INFRA-19.TIF

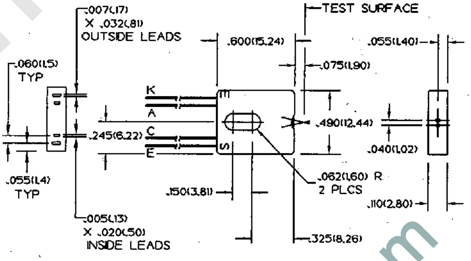
DESCRIPTION

This compact reflective sensor consists of an infrared emitting diode and an NPN silicon phototransistor (HOA1160-001, -002) or photodarlington (HOA1160-003), encased side-by-side on converging optical axes, in a black thermoplastic housing. The detector responds to radiation from the IRED only when a reflective object passes within its field of view. Flexibility of use is enhanced by a mounting arrangement which allows an adjustment of 0.15 in.(3.80 mm) in the distance from the reflective surface. The HOA1160 series employs hermetically sealed, metal can packaged components. For additional component information see SE2460, SD2440, and SD2410.

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

OUTLINE DIMENSIONS in inches (mm)

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



INFRA-34.DIM

HOA1160

Reflective 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 mA
Reverse Leakage Current	I_R			10	μA	V_R=3 V
DETECTOR						
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$				V	I_C=100 μA
HOA1160-001, -002		30				
HOA1160-003		15				
Collector-Emitter Breakdown Voltage	$V_{(BR)ECO}$	5.0			V	I_E=100 μA
Collector Dark Current	I_{CEO}				nA	V_{CE}=10 V
HOA1160-001, -002				100		I_F=0
HOA1160-003				250		
COUPLED CHARACTERISTICS						
On-State Collector Current	$I_{C(ON)}$				mA	V_{CE}=5 V
HOA1160-001		0.5				I_F=30 mA
HOA1160-002		2.0				(1)
HOA1160-003		5.0				
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$				V	I_F=30 mA, (1)
HOA1160-001				0.4		I_C=60 μA
HOA1160-002				0.4		I_C=250 μA
HOA1160-003				1.1		I_C=630 μA
Rise And Fall Time	t_r, t_f				μs	V_{CC}=5 V, I_C=1 mA
HOA1160-001, -002			15			R_L=1000 Ω
HOA1160-003			75			R_L=100 Ω

Notes

1. Test surface is a front surface mirror located 0.075 in.(1.90 mm) from the front surface of the device.

ABSOLUTE MAXIMUM RATINGS

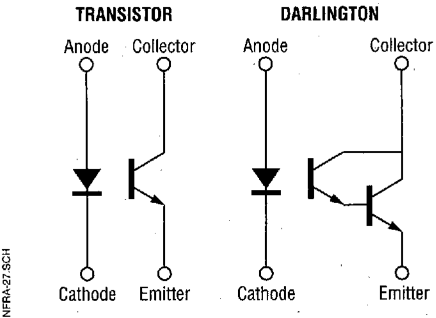
(25°C Free-Air Temperature unless otherwise noted)

Operating Temperature Range	-55°C to 100°C	
Storage Temperature Range	-55°C to 125°C	
Soldering Temperature (10 sec)	260°C	
IR EMITTER		
Power Dissipation	125 mW(1)	
Reverse Voltage	3 V	
Continuous Forward Current	50 mA	
DETECTOR	**TRANS.**	**DARLINGTON**
Collector-Emitter Voltage	30 V	15 V
Emitter-Collector Voltage	5 V	5 V
Power Dissipation	125 mW(1)	125 mW(1)
Collector DC Current	30 mA	30 mA

Notes

1. Derate linearly at 1.19 mW/°C above 25°C.

SCHEMATIC

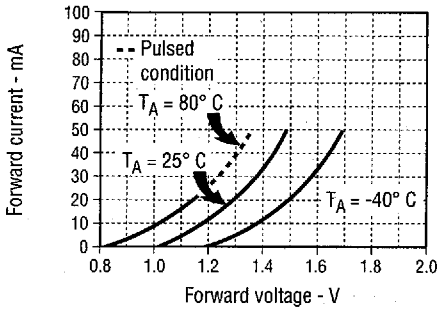


Honeywell

HOA1160

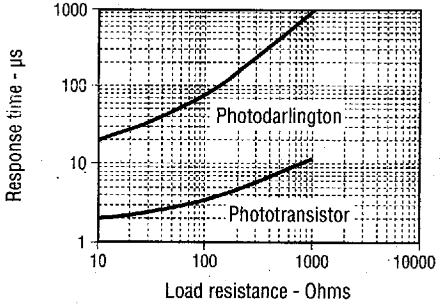
Reflective Sensor

Fig. 1 IRED Forward Bias Characteristics



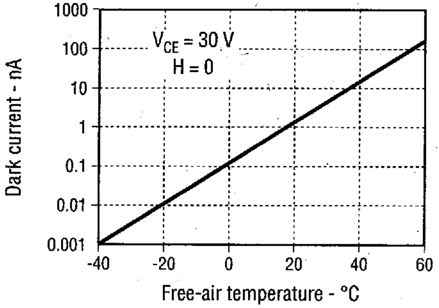
INFRA-73.GRA

Fig. 2 Non-Saturated Switching Time vs Load Resistance



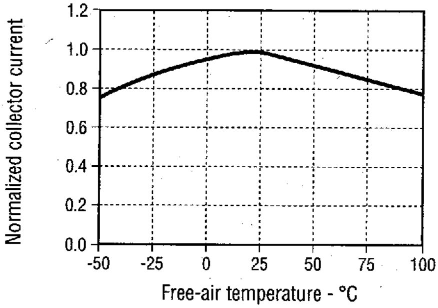
INFRA-79.GRA

Fig. 3 Detector Dark Current vs Temperature



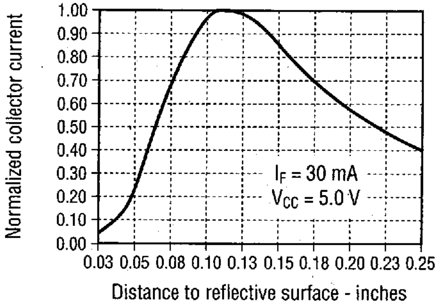
INFRA-75.GRA

Fig. 4 Collector Current vs Ambient Temperature



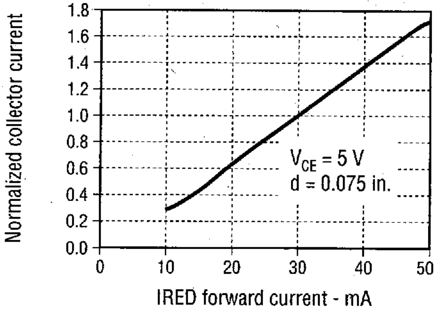
INFRA-76.GRA

Fig. 5 Collector Current vs Distance to Reflective Surface



INFRA-82.GRA

Fig. 6 Collector Current vs IRED Forward Current



INFRA-83.GRA

All Performance Curves Show Typical Values

Honeywell