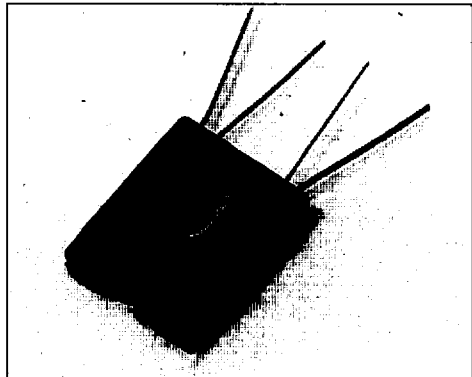


HOA1160

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



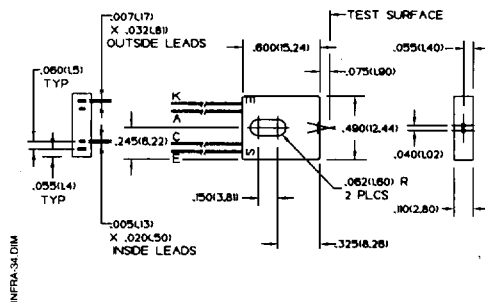
DESCRIPTION

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



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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	$I_F=20\text{ mA}$
Reverse Leakage Current	I_R			10	μA	$V_R=3\text{ V}$
DETECTOR						
Collector-Emitter Breakdown Voltage HOA1160-001, -002 HOA1160-003	$V_{(BR)CEO}$	30 15			V	$I_C=100\ \mu\text{A}$
Collector-Emitter Breakdown Voltage Collector Dark Current HOA1160-001, -002 HOA1160-003	$V_{(BR)ECO}$ I_{CEO}	5.0		100 250	V nA	$I_E=100\ \mu\text{A}$ $V_{CE}=10\text{ V}$ $I_F=0$
COUPLED CHARACTERISTICS						
On-State Collector Current HOA1160-001 HOA1160-002 HOA1160-003	$I_{C(ON)}$	0.5 2.0 5.0			mA	$V_{CE}=5\text{ V}$ $I_F=30\text{ mA}$ (1)
Collector-Emitter Saturation Voltage HOA1160-001 HOA1160-002 HOA1160-003	$V_{CE(SAT)}$			0.4 0.4 1.1	V	$I_F=30\text{ mA}, (1)$ $I_C=60\ \mu\text{A}$ $I_C=250\ \mu\text{A}$ $I_C=630\ \mu\text{A}$
Rise And Fall Time HOA1160-001, -002 HOA1160-003	t_r, t_f		15 75		μs	$V_{CC}=5\text{ V}, I_C=1\text{ mA}$ $R_L=1000\ \Omega$ $R_L=100\ \Omega$

Notes

- 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

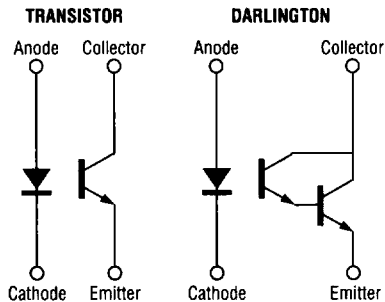
DETECTOR

Collector-Emitter Voltage 30 V
Emitter-Collector Voltage 5 V
Power Dissipation 125 mW⁽¹⁾
Collector DC Current 30 mA

DARLINGTON

TRANS. 15 V
5 V
125 mW⁽¹⁾
30 mA

SCHEMATIC



Notes

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

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HOA1160

Reflective Sensor

Fig. 1 IRED Forward Bias Characteristics

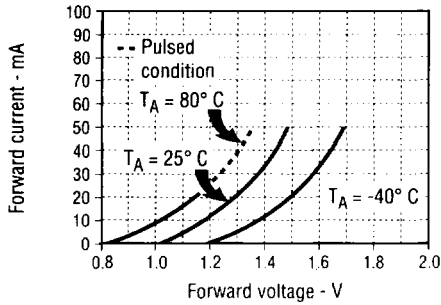


Fig. 2 Non-Saturated Switching Time vs Load Resistance

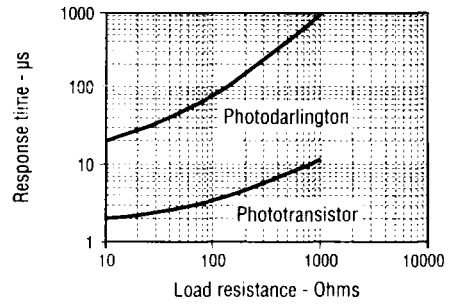


Fig. 3 Detector Dark Current vs Temperature

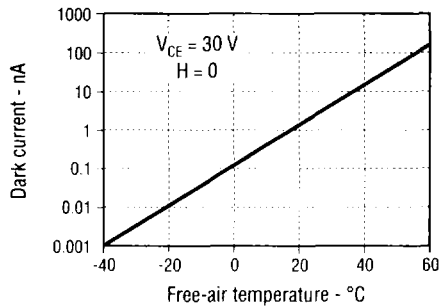


Fig. 4 Collector Current vs Ambient Temperature

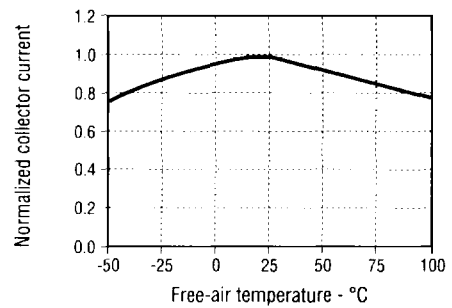


Fig. 5 Collector Current vs Distance to Reflective Surface

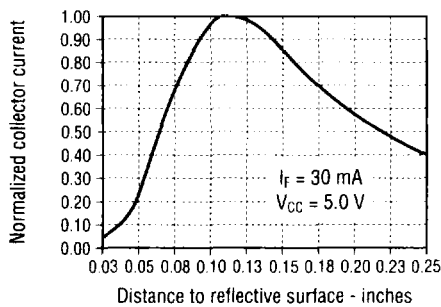
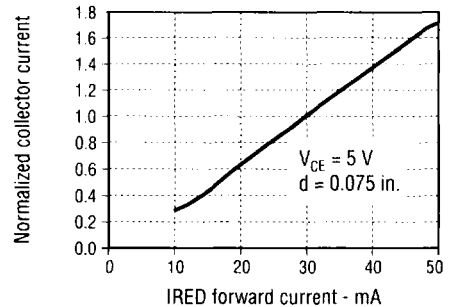


Fig. 6 Collector Current vs IRED Forward Current



All Performance Curves Show Typical Values



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