

HOA1180

Reflective Sensor

FEATURES

- Choice of phototransistor or photodarlington output
- High sensitivity
- Wide operating temperature range (-55°C to +100°C)
- 12.0 in.(305 mm) min. 28 AWG PVC insulated wire leads

DESCRIPTION

The HOA1180 series consists of an infrared emitting diode and an NPN silicon photodarlington (HOA1180-001, -002) or phototransistor (HOA1180-003), 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. The HOA1180 series employs metal can packaged components. For additional component information see SE1450, SD1440, and SD1410.

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

Wire color code and functions are:

All devices

IRED anode - Red

IRED cathode - Black

HOA1180-001

Collector - Brown

Emitter - Black

HOA1180-002

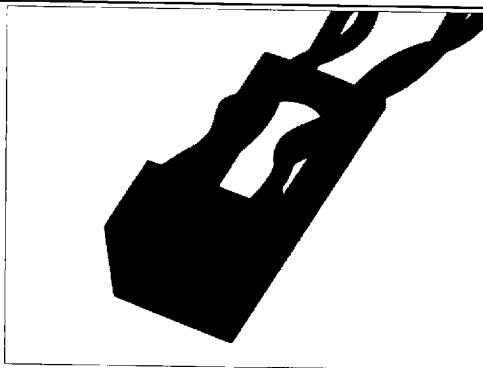
Collector - Orange

Emitter - Black

HOA1180-003

Collector - Yellow

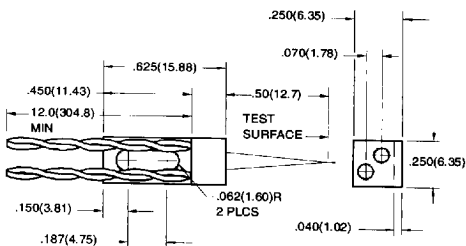
Emitter - Black



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OUTLINE DIMENSIONS in inches (mm)

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



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ELECTRICAL CHARACTERISTIC (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	$V_{(BR)CEO}$				V	$I_C=100\text{ }\mu\text{A}$
HOA1180-001, -002		30				
HOA1180-003		15				
Emitter-Collector Breakdown Voltage	$V_{(BR)ECO}$	5.0			V	$I_E=100\text{ }\mu\text{A}$
Collector Dark Current	I_{CEO}			100	nA	$V_{CE}=10\text{ V}$ $I_F=0$
HOA1180-001, -002				250		
HOA1180-003						
COUPLED CHARACTERISTICS						
On-State Collector Current	$I_{C(ON)}$				mA	$V_{CE}=5\text{ V}$ $I_F=30\text{ mA}$ (1)
HOA1180-001		0.04				
HOA1180-002		0.16				
HOA1180-003		2.0				
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$			0.4	V	$I_F=30\text{ mA}$ (1) $I_C=5\text{ }\mu\text{A}$
HOA1180-001				0.4		$I_C=20\text{ }\mu\text{A}$
HOA1180-002				1.1		$I_C=250\text{ }\mu\text{A}$
HOA1180-003						
Rise And Fall Time	t_r, t_f			15	μs	$V_{CC}=5\text{ V}, I_C=1\text{ mA}$ $R_L=1000\text{ }\Omega$
HOA1180-001, -002				75		$R_L=100\text{ }\Omega$
HOA1180-003						

Notes

- Test surface is a front surface mirror (polished aluminum, 85% reflectance) located 0.50 in. (12.7 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 (5 sec) 240°C

IR EMITTER

Power Dissipation 75 mW (1)

Reverse Voltage 3 V

Continuous Forward Current 50 mA

DETECTOR

Collector-Emitter Voltage **TRANS.** 30 V **DARLINGTON** 15 V

Emitter-Collector Voltage 5 V 5 V

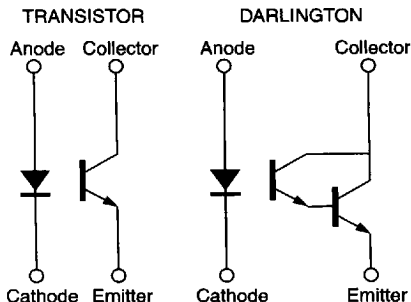
Power Dissipation 75 mW (1) 75 mW (1)

Collector DC Current 30 mA 30 mA

Notes

- Derate linearly at 0.71 mW/°C above 25°C.

SCHEMATIC



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

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Fig. 1 IRED Forward Bias Characteristics

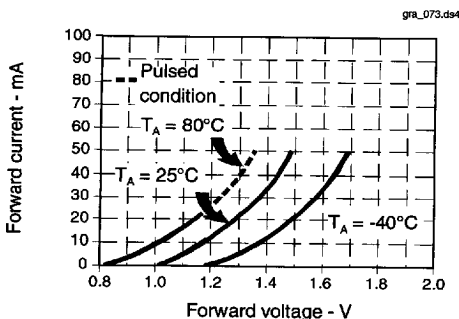


Fig. 2 Non-Saturated Switching Time vs Load Resistance

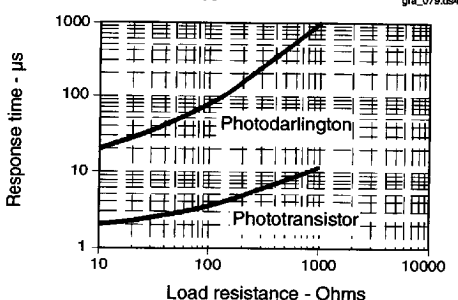


Fig. 3 Dark Current vs Temperature

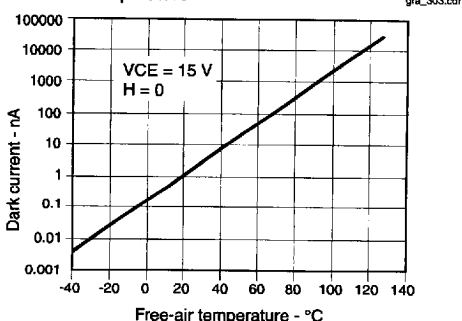


Fig. 4 Collector Current vs Ambient Temperature

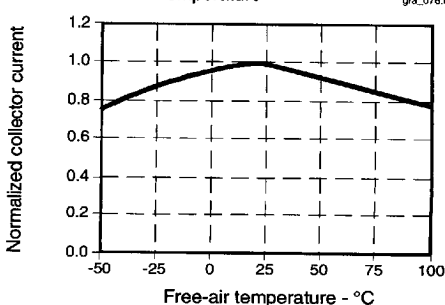


Fig. 5 Collector Current vs Distance to Reflective Surface

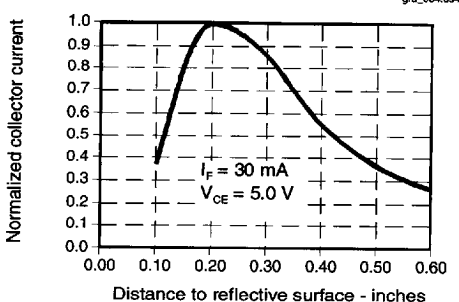
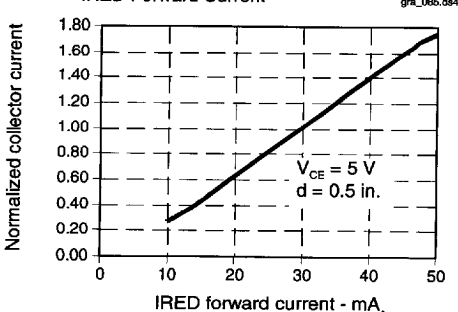


Fig. 6 Collector Current vs IRED Forward Current



All Performance Curves Show Typical Values

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238

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