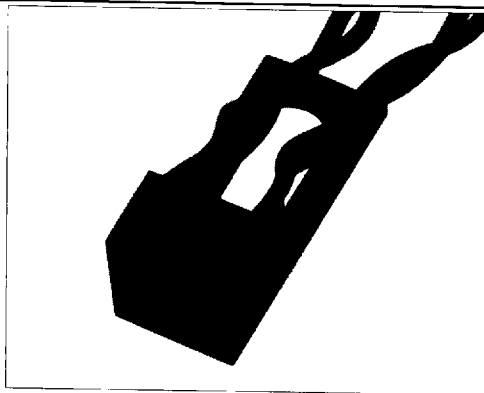


HOA1180

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



INFRA-24.TIF

DESCRIPTION

The HOA1180 series consists of an infrared emitting diode and an NPN silicon phototransistor (HOA1180-001, -002) or photodarlington (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

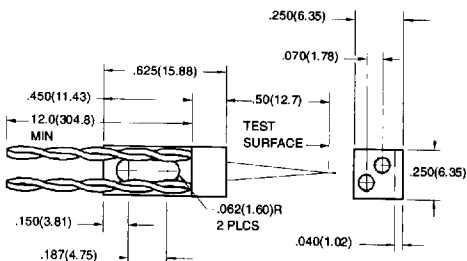
Collector - Orange
Emitter - Black

HOA1180-003

Collector - Yellow
Emitter - Black

OUTLINE DIMENSIONS in inches (mm)

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



DIM_035.dwg

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HOA1180

Reflective Sensor

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}				nA	$V_{CE}=10\text{ V}$ $I_F=0$
HOA1180-001, -002				100		
HOA1180-003				250		
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	$V_{CE(SAT)}$				V	$I_F=30\text{ mA}$ (1) $I_C=5\text{ }\mu\text{A}$ $I_C=20\text{ }\mu\text{A}$ $I_C=250\text{ }\mu\text{A}$
HOA1180-001				0.4		
HOA1180-002				0.4		
HOA1180-003				1.1		
Rise And Fall Time	t_r, t_f				μs	$V_{CC}=5\text{ V}, I_C=1\text{ mA}$ $R_L=1000\text{ }\Omega$ $R_L=100\text{ }\Omega$
HOA1180-001, -002				15		
HOA1180-003				75		

Notes

1. 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

	TRANS.	DARLINGTON
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Collector-Emitter Voltage	30 V	15 V
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Emitter-Collector Voltage	5 V	5 V
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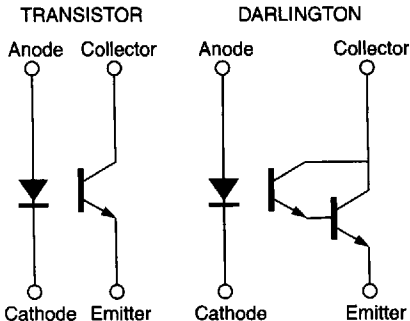
Power Dissipation	75 mW (1)	75 mW (1)
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Collector DC Current	30 mA	30 mA
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Notes

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

SCHEMATIC



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HOA1180

Reflective Sensor

Fig. 1 IRED Forward Bias Characteristics

gra_073.ds4

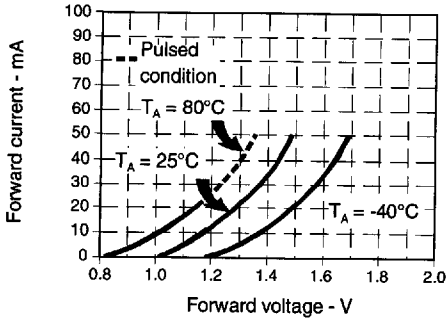


Fig. 2 Non-Saturated Switching Time vs Load Resistance

gra_079.ds4

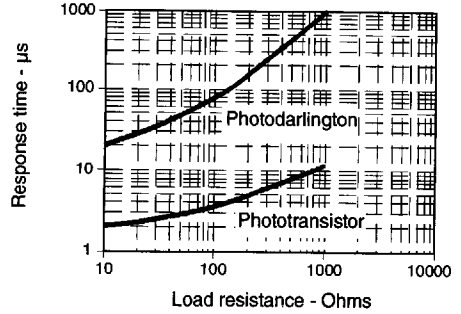


Fig. 3 Dark Current vs Temperature

gra_303.cdr

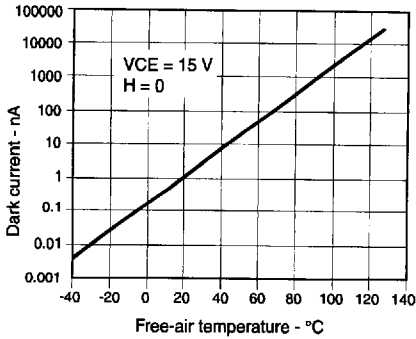


Fig. 4 Collector Current vs Ambient Temperature

gra_076.ds4

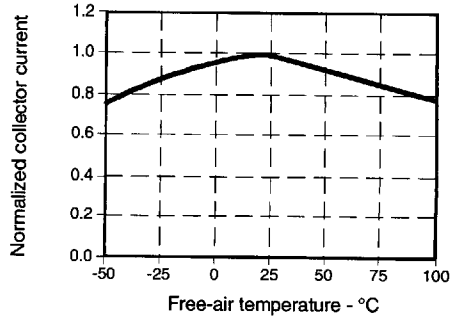


Fig. 5 Collector Current vs Distance to Reflective Surface

gra_084.ds4

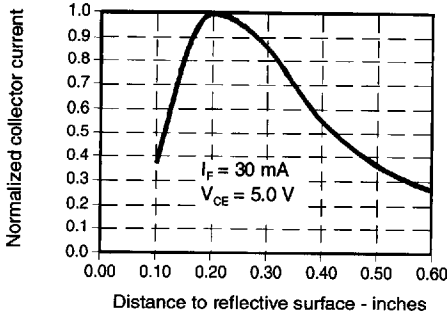
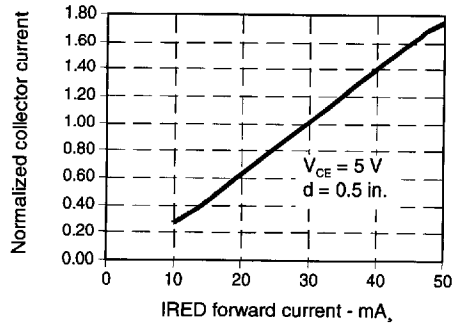


Fig. 6 Collector Current vs IRED Forward Current

gra_085.ds4



All Performance Curves Show Typical Values

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