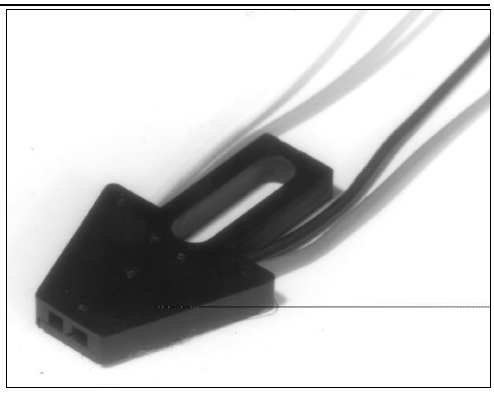
HOA1406

Reflective Sensor

FEATURES

- Choice of phototransistor or photodarlington output
- Low profile package
- Hermetic style emitter and detector
- Focused for maximum response
- 24.0 in.(610 mm) min. 26 AWG Teflon insulated lead wires



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DESCRIPTION

The HOA1406 series consists of an infrared emitting diode facing an NPN silicon phototransistor (HOA1406- 001) or photodarlington (HOA1406- 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. This low profile sensor is ideally suited for applications where space is limited, or stacking of sensors is required. The HOA1406 series employs hermetically sealed metal can packaged components. For additional component information see SE2460, SD2440, SD2410.

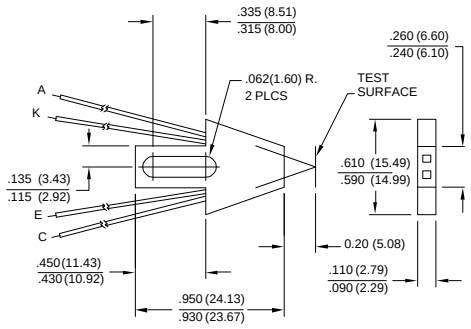
Housing material is polycarbonate. Housings are soluble in chlorinated hydrocarbons and ketones. Recommended cleaning agents are methanol and isopropanol.

Wire color code and functions are:

IRED anode - red
IRED cathode - black
Collector - white
Emitter - green

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 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
HOA1406-001		30				
HOA1406-003		15				
Emitter-Collector Breakdown Voltage	$V_{(BR)ECO}$	5.0			V	I_E=100 µA
Collector Dark Current	I_{CEO}				nA	V_{CE}=10 V, I_F=0
HOA 1406-001				100		
HOA1406-003				250		
COUPLED CHARACTERISTICS						
On-State Collector Current	$I_{C(ON)}$					V_{CE}=5 V
HOA1406-001		25			µA	I_F=40 mA
HOA1406-003		2.0			mA	(1)
Crosstalk (2)	I_{CX}			2.0	µA	V_{CE}=5 V, I_F=40 mA
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$				V	I_F=40 mA (1)
HOA1406-001				0.4		I_C=10 µA
HOA1406-003				1.1		I_C=1 mA
Rise And Fall Time	t_r, t_f				µs	V_{CC}=5 V, I_C=1 mA
HOA1406-001			15			R_L=1000 Ω
HOA1406-003			75			R_L=100 Ω

Notes
1. Test surface is a Eastman Kodak neutral white card with 90% diffuse reflectance located 0.20 in. (5.0 mm) from the front surface of the device.
2. Crosstalk (Icx) is the collector current measured with current to emitter and no reflecting surface.

ABSOLUTE MAXIMUM RATINGS

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

Operating Temperature Range	-40°C to 100°C	
Storage Temperature Range	-40°C to 100°C	
IR EMITTER		
Power Dissipation	80 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	75 mW (2)	75 mW (2)
Collector DC Current	30 mA	30 mA

SCHEMATIC

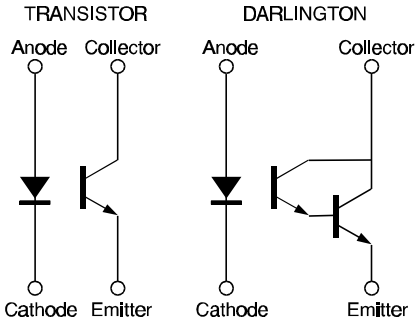

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Fig. 1 IRED Forward Bias Characteristics

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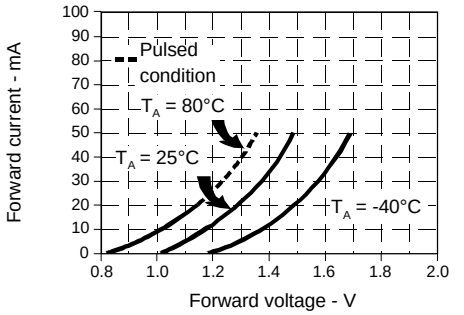

Fig. 2 Non-Saturated Switching Time vs Load Resistance

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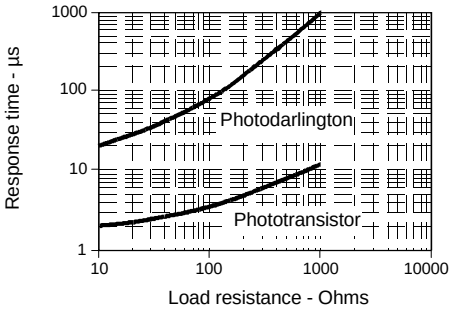

Fig. 3 Dark Current vs Temperature

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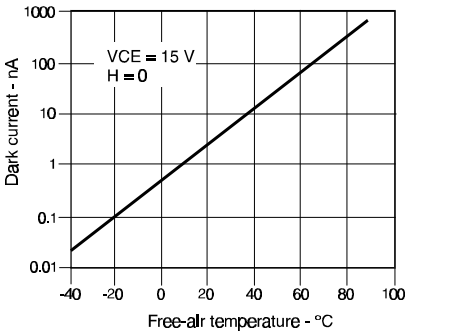

Fig. 4 Collector Current vs Ambient Temperature

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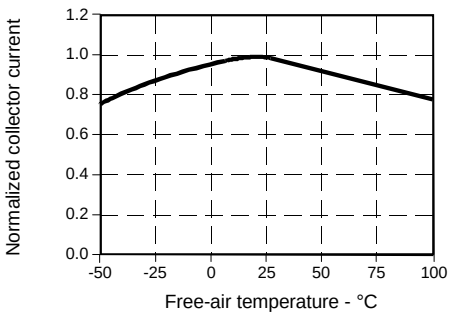

Fig. 5 Collector Current vs Distance to Reflective Surface

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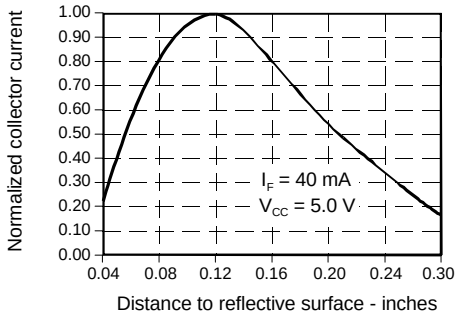

Fig. 6 Collector Current vs IRED Forward Current

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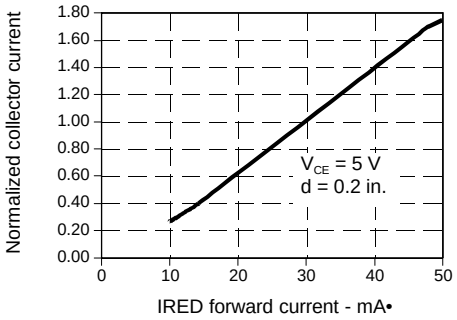

All Performance Curves Show Typical Values

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HOA1406-001 HOA1406-003