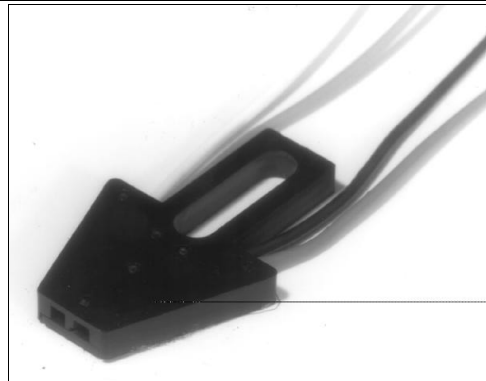


HOA1406

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 PTFE insulated lead wires



INFRA-84.TIF

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.

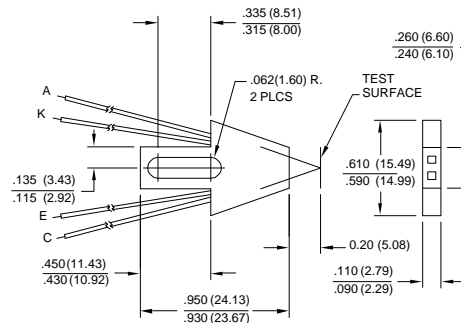
Housing material is polycarbonate. Housings are soluble in chlorinated hydrocarbons and ketones. Recommended cleaning agents are methanol and isopropanol.

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



DIM_072.dwg

HOA1406

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

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 (I_{CX}) is the collector current measured with current 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

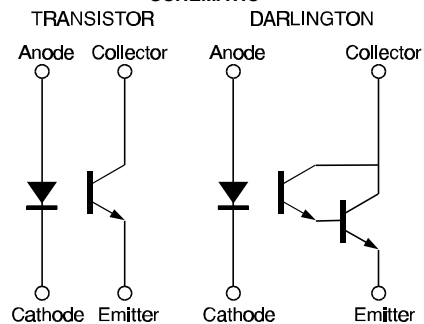
IR EMITTER

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



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

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HOA1406

Reflective Sensor

Fig. 1 IRED Forward Bias Characteristics

gra_073.ds4

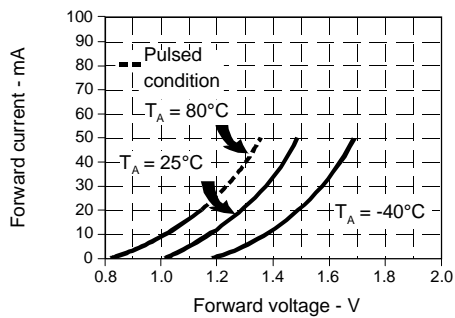


Fig. 2 Non-Saturated Switching Time vs Load Resistance

gra_079.ds4

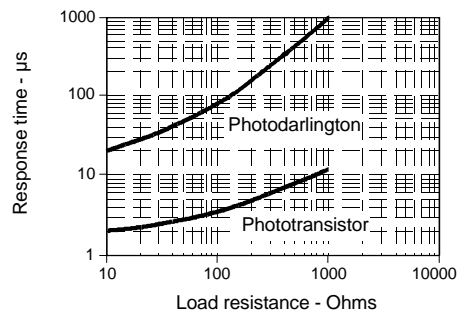


Fig. 3 Dark Current vs Temperature

gra_301.cdr

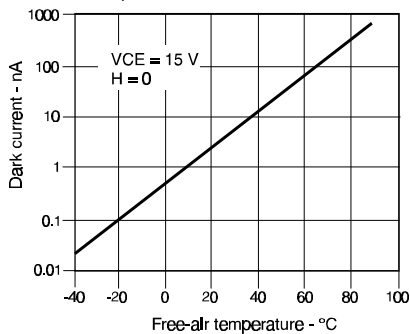


Fig. 4 Collector Current vs Ambient Temperature

gra_076.ds4

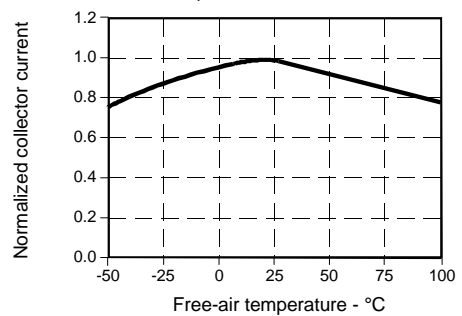


Fig. 5 Collector Current vs Distance to Reflective Surface

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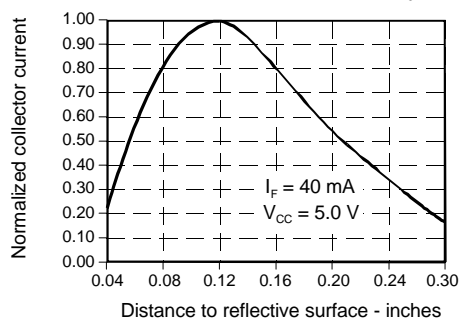
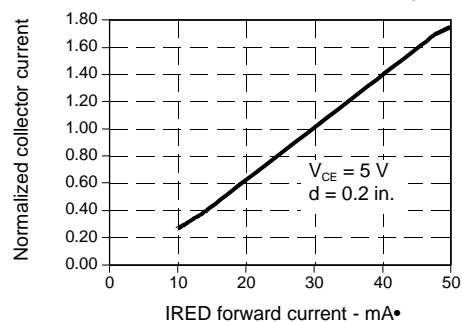


Fig. 6 Collector Current vs IRED Forward Current

gra_209.ds4



All Performance Curves Show Typical Values

HOA1406
Reflective Sensor



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