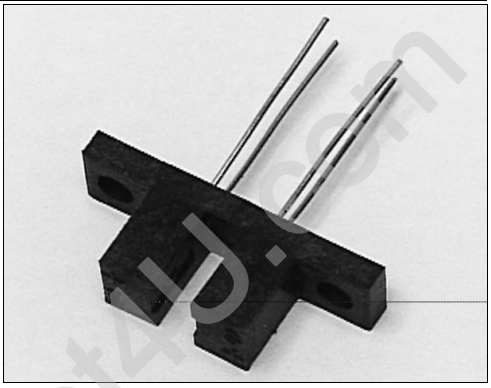
HOA1874

Transmissive Sensor

FEATURES

- Choice of phototransistor or photodarlington output
- Three sensitivity ranges
- Choice of metal can package or plastic molded components
- 0.120 in.(3.05 mm) slot width



INFRA-15.TIF

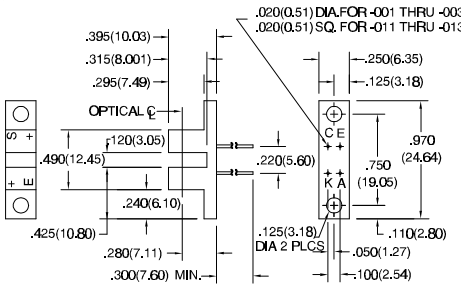
DESCRIPTION

The HOA1874 series consists of an infrared emitting diode facing an NPN silicon phototransistor (HOA1874- 001, - 002, - 011, - 012) or photodarlington (HOA1874- 003, - 013) encased in a black thermoplastic housing. Detector switching takes place whenever an opaque object passes through the slot between emitter and detector. The HOA1874- 001, - 002, and - 003 have a 0.050 in.(1.27 mm) dia. detector aperture and employ metal can packaged components, while the HOA1874- 011,- 012, and - 013 have a 0.060 in.(1.52 mm) dia. detector aperture and contain plastic molded components. For additional component information see SE1450, SD1440, SD1410, SEP8506, SDP8406, and SDP8106.

HOA1874-001, 002, 003 housing material is acetal copolymer. HOA1874-011, 012, 013 housing material is polyester. Housings are soluble in chlorinated hydrocarbons and ketones. Recommended cleaning agents are methanol and isopropanol.

OUTLINE DIMENSIONS in inches (mm)

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



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HOA1874

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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
HOA1874-001, -002, -011, -012		30				
HOA1874-003, -013		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
HOA1874-001, -002, -011, -012				100		I_F=0
HOA1874-003, -013				250		
COUPLED CHARACTERISTICS						
On-State Collector Current	$I_{C(ON)}$				mA	V_{CE}=5 V
HOA1874-001, -011		0.3				I_F=20 mA
HOA1874-002, -012		1.8				
HOA1874-003, -013		4.0				
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$				V	I_F=20 mA
HOA1874-001, -011				0.4		I_C=40 µA
HOA1874-002, -012				0.4		I_C=230 µA
HOA1874-003, -013				1.1		I_C=500 µA
Rise And Fall Time	t_r, t_f				µs	V_{CC}=5 V, I_C=1 mA
HOA1874-001, -002, -011, -012			15			R_L=1000 Ω
HOA1874-003, -013			75			R_L=100 Ω

ABSOLUTE MAXIMUM RATINGS

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

Operating Temperature Range
- HOA1874-001, -002, -003: -55°C to 100°C
- HOA1874-011, -012, -013: -40°C to 85°C

Storage Temperature Range
- HOA1874-001, -002, -003: -55°C to 125°C
- HOA1874-011, -012, -013: -40°C to 85°C

Soldering Temperature
- HOA1874-001, -002, -003: 260°C (10 sec)
- HOA1874-011, -012, -013: 240°C (5 sec)

IR EMITTER

Power Dissipation:
- HOA1874-001, -002, -003: 75 mW
- HOA1874-011, -012, -013: 100 mW

Reverse Voltage: 3 V

ABSOLUTE MAXIMUM RATINGS (continued)

Continuous Forward Current: 50 mA

DETECTOR	**TRANS.**	**DARLINGTON**
Collector-Emitter Voltage	30 V	15 V
Emitter-Collector Voltage	5 V	5 V
Power Dissipation:		
HOA1874-001, -002, -003	75 mW (1)	75 mW (1)
HOA1874-011, -012, -013	100 mW (2)	100 mW (2)
Collector DC Current	30 mA	30 mA

Notes
1. Derate linearly at 0.71 mW/°C above 25°C.
2. Derate linearly at 0.78 mW/°C above 25°C.

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SCHEMATIC

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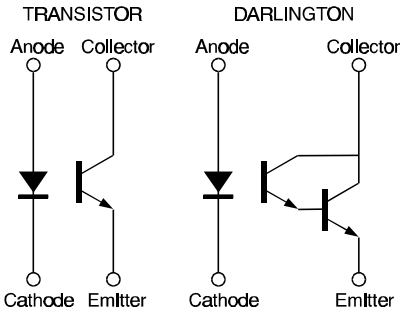

Fig. 1 IRED Forward Bias Characteristics

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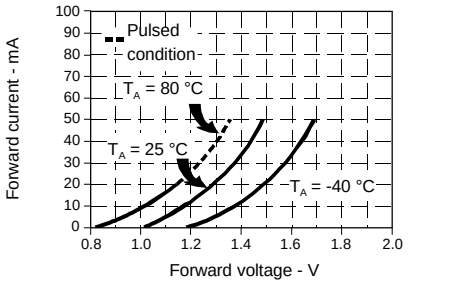

Fig. 2 Non-Saturated Switching Time vs Load Resistance

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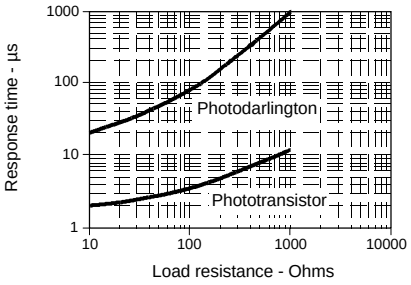

Fig. 3 Dark Current vs Temperature

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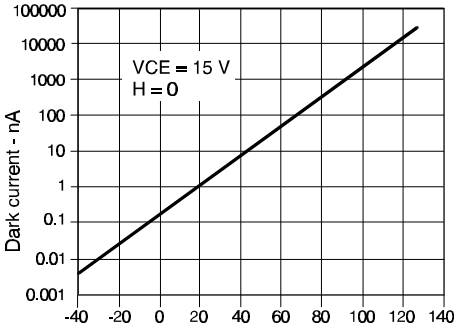

Fig. 4 Collector Current vs Ambient Temperature

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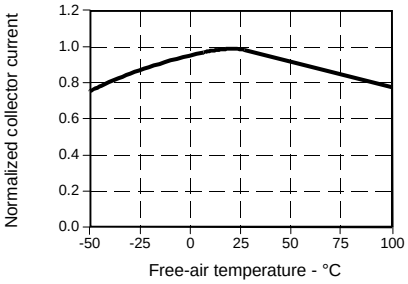

All Performance Curves Show Typical Values

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