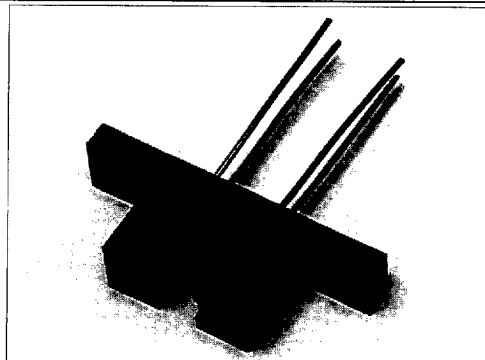


HOA1874

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

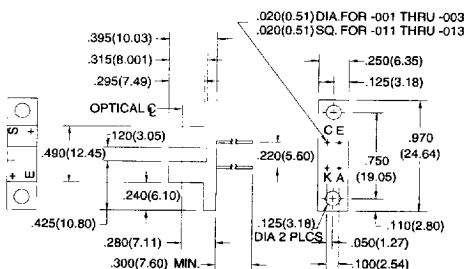
DESCRIPTION

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



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HOA1874

Transmissive 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 HOA1874-001, -002, -011, -012 HOA1874-003, -013	$V_{(BR)CEO}$	30 15			V	$I_C=100\text{ }\mu\text{A}$
Emitter-Collector Breakdown Voltage	$V_{(BR)ECO}$	5.0			V	$I_E=100\text{ }\mu\text{A}$
Collector Dark Current HOA1874-001, -002, -011, -012 HOA1874-003, -013	I_{CEO}			100 250	nA	$V_{CE}=10\text{ V}$ $I_F=0$
COUPLED CHARACTERISTICS						
On-State Collector Current HOA1874-001, -011 HOA1874-002, -012 HOA1874-003, -013	$I_{C(ON)}$	0.3 1.8 4.0			mA	$V_{CE}=5\text{ V}$ $I_F=20\text{ mA}$
Collector-Emitter Saturation Voltage HOA1874-001, -011 HOA1874-002, -012 HOA1874-003, -013	$V_{CE(SAT)}$			0.4 0.4 1.1	V	$I_F=20\text{ mA}$ $I_C=40\text{ }\mu\text{A}$ $I_C=230\text{ }\mu\text{A}$ $I_C=500\text{ }\mu\text{A}$
Rise And Fall Time HOA1874-001, -002, -011, -012 HOA1874-003, -013	t_r, t_f		15 75		μs	$V_{CC}=5\text{ V}, I_C=1\text{ mA}$ $R_L=1000\text{ }\Omega$ $R_L=100\text{ }\Omega$

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 ⁽¹⁾
HOA1874-011, -012, -013	100 mW ⁽²⁾

Reverse Voltage

3 V

ABSOLUTE MAXIMUM RATINGS (continued)

Continuous Forward Current 50 mA

DETECTOR

Collector-Emitter Voltage

Emitter-Collector Voltage

Power Dissipation:

HOA1874-001, -002, -003

HOA1874-011, -012, -013

Collector DC Current

TRANS. DARLINGTON

30 V 15 V

5 V 5 V

75 mW ⁽¹⁾ 75 mW ⁽¹⁾

100 mW ⁽²⁾ 100 mW ⁽²⁾

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.

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

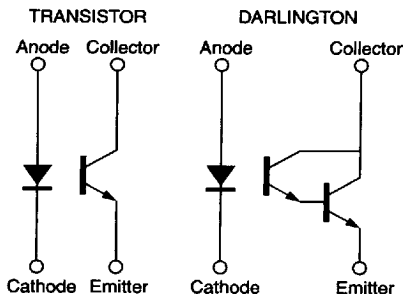
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HOA1874

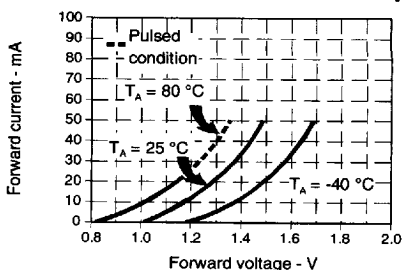
Transmissive Sensor

SCHEMATIC



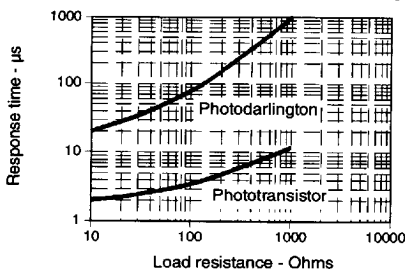
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Fig. 1 IRED Forward Bias Characteristics



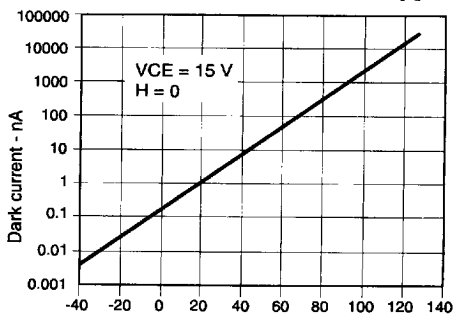
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Fig. 2 Non-Saturated Switching Time vs Load Resistance



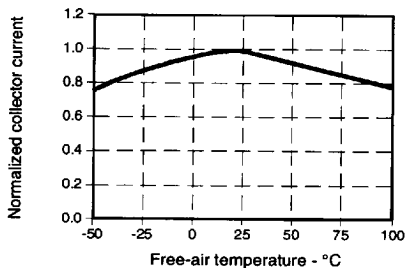
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Fig. 3 Dark Current vs Temperature



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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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