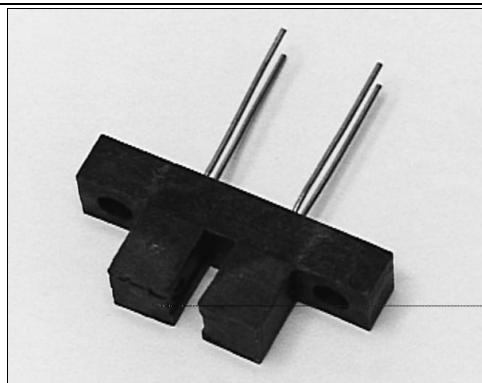


HOA1873

Transmissive Sensor

FEATURES

- Choice of phototransistor or photodarlington output
- Three sensitivity ranges
- Choice of metal can package or plastic molded components
- 0.100 in.(2.54 mm) slot width



INFRA-13.TIF

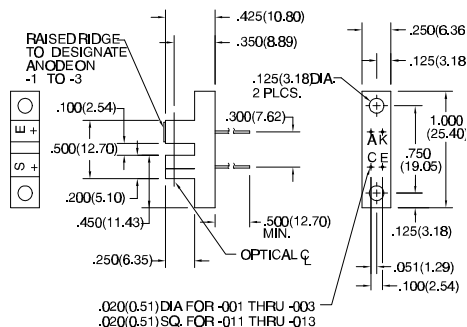
DESCRIPTION

The HOA1873 series consists of an infrared emitting diode facing an NPN silicon phototransistor (HOA1873-001, -002, -011, -012) or photodarlington (HOA1873-003, -013) encased in a black thermoplastic housing. Detector switching takes place whenever an opaque object passes through the slot between emitter and detector. The HOA1873-001, -002, and -003 have a 0.050 in.(1.27 mm) dia. detector aperture and employ metal can packaged components, while the HOA1873-011, -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.

HOA1873-001, 002, 003 housing material is acetal copolymer. HOA1873-011, 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 $\pm 0.020(0.51)$



DIM_045.cdr

HOA1873

Transmissive 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 HOA1873-001, -002, -011, -012 HOA1873-003, -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 HOA1873-001, -002, -011, -012 HOA1873-003, -013	I_{CEO}			100 250	nA	$V_{CE}=10\text{ V}$ $I_F=0$
COUPLED CHARACTERISTICS						
On-State Collector Current HOA1873-001, -011 HOA1873-002, -012 HOA1873-003, -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 HOA1873-001, -011 HOA1873-002, -012 HOA1873-003, -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 HOA1873-001, -002, -011, -012 HOA1873-003, -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	
HOA1873-001, -002, -003	-55°C to 100°C
HOA1873-011, -012, -013	-40°C to 85°C
Storage Temperature Range	
HOA1873-001, -002, -003	-55°C to 125°C
HOA1873-011, -012, -013	-40°C to 85°C
Soldering Temperature	
HOA1873-001, -002, -003	260°C (10 sec)
HOA1873-011, -012, -013	240°C (5 sec)

IR EMITTER

Power Dissipation:	
HOA1873-001, -002, -003	75 mW
HOA1873-011, -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		
HOA1873-001, -002, -003	75 mW ⁽¹⁾	75 mW ⁽¹⁾
HOA1873-011, -012, -013	100 mW ⁽²⁾	100 mW ⁽²⁾
Collector DC Current	30 mA	30 mA

Notes

- Derate linearly at 0.71 mW/°C above 25°C.
- 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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HOA1873

Transmissive Sensor

SCHEMATIC

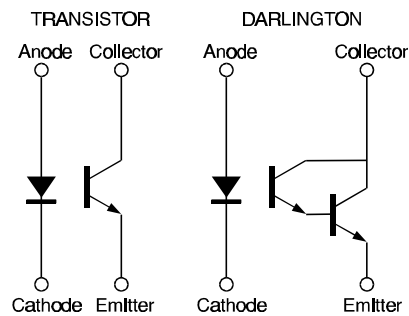


Fig. 1 IRED Forward Bias Characteristics

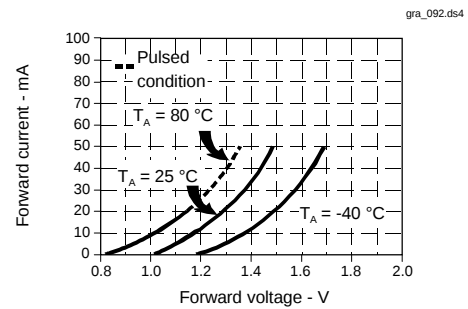


Fig. 2 Non-Saturated Switching Time vs Load Resistance

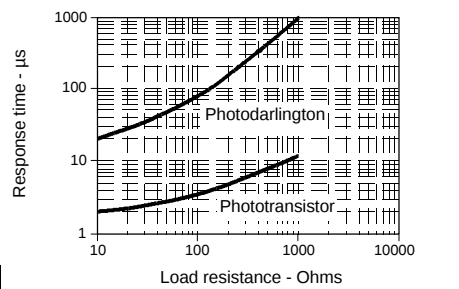


Fig. 3 Dark Current vs Temperature

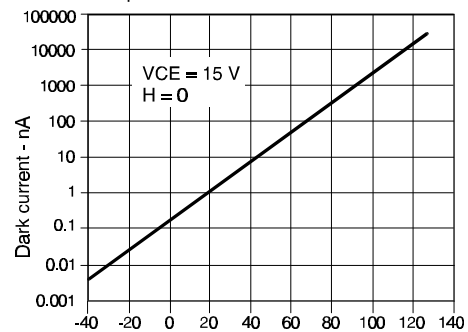
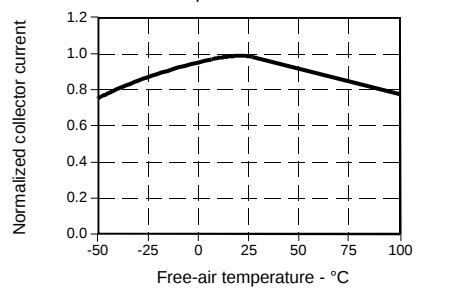


Fig. 4 Collector Current vs Ambient Temperature



All Performance Curves Show Typical Values



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