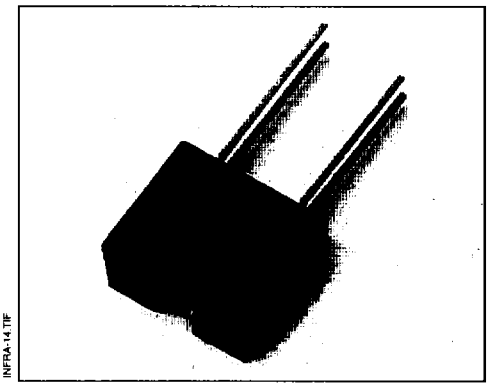
HOA1872

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



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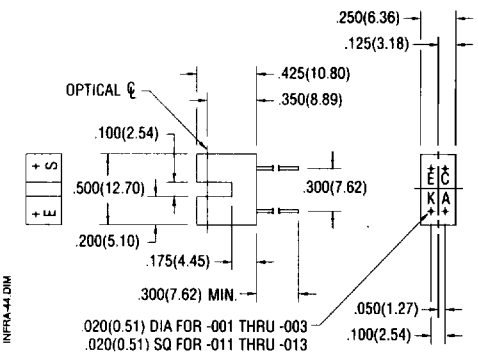
DESCRIPTION

The HOA1872 series consists of an infrared emitting diode facing an NPN silicon phototransistor (HOA1872-001, -002, -011, -012) or photodarlington (HOA1872-003, -013) encased in a black thermoplastic housing. Detector switching takes place wherever an opaque object passes through the slot between emitter and detector. The HOA1872-001, -002 and -003 have a 0.050 in.(1.27 mm)dia. detector aperture and employ metal can packaged components, while the HOA1872-011, -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.

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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HOA1872

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 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
HOA1872-001, -002, -011, -012		30				
HOA1872-003, -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
HOA1872-001, -002, -011, -012				100		I_F=0
HOA1872-003, -013				250		
COUPLED CHARACTERISTICS						
On-State Collector Current	$I_{C(ON)}$				mA	V_{CE}=5 V
HOA1872-001, -011		0.3				I_F=20 mA
HOA1872-002, -012		1.8				
HOA1872-003, -013		4.0				
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$				V	I_F=20 mA
HOA1872-001, -011				0.4		I_C=40 µA
HOA1872-002, -012				0.4		I_C=230 µA
HOA1872-003, -013				1.1		I_C=500 µA
Rise And Fall Time	t_r, t_f				µs	V_{CC}=5 V, I_C=1 mA
HOA1872-001, -002, -011, -012			15			R_L=1000 Ω
HOA1872-003, -013			75			R_L=100 Ω

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

Operating Temperature Range	
HOA1872-001, -002, -003	-55°C to 100°C
HOA1872-011, -012, -013	-40°C to 85°C
Storage Temperature Range	
HOA1872-001, -002, -003	-55°C to 125°C
HOA1872-011, -012, -013	-40°C to 85°C
Soldering Temperature	
HOA1872-001, -002, -003	260°C (10 sec)
HOA1872-011, -012, -013	240°C (5 sec)
IR EMITTER	
Power Dissipation	
HOA1872-001, -002, -003	75 mW(1)
HOA1872-011, -012, -013	100 mW(2)
Reverse Voltage	3 V
Continuous Forward Current	50 mA

ABSOLUTE MAXIMUM RATINGS (continued)

DETECTOR	TRANS.	DARLINGTON
Collector-Emitter Voltage	30 V	15 V
Emitter-Collector Voltage	5 V	5 V
Power Dissipation		
HOA1872-001, -002, -003	75 mW(1)	75 mW(1)
HOA1872-011, -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

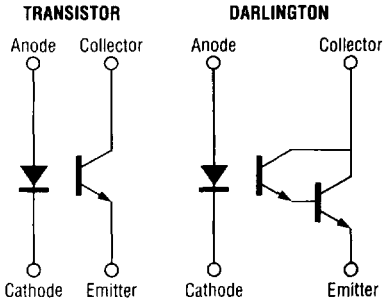

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Fig. 1 IRED Forward Bias Characteristics

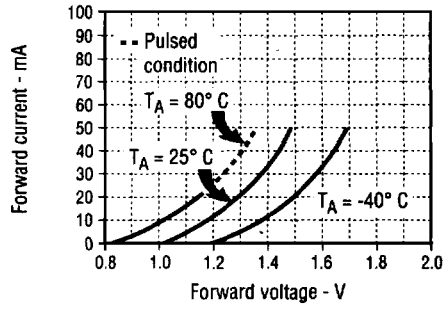

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Fig. 2 Non-Saturated Switching Time vs Load Resistance

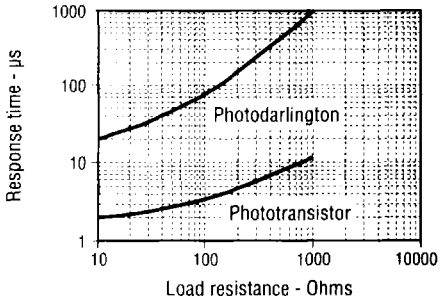

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Fig. 3 Detector Dark Current vs Temperature

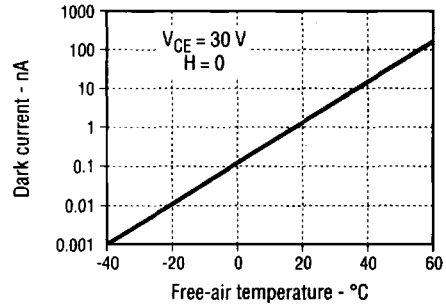

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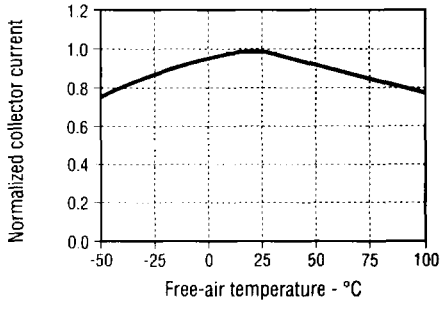
Fig. 4 Collector Current vs Ambient Temperature



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All Performance Curves Show Typical Values

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