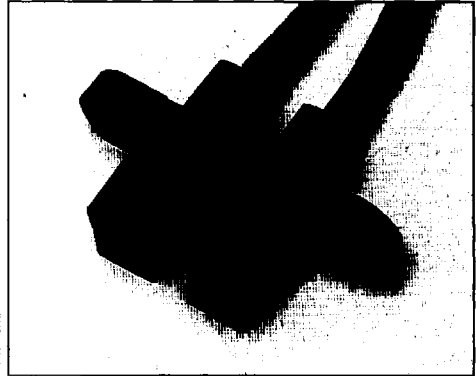


HOA1881

Transmissive Sensor

FEATURES

- Choice of phototransistor or photodarlington output
- 0.060 in. (1.52 mm) dia. detector aperture
- 0.125 in. (3.18 mm) slot width
- 18.0 in. (457 mm) min. 22 AWG PVC insulated wire leads



DESCRIPTION

The HOA1881 series consists of an infrared emitting diode facing an NPN silicon phototransistor (HOA1881-011, -012) or photodarlington (HOA1881-013) encased in a black thermoplastic housing. Detector switching takes place whenever an opaque object passes through the slot between emitter and detector. The lead wires of minimum length 18.0 in. (457 mm) provide alternate electrical connection when PC board mounting is not possible. The HOA1881 series employs plastic molded components. For additional component information see SEP8506, SDP8406, and SDP8106.

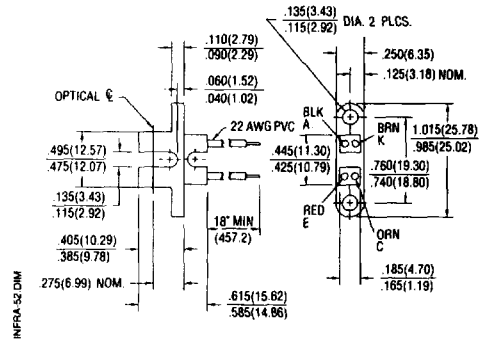
Housing material is nylon. Housings are soluble in chlorinated hydrocarbons and ketones. Recommended cleaning agents are methanol and isopropanol.

Wire color code and functions are:

- Black - IRED Anode
- Orange - Detector Collector
- Brown - IRED Cathode
- Red - Detector Emitter

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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HOA1881

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	$V_{(BR)CEO}$				V	$I_C=100\ \mu\text{A}$
HOA1881-011, -012		30				
HOA1881-013		15				
Emitter-Collector Breakdown Voltage	$V_{(BR)ECO}$	5.0			V	$I_E=100\ \mu\text{A}$
Collector Dark Current	I_{CEO}				nA	$V_{CE}=10\text{ V}$
HOA1881-011, -012				100		$I_F=0$
HOA1881-013				250		
COUPLED CHARACTERISTICS						
On-State Collector Current	$I_{C(ON)}$				mA	$V_{CE}=5\text{ V}$
HOA1881-011		0.3				$I_F=20\text{ mA}$
HOA1881-012		1.8				
HOA1881-013		4.0				
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$				V	$I_F=20\text{ mA}$
HOA1881-011				0.4		$I_C=40\ \mu\text{A}$
HOA1881-012				0.4		$I_C=230\ \mu\text{A}$
HOA1881-013				1.1		$I_C=500\ \mu\text{A}$
Rise And Fall Time	t_r, t_f				μs	$V_{CC}=5\text{ V}, I_C=1\text{ mA}$
HOA1881-011, -012			15			$R_L=1000\ \Omega$
HOA1881-013			75			$R_L=100\ \Omega$

ABSOLUTE MAXIMUM RATINGS

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

Operating Temperature Range -40°C to 85°C

Storage Temperature Range -40°C to 85°C

Soldering Temperature (5 sec) 240°C

IR EMITTER

Power Dissipation 100 mW⁽¹⁾

Reverse Voltage 3 V

Continuous Forward Current 50 mA

DETECTOR

Collector-Emitter Voltage 30 V

Emitter-Collector Voltage 5 V

Power Dissipation 100 mW⁽¹⁾

Collector DC Current 30 mA

TRANS.

DARLINGTON

15 V

5 V

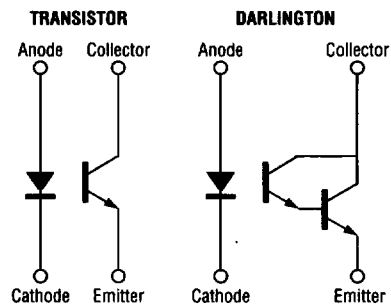
100 mW⁽¹⁾

30 mA

Notes

- Derate linearly at 0.78 mW/°C above 25°C.

SCHEMATIC



INFRA-27 SCH

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HOA1881

Transmissive Sensor

Fig. 1 IRED Forward Bias Characteristics

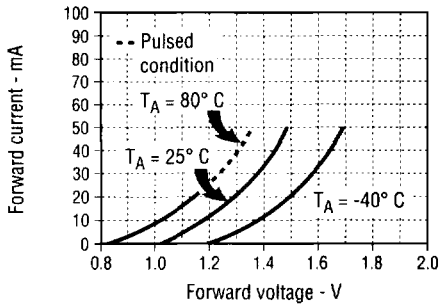


Fig. 2 Non-Saturated Switching Time vs Load Resistance

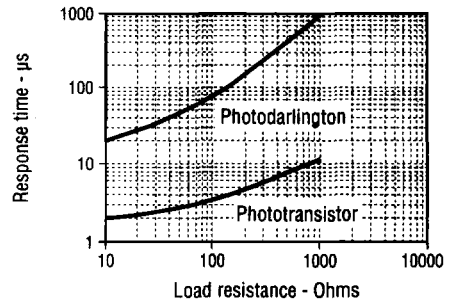


Fig. 3 Detector Dark Current vs Temperature

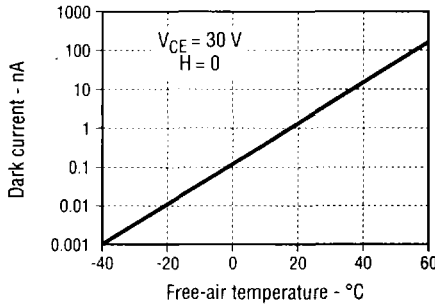
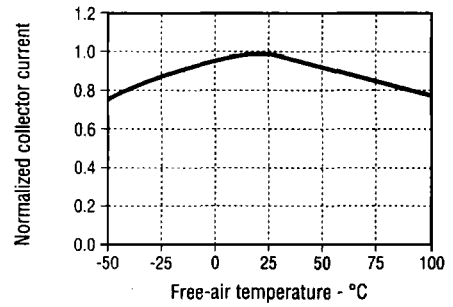


Fig. 4 Collector Current vs Ambient Temperature



All Performance Curves Show Typical Values



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