

HOA0708/0709

Reflective Sensor

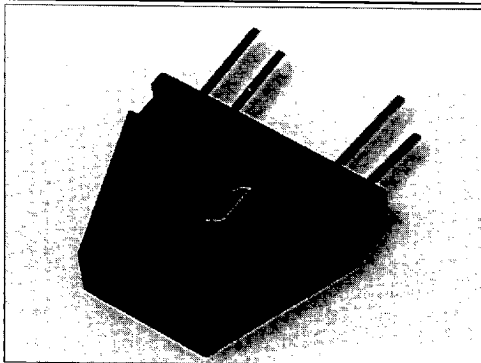
FEATURES

- Choice of phototransistor or photodarlington output
- Focused for maximum response
- Ambient light and dust protective filter
- Adjustable mounting slot

DESCRIPTION

The HOA0708/0709 series consists of an infrared emitting diode and an NPN silicon phototransistor (HOA0708-001, -011) or photodarlington (HOA0709-001, -011) encased side-by-side on converging optical axes in a black thermoplastic housing. The detector responds to radiation from the IRED only when a reflective object passes within its field of view. The HOA0708-011 and HOA0709-011 employ an IR transmissive filter to minimize the effects of visible ambient light and provide a smooth optical face which prevents the accumulation of airborne contaminants in the optical path. The HOA0708/0709 series employs plastic molded components. For additional component information see SEP8505, SDP8405, and SDP8105.

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

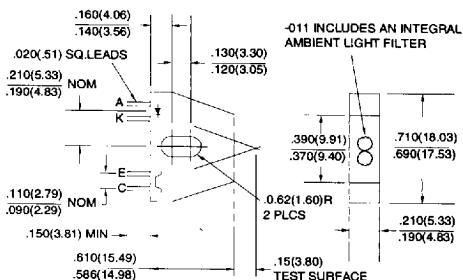


INFRA-56.TIF

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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HOA0708/0709

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ELECTRICAL CHARACTERISTIC (25°C unless otherwise noted)

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	TEST CONDITIONS
IR EMITTER						
Forward Voltage	V_F			1.6	V	$I_F=20\text{ mA}$ $V_R=3\text{ V}$
Reverse Leakage Current	I_R			10	μA	
DETECTOR						
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	30			V	$I_C=100\text{ }\mu\text{A}$
HOA0708-001, -011		15				
HOA0709-001, -011		5.0			V	$I_E=100\text{ }\mu\text{A}$
Emitter-Collector Breakdown Voltage	$V_{(BR)ECO}$				V	$V_{CE}=10\text{ V}$ $I_F=0$
Collector Dark Current	I_{CEO}			100	nA	
HOA0708-001, -011				250		
HOA0709-001, -011						
COUPLED CHARACTERISTICS						
On-State Collector Current	$I_{C(ON)}$	0.2			mA	$V_{CE}=5\text{ V}$ $I_F=40\text{ mA}$ (1)
HOA0708-001, -011		1.0				
HOA0709-001, -011					V	$I_F=40\text{ mA}$ (1) $I_C=30\text{ }\mu\text{A}$ $I_C=125\text{ }\mu\text{A}$
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$			0.4	V	$V_{CC}=5\text{ V}$, $I_C=1\text{ mA}$ $R_L=1000\text{ }\Omega$ $R_L=100\text{ }\Omega$
HOA0708-001, -011				1.1		
HOA0709-001, -011					μs	
Rise And Fall Time	t_r, t_f		15			
HOA0708-001, -011			75			
HOA0709-001, -011						

Notes

- Test surface is Eastman Kodak neutral white test card with 90% diffuse reflectance located 0.15 in. (3.80 mm) from the front surface of the device.

ABSOLUTE MAXIMUM RATINGS

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	70 mW (1)
Reverse Voltage	3 V
Continuous Forward Current	50 mA

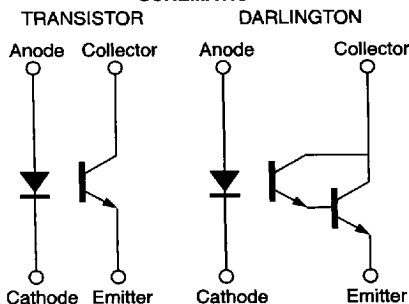
DETECTOR

	TRANS.	DARLINGTON
Collector-Emitter Voltage	30 V	15 V
Emitter-Collector Voltage	5 V	5 V
Power Dissipation	70 mW (1)	70 mW (1)
Collector DC Current	30 mA	30 mA

Notes

- Derate linearly at 0.18 mW/°C above 25°C.

SCHEMATIC



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Fig. 1 IRED Forward Bias Characteristics

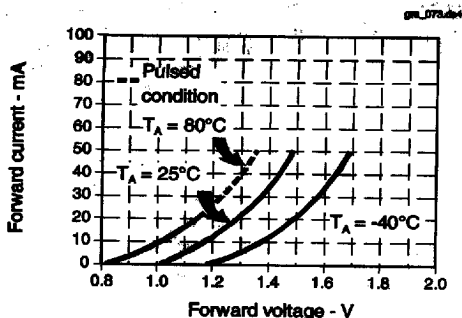


Fig. 2 Non-Saturated Switching Time vs Load Resistance

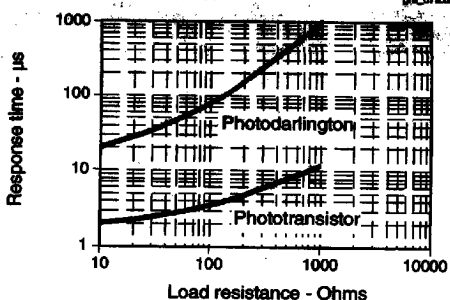


Fig. 3 Dark Current vs Temperature

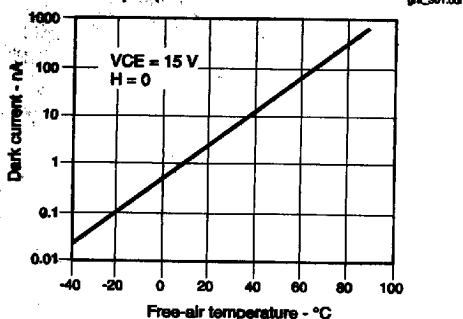


Fig. 4 Collector Current vs Ambient Temperature

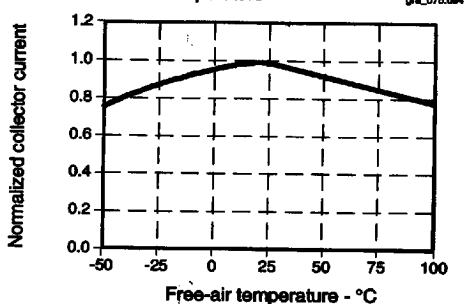


Fig. 5 Collector Current vs Distance to Reflective Surface

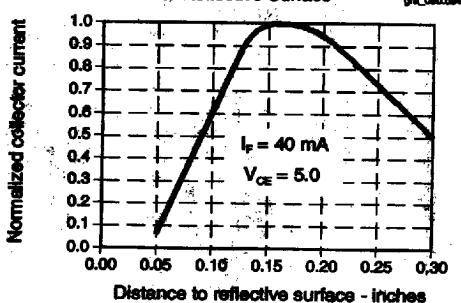
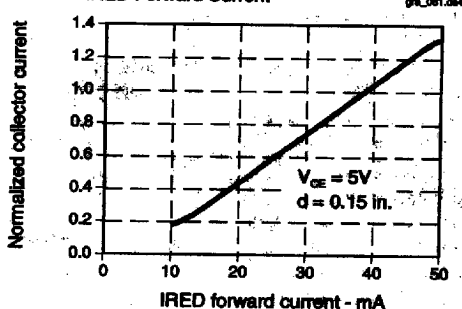


Fig. 6 Collector Current vs IRED Forward Current



All Performance Curves Show Typical Values

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