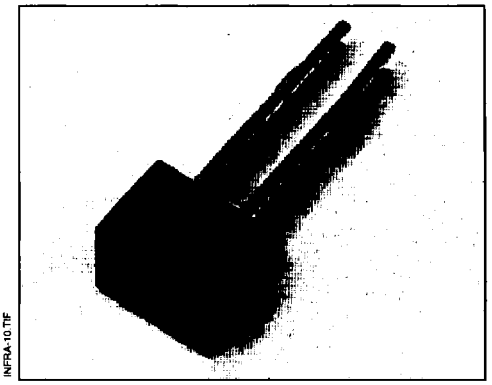
HOA1397

Reflective Sensor

FEATURES
- Choice of phototransistor or photodarlington output
- Low profile for design flexibility
- Unfocused for sensing diffuse surfaces



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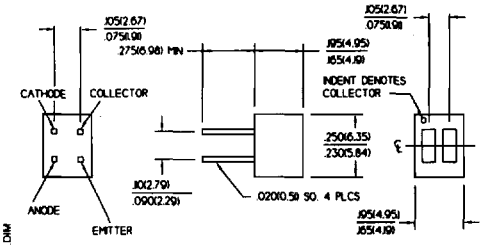
DESCRIPTION
The HOA1397 series consists of an infrared emitting diode and an NPN silicon phototransistor (HOA1397-001, -002) or photodarlington (HOA1397-031, 032) encased side-by-side on parallel axes in a miniature black thermoplastic housing. The detector responds to radiation from the IRED only when a reflective object passes within its field of view. The HOA1397 series employs plastic molded components. For additional component information refer to SEP8507 and SDP8407.

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

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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						
Emitter-Collector Breakdown Voltage	$V_{(BR)ECO}$				V	I_C=100 µA
HOA1397-001, -002		30				
HOA1397-031, -032		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
HOA1397-001, -002				100		I_F=0
HOA1397-031, -032				250		
COUPLED CHARACTERISTICS						
On-State Collector Current	$I_{C(ON)}$				mA	V_{CE}=5 V
HOA1397-001		0.2				I_F=20 mA
HOA1397-002		0.7				(1)
HOA1397-031		2.0				
HOA1397-032		7.0				
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$				V	I_F=20 mA, (1)
HOA1397-001				0.4		I_C=30 µA
HOA1397-002				0.4		I_C=90 µA
HOA1397-031				1.1		I_C=250 µA
HOA1397-032				1.1		I_C=880 µA
Rise And Fall Time	t_r, t_f				µs	V_{CC}=5 V, I_C=1 mA
HOA1397-001, -002			15			R_L=1000 Ω
HOA1397-031, -032			75			R_L=100 Ω

Notes
1. Test surface is an Eastman Kodak neutral white test card with 90% diffuse reflectance located 0.05 in.(1.27 mm) from the front surface of the device.

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	60 mA	
DETECTOR	**TRANS.**	**DARLINGTON**
Collector-Emitter Voltage	30 V	15 V
Emitter-Collector Voltage	5 V	5 V
Power Dissipation	100 mW(1)	100 mW(1)
Collector DC Current	30 mA	30 mA

Notes
1. Derate linearly at 0.66 mW/°C above 25°C.

SCHEMATIC

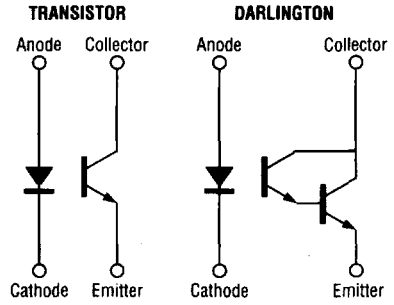

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Fig. 1 IRED Forward Bias Characteristics

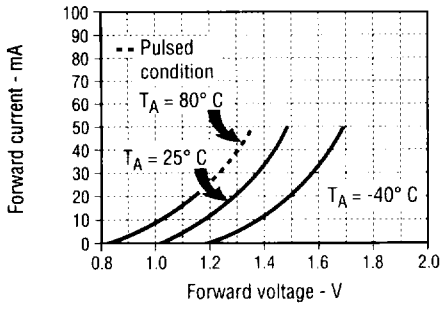


Fig. 2 Non-Saturated Switching Time vs Load Resistance

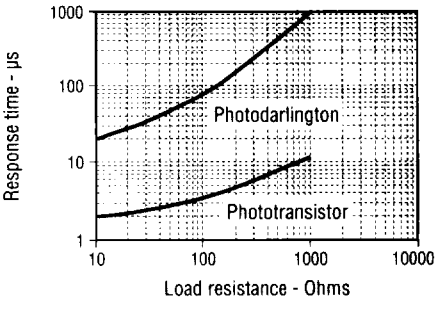


Fig. 3 Detector Dark Current vs Temperature

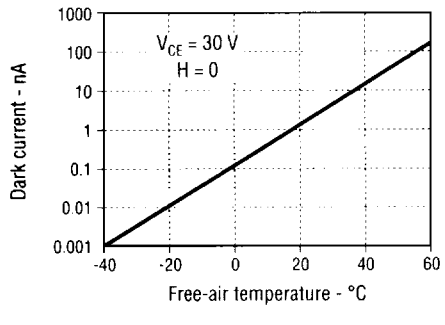


Fig. 4 Collector Current vs Ambient Temperature

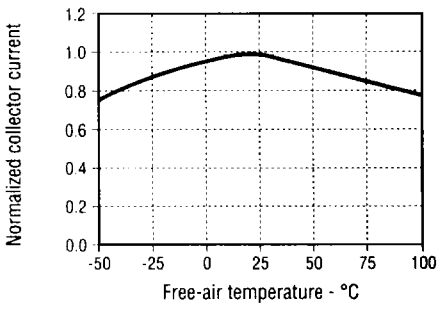


Fig. 5 Collector Current vs Distance to Reflective Surface

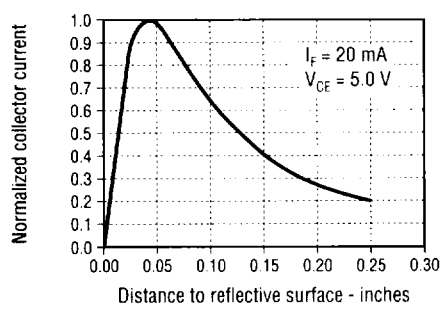
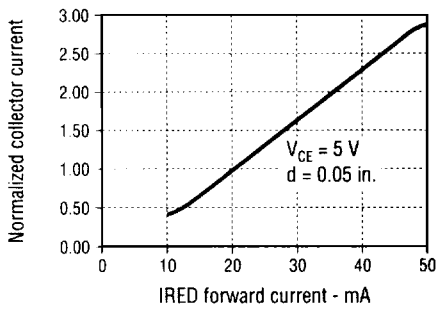


Fig. 6 Collector Current vs IRED Forward Current



All Performance Curves Show Typical Values

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