

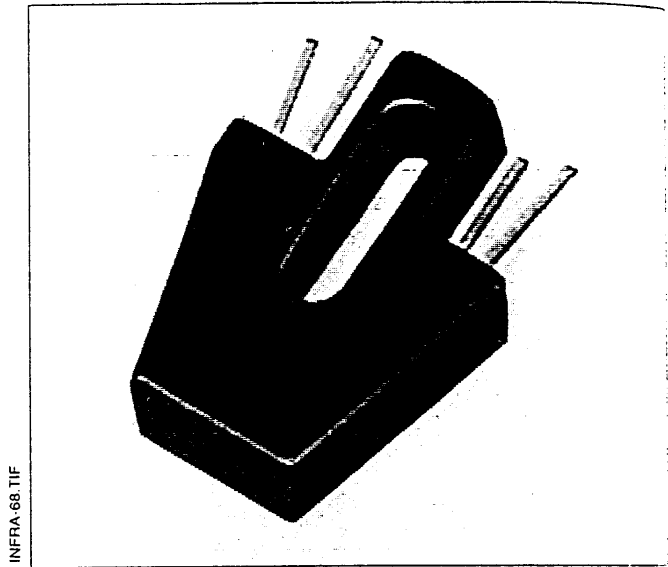
HOA1405

327-244

Reflective Sensor

FEATURES

- Phototransistor output
- Focused for maximum response
- Ambient light rejection filter



INFRA-68.TIF

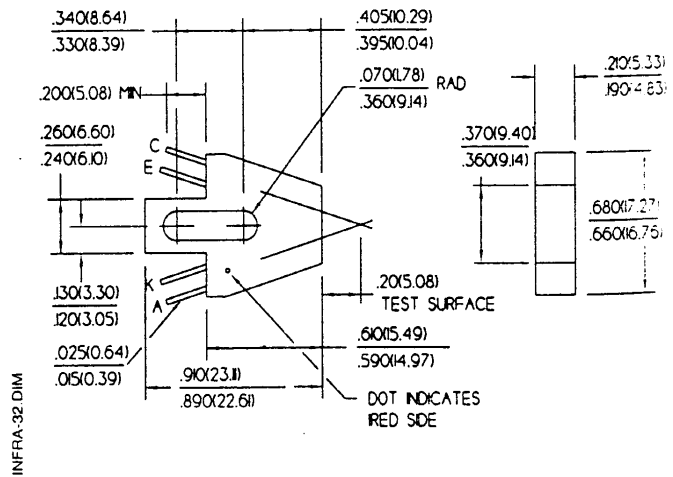
DESCRIPTION

The HOA1405 series consists of an infrared emitting diode and an NPN silicon phototransistor encased side-by-side on converging optical axes in a black thermoplastic housing. The phototransistor responds to radiation from the IRED only when a reflective object passes within its field of view. The HOA1405 series contains plastic molded components and employs a polysulfone filter for ambient light rejection. For additional component information see SEP8505 and SDP8405.

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

OUTLINE DIMENSIONS in inches (mm)

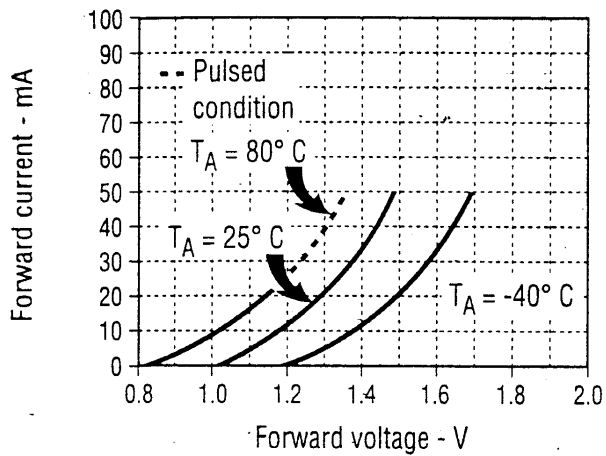
Tolerance 3 plc decimals $\pm 0.005(0.12)$
 2 plc decimals $\pm 0.020(0.51)$



HOA1405

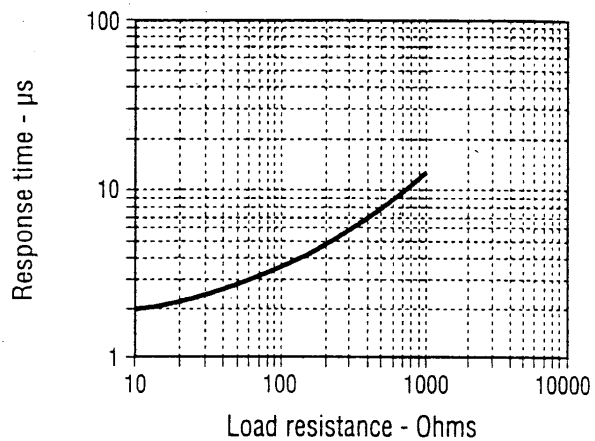
Reflective Sensor

Fig. 1 IRED Forward Bias Characteristics



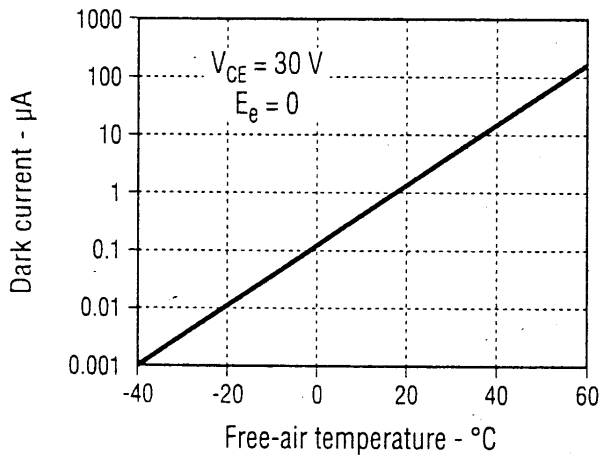
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Fig. 2 Non-Saturated Switching Time vs Load Resistance



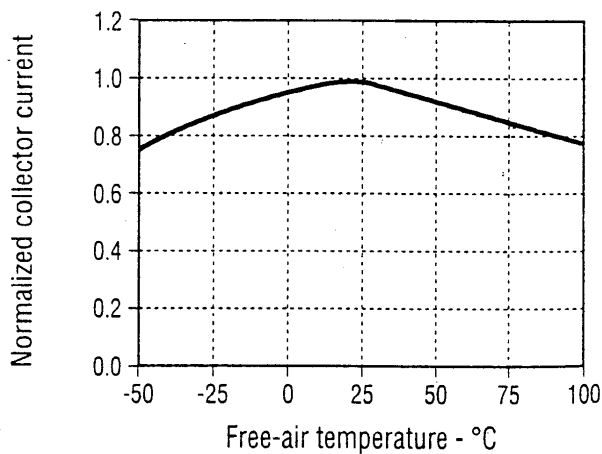
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Fig. 3 Detector Dark Current vs Temperature



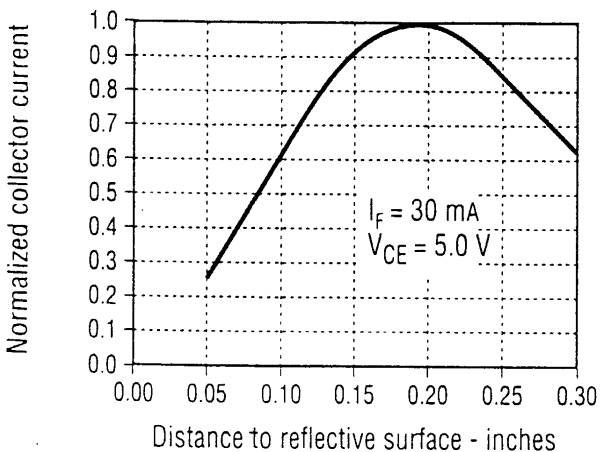
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Fig. 4 Collector Current vs Ambient Temperature



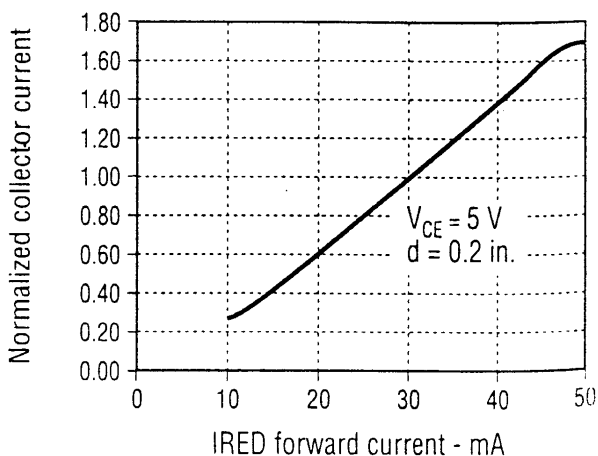
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Fig. 5 Collector Current vs Distance to Reflective Surface



INFRA-90.GRA

Fig. 6 Collector Current vs IRED Forward Current



INFRA-91.GRA

HOA1405

Reflective 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	$V_{(BR)CEO}$	30			V	$I_C=100\ \mu\text{A}$
Emitter-Collector Breakdown Voltage	$V_{(BR)ECO}$	5.0			V	$I_E=100\ \mu\text{A}$
Collector Dark Current	I_{CEO}			100	nA	$V_{CE}=10\text{ V}, I_F=0$
COUPLED CHARACTERISTICS						
On-State Collector Current	$I_{C(ON)}$				mA	$V_{CE}=5\text{ V}$
HOA1405-001		0.2				$I_F=30\text{ mA}$
HOA1405-002		0.8				(1)
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$				V	$I_F=30\text{ mA}, (1)$
HOA1405-001				0.4		$I_C=30\ \mu\text{A}$
HOA1405-002				0.4		$I_C=100\ \mu\text{A}$
Rise And Fall Time	t_r, t_f		15		μs	$V_{CC}=5\text{ V}, I_C=1\text{ mA}$ $R_L=1000\ \Omega$

Notes

- Test surface is an Eastman Kodak neutral white test card with 90% diffuse reflectance located 0.20 in. (5.0 mm) from the front surface of the device.

ABSOLUTE MAXIMUM RATINGS

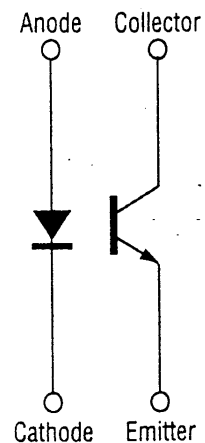
(25°C Free-Air Temperature unless otherwise noted)

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	70 mW ⁽¹⁾
Reverse Voltage	3 V
Continuous Forward Current	50 mA
DETECTOR	
Collector-Emitter Voltage	30 V
Emitter-Collector Voltage	5 V
Power Dissipation	70 mW ⁽¹⁾

Notes

- Derate linearly at 0.75 mW/°C above 25°C.

SCHEMATIC



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