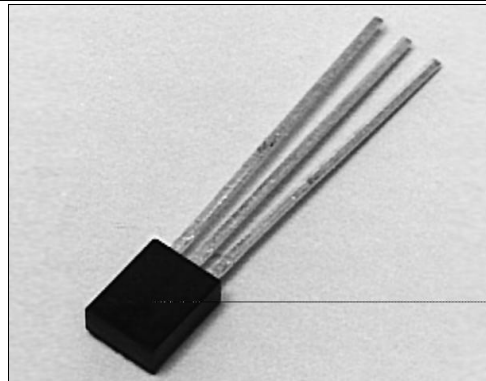


HLC1395

Reflective Sensor

FEATURES

- Side-looking plastic package
- Phototransistor output
- IR emitter and phototransistor detector in a single package
- Low profile for design flexibility
- Designed for short distance detection
- High sensitivity
- Unfocused for sensing diffused surfaces



INFRA-58.TIF

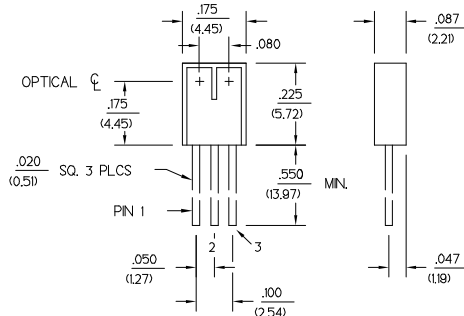
DESCRIPTION

The HLC1395 is a miniature infrared sensor designed to sense reflective objects at short distances. Both the GaAs IRED and the NPN phototransistor are mounted side-by-side in a single black plastic package with an integral barrier to minimize crosstalk. The sensor is configured with the IRED cathode and the phototransistor emitter connected to a common lead.

The housing consists of an opaque polysulfone outer shell with transfer-molded, IR-transmissive epoxy encapsulant. Housings are soluble in chlorinated hydrocarbons and ketones. Recommended cleaning agents are methanol and isopropanol.

OUTLINE DIMENSIONS in inches (mm)

Tolerance 3 plc decimals $\pm 0.010(0.25)$
2 plc decimals $\pm 0.030(0.76)$



DIM_029.cdr

HLC1395

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 mA
Reverse Current	I _R			10	μA	V _R =3 V
DETECTOR						
Collector-Emitter Breakdown Voltage	V _{(BR)CEO}	30			V	I _C =100 μA
Emitter-Collector Breakdown Voltage	V _{(BR)ECO}	5.0			V	I _E =100 μA
Collector Dark Current	I _{CDO}			100	nA	V _{CE} =10 V, I _F =0
COUPLED CHARACTERISTICS						
On-State Collector Current	I _{C(ON)}				mA	V _{CE} =5 V
HLC1395-001		0.30				I _F =10 mA
HLC1395-002		0.60				(1)
Collector-Emitter Saturation Voltage	V _{CE(SAT)}		0.5		V	I _C =40 μA, I _F =10 mA (1)
Crosstalk (2)	I _{CX}		15		μA	V _{CE} =5 V, I _F =10 mA
Rise And Fall Time	t _r , t _f		15		μs	V _{CC} =5 V, I _C =0.3 mA R _L =1000 Ω

Notes
1. Test surface is Eastman Kodak neutral white test card with 90% diffuse reflectance located 0.040 in. (1.0 mm) from the front surface of the device.
2. Crosstalk (I_{CX}) is the collector current measured with current to emitter and no reflecting surface.

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

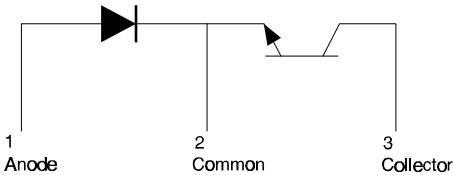
IR EMITTER

Reverse Voltage 3 V
Continuous Forward Current 50 mA
Power Dissipation 100 mW (1)

DETECTOR

Collector-Emitter Voltage 30 V
Emitter-Collector Voltage 5 V
Power Dissipation 100 mW (1)
Collector DC Current 30 mA

SCHEMATIC



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

HLC1395

Reflective Sensor

Fig. 1 Normalized Light Current (I_L) vs Distance to Reflective Surface

gra_071.ds4

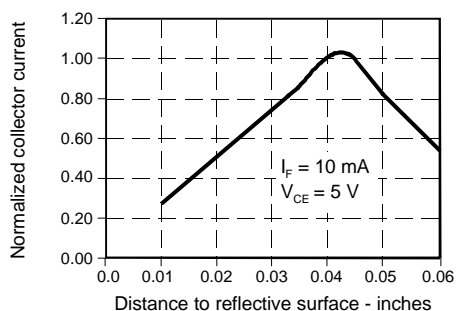


Fig. 2 Normalized Light Current (I_L) vs IRED Forward Current

gra_072.ds4

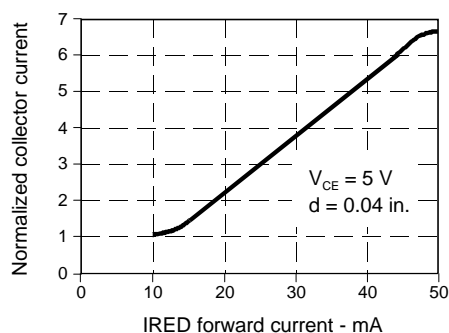


Fig. 3 IRED Forward Bias Characteristics

gra_073.ds4

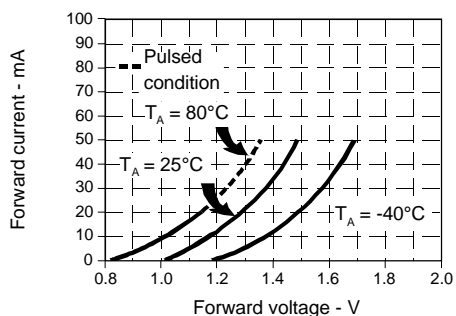


Fig. 4 Non-Saturated Switching Time vs Load Resistance

gra_074.ds4

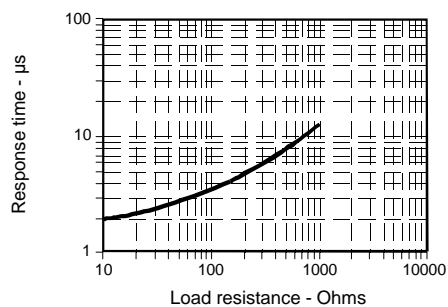


Fig. 5 Dark Current vs Temperature

gra_301.cdr

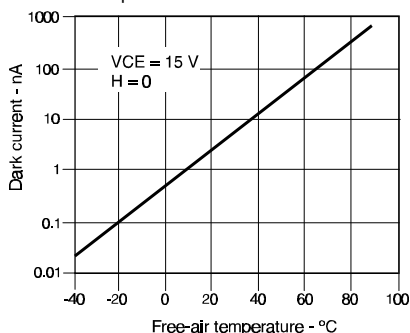
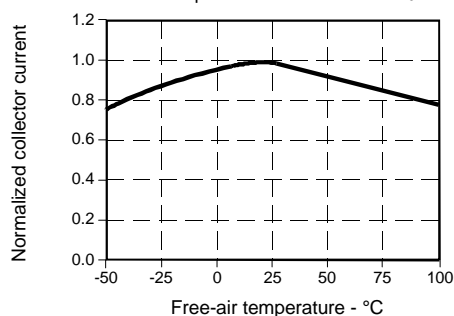


Fig. 6 Collector Current vs Ambient Temperature

gra_076.ds4



All Performance Curves Show Typical Values

HLC1395

Reflective Sensor

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