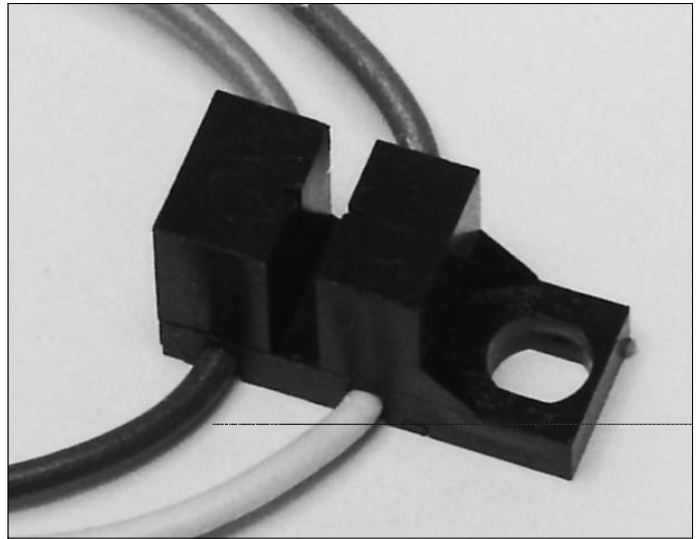


HOA1870

Transmissive Sensor

FEATURES

- Choice of phototransistor or photodarlington output
- Accurate position sensing
- 0.070 in.(1.78 mm) slot width
- 18.0 in.(457 mm) min. 22 AWG UL 1007 wire leads



INFRA--7.TIF

DESCRIPTION

The HOA1870 series consists of an infrared emitting diode facing an NPN silicon phototransistor (HOA1870- 031) or photodarlington (HOA1870- 033) encased in a black thermoplastic housing. Detector switching takes place whenever an opaque object passes through the slot between emitter and detector. A minimum of 18.0 in.(457 mm) lead wires provides alternate electrical connection when PC board mounting is not possible. This device is ideal for use in applications in which maximum position resolution is desired. Both emitter and detector have a 0.006 in.(0.152 mm) x 0.040 in.(1.02 mm) vertical aperture. The HOA1870 series employs plastic molded components. For additional component information see SEP8506, SDP8406 and SDP8106.

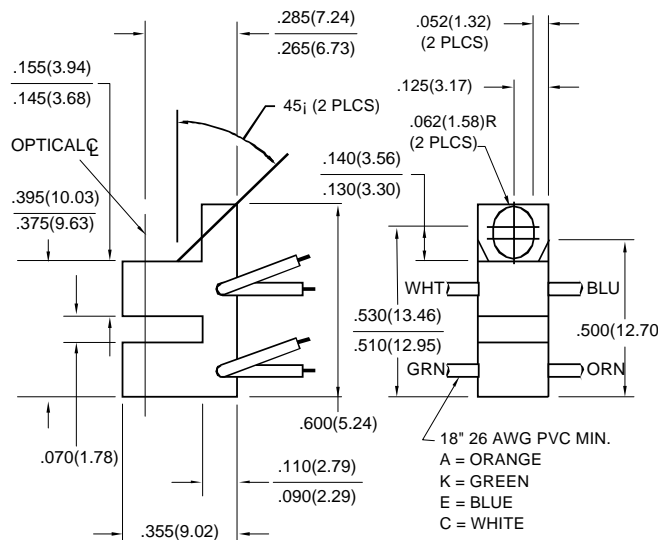
Housing material is polycarbonate. Housings are soluble in chlorinated hydrocarbons and ketones. Recommended cleaning agents are methanol and isopropanol.

Wire color code and functions are:

- Orange - IRED Anode
- White - Detector Collector
- Green - IRED Cathode
- Blue - Detector Emitter

OUTLINE DIMENSIONS in inches (mm)

Tolerance	3 plc decimals	±0.010(0.25)
	2 plc decimals	±0.020(0.51)



DIM_043.ds4

HOA1870

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 HOA1870-031 HOA1870-033	$V_{(BR)CEO}$	30 15			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 HOA1870-031 HOA1870-033	I_{CEO}			100 250	nA	$V_{CE}=10\text{ V}$ $I_F=0$
COUPLED CHARACTERISTICS						
On-State Collector Current HOA1870-031 HOA1870-033	$I_{C(ON)}$	0.3 2.0			mA	$V_{CE}=5\text{ V}$ $I_F=20\text{ mA}$
Collector-Emitter Saturation Voltage HOA1870-031 HOA1870-033	$V_{CE(SAT)}$			0.4 1.1	V	$I_F=20\text{ mA}$ $I_C=40\ \mu\text{A}$ $I_C=250\ \mu\text{A}$
Rise And Fall Time HOA1870-031 HOA1870-033	t_r, t_f		15 75		μs	$V_{CC}=5\text{ V}, I_C=1\text{ mA}$ $R_L=1000\ \Omega$ $R_L=100\ \Omega$

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

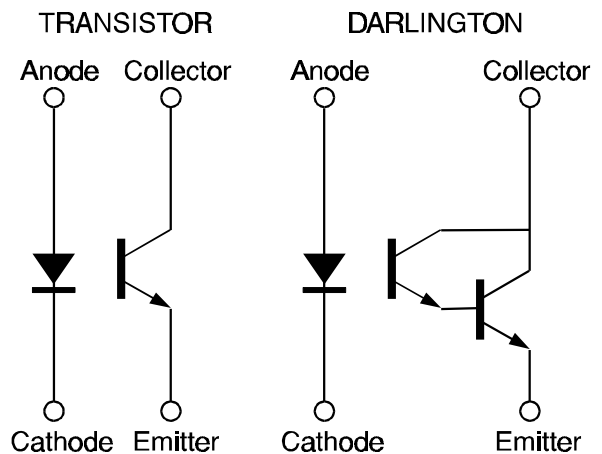
IR EMITTER

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

DETECTOR

	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

SCHEMATIC



HOA1870

Transmissive Sensor

Fig. 1 IRED Forward Bias Characteristics

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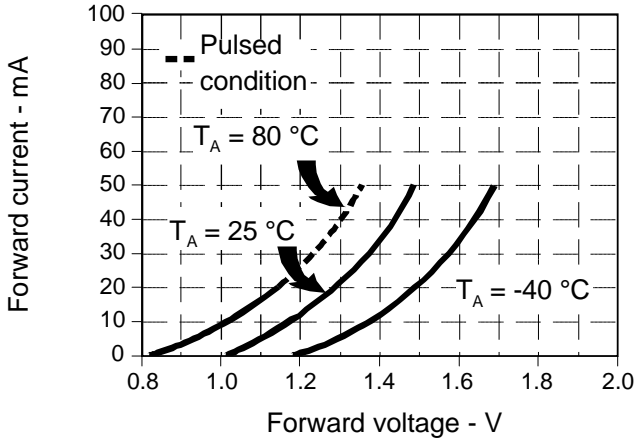


Fig. 2 Non-Saturated Switching Time vs Load Resistance

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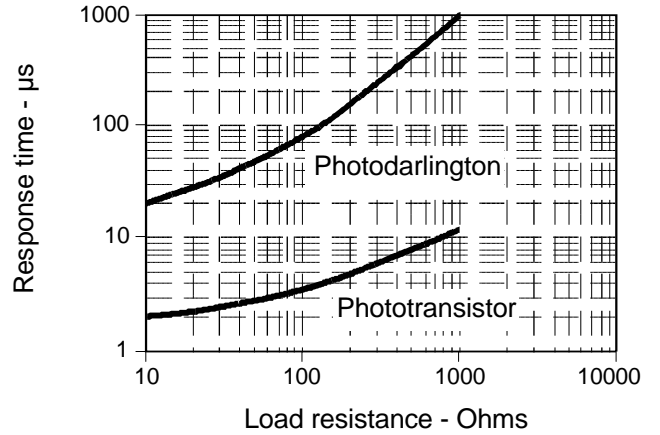


Fig. 3 Dark Current vs Temperature

gra_301.cdr

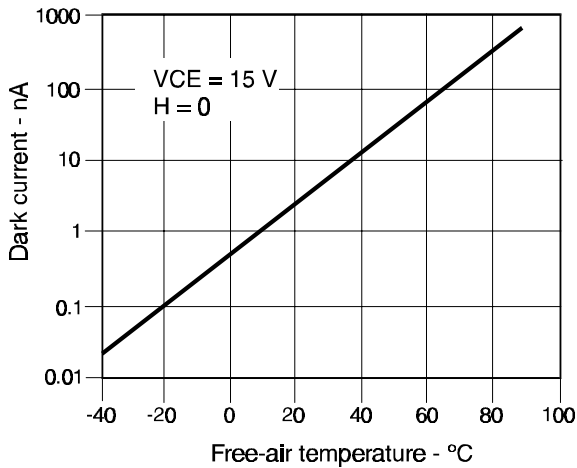
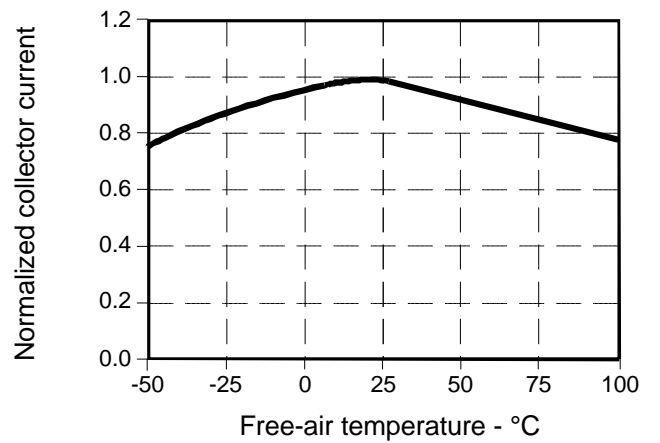


Fig. 4 Collector Current vs Ambient Temperature

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All Performance Curves Show Typical Values

HOA1870

Transmissive Sensor
