

- Choice of phototransistor or photodarlington output
- Wide operating temperature range (- 55°C to +100°C)
- 0.50 in.(12.7 mm) high optical axis position
- 0.375 in.(9.52 mm) slot width



The HOA1877 series consists of an infrared emitting diode facing an NPN silicon phototransistor (HOA1877- 001, - 002) or photodarlington (HOA1877- 003) encased in a black thermoplastic housing. Detector switching takes place whenever an opaque object passes through the slot between emitter and detector. The HOA1877 series has a 0.050 in.(1.27 mm) dia. detector aperture and employs metal can packaged components. For additional component information see SE1450, SD1440, and SD1410.

Tolerance	3 plc decimals	$\pm 0.010(0.25)$
	2 plc decimals	$\pm 0.020(0.51)$



HOA1877

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 HOA1877-001, -002 HOA1877-003	$V_{(BR)CEO}$	30 15			V	$I_C=100\text{ }\mu\text{A}$
Emitter-Collector Breakdown Voltage	$V_{(BR)ECO}$	5.0			V	$I_E=100\text{ }\mu\text{A}$
Collector Dark Current HOA1877-001, -002 HOA1877-003	I_{CEO}			100 250	nA	$V_{CE}=10\text{ V}$ $I_F=0$
COUPLED CHARACTERISTICS						
On-State Collector Current HOA1877-001 HOA1877-002 HOA1877-003	$I_{C(ON)}$	0.1 0.5 1.5			mA	$V_{CE}=5\text{ V}$ $I_F=30\text{ mA}$
Collector-Emitter Saturation Voltage HOA1877-001 HOA1877-002 HOA1877-003	$V_{CE(SAT)}$		0.4 0.4 1.1		V	$I_F=30\text{ mA}$ $I_C=10\text{ }\mu\text{A}$ $I_C=60\text{ }\mu\text{A}$ $I_C=190\text{ }\mu\text{A}$
Rise And Fall Time HOA1877-001, -002 HOA1877-003	t_r, t_f		15 75		μs	$V_{CC}=5\text{ V}$, $I_C=1\text{ mA}$ $R_L=1000\text{ }\Omega$ $R_L=100\text{ }\Omega$

ABSOLUTE MAXIMUM RATINGS

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

Operating Temperature Range -55°C to 100°C

Storage Temperature Range -55°C to 125°C

Soldering Temperature (10 sec) 260°C

IR EMITTER

Power Dissipation 75 mW ⁽¹⁾

Reverse Voltage 3 V

Continuous Forward Current 50 mA

DETECTOR

Collector-Emitter Voltage 30 V

Emitter-Collector Voltage 5 V

Power Dissipation 75 mW ⁽¹⁾

Collector DC Current 30 mA

TRANS. DARLINGTON

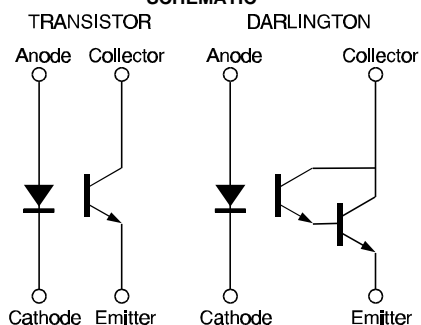
15 V

5 V

75 mW ⁽¹⁾

30 mA

SCHEMATIC



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

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Transmissive Sensor

Fig. 1 IRED Forward Bias Characteristics

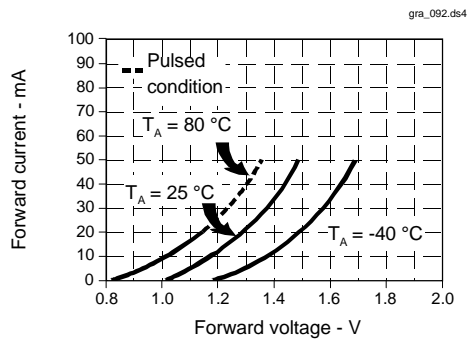


Fig. 2 Non-Saturated Switching Time vs Load Resistance

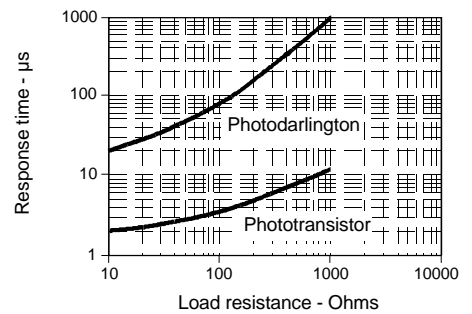


Fig. 3 Dark Current vs Temperature

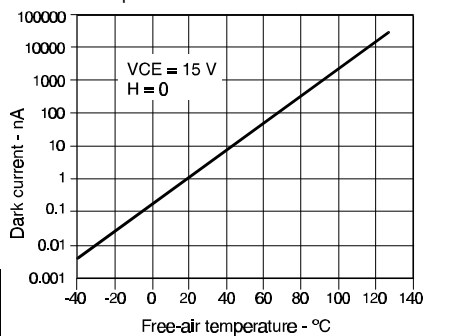
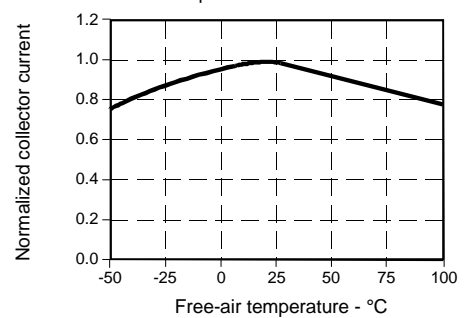


Fig. 4 Collector Current vs Ambient Temperature



All Performance Curves Show Typical Values

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