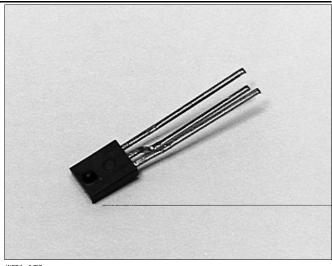
Optoschmitt Detector

FEATURES

- Side-looking plastic package
- 55° (nominal) acceptance angle
- Wide sensitivity ranges
- TTL/LSTTL/CMOS compatible
- Buffer (SDP8600/8601/8602) or inverting (SDP8610/8611/8612) logic available
- · Three different lead spacing arrangements
- Mechanically and spectrally matched to SEP8506 and SEP8706 infrared emitting diodes



INFRA--6.TIF

DESCRIPTION

The SDP86XX series is a family of single chip Optoschmitt IC detectors molded in a side-looking black plastic package to minimize the effect of visible ambient light. The photodetector consists of a photodiode, amplifier, voltage regulator, Schmitt trigger and an NPN output transistor with a 10 k Ω (nominal) pull-up resistor. Output rise and fall times are independent of the rate of change of incident light. Detector sensitivity has been internally temperature compensated. Flexibility of use is enhanced by a choice of three different lead configurations; in-line (SDP8601/8611), 0.05 in.(1.27 mm) offset pin circle (SDP8600/8610) and 0.10 in. (2.54 mm) offset center lead (SDP8602/8612).

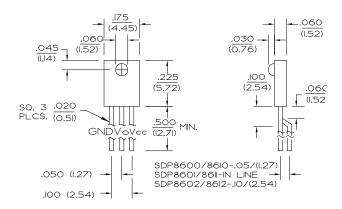
Device Polarity:

Buffer - Output is HI when incident light intensity is above the turn- on threshold level.

Inverter - Output is LO when incident light intensity is above the turn- on threshold level.

OUTLINE DIMENSIONS in inches (mm)

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



DIM_028.cdr



Optoschmitt Detector

ELECTRICAL CHARACTERISTICS (-40°C to +85°C unless otherwise noted)

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	TEST CONDITIONS
Operating Supply Voltage	Vcc	4.5		12.0	V	T _A =25°C
Turn-on Threshold Irradiance	Еет(+)				mW/cm ²	Vcc=5 V
SDP86XX-001				2.5		T _A =25°C
SDP86XX-002				1.2		(2)
SDP86XX-003				0.6		
Hysteresis (3)	HYST	5		30	%	
Supply Current	lcc				mA	Ee=0 Or 3.0 mW/cm ²
				12.0		Vcc=5 V
				15.0		Vcc=12 V
High Level Output Voltage	Voн				V	Vcc=5 V, Iон=0
SDP8600/8601/8602		2.4				E _e =3.0 mW/cm ²
SDP8610/8611/8612		2.4				Ee=0
Low Level Output Voltage	Vol				V	Vcc=5 V, I _{OL} =12.8 mA
SDP8600/8601/8602				0.4		Ee=0
SDP8610/8611/8612				0.4		Ee=3.0 mW/cm ²
Internal Pull-Up Resistor	RINT	5.0	10.0	20.0	kΩ	
Operate Point Temperature Coefficient	Ортс		-0.76		%/°C	Emitter @ Constant
						Temperature
Output Rise Time	t _r		60		ns	R _L =390 Ω , C _L =50 pF
Output Fall Time	t _f		15		ns	R _L =390 Ω , C _L =50 pF
Propagation Delay, Low-High, High-Low	t _{PLH} , t _{PHL}		5.0		μs	R _L =390 Ω , C _L =50 pF
Clock Frequency				100	kHz	R _L =390 Ω , C _L =50 pF

Notes

- 1. It is recommended that a bypass capacitor, 0.1 μF typical, be added between V_{CC} and GND near the device in order to stabilize power supply line.
- 2. The radiation source is an IRED with a peak wavelength of 935 nm.
- 3. Hysteresis is defined as the difference between the operating and release threshold intensities, expressed as a percentage of the operate threshold intensity.

ABSOLUTE MAXIMUM RATINGS

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

Supply Voltage 12 V (1)

Duration of Output

Short to V_{CC} or Ground 1.0 sec

Output Current 18 mA

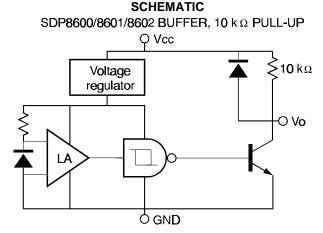
Operating Temperature Range -40°C to 85°C

Storage Temperature Range -40°C to 85°C

Soldering Temperature (5 sec) 240°C

Notes

1. Derate linearly from 25°C to 5.5 V at 85°C.



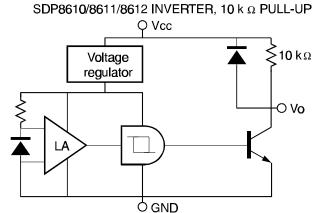
Honeywell reserves the right to make changes in order to improve design and supply the best products possible.



Optoschmitt Detector

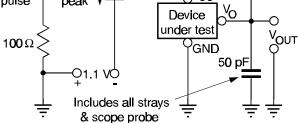
SCHEMATIC

SCH 024.cdr



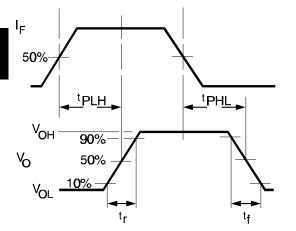
SWITCHING TIME TEST CIRCUIT

cir_007.cdr $100\,\Omega$ +5 V $V_{\rm IN}$ 0-10 V **IRED** 390Ω input $I_E 100 \text{ mA}_{\perp}$ pulse peak



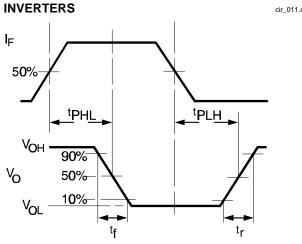
SWITCHING WAVEFORM FOR BUFFERS

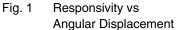
cir 013.cdr



SWITCHING WAVEFORM FOR

cir_011.cdr





gra_065.ds4

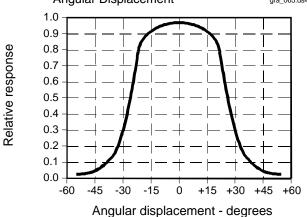
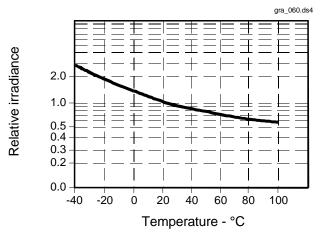


Fig. 2 Threshold Irradiance vs Temperature



Optoschmitt Detector

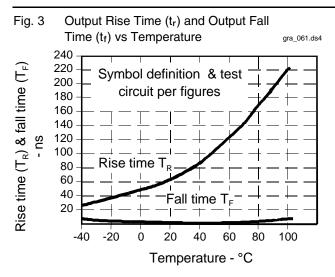
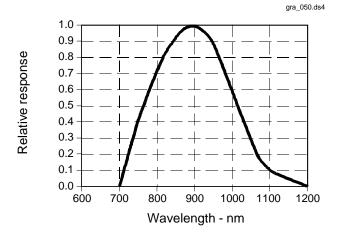


Fig. 5 Spectral Responsivity



All Performance Curves Show Typical Values

