

SDP8371

Precision Optoschmitt Detector

FEATURES

- Side-looking plastic package
- 180° (nominal) acceptance angle
- TTL/LSTTL/CMOS compatible
- Precision laser-trimmed switch points
- Highly sensitive, no lens necessary
- Wide field of view
- 30 kHz frequency range
- Spectrally matched to SEP8506 and SEP8706 infrared emitting diodes



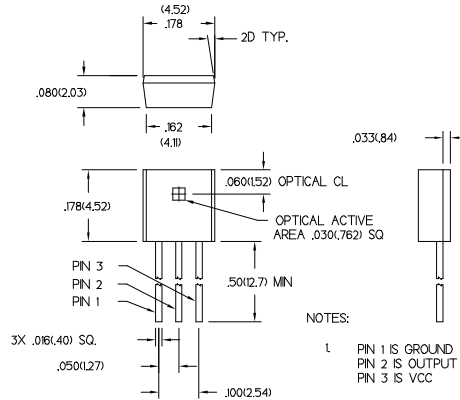
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DESCRIPTION

The SDP8371 is a precision Optoschmitt detector molded in a side-looking clear plastic package. The detector is a monolithic IC, consisting of a 0.030 in. (0.762 mm) square photodiode, amplifier, voltage regulator, Schmitt trigger and an NPN open-collector output transistor. The output is a buffer logic type, switching from low to high when illumination is increased to the threshold irradiance. Detector sensitivity has been internally temperature compensated and laser trimmed for narrow sensitivity range.

OUTLINE DIMENSIONS in inches (mm)

Tolerance 3 plc decimals ±0.005(0.12)
2 plc decimals ±0.020(0.51)



DIM_027.cdr

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ELECTRICAL CHARACTERISTICS (-40°C to +70°C unless otherwise noted)

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	TEST CONDITIONS
Operating Supply Voltage	V _{CC}	4.0		15.0	V	T _A =25°C
Supply Current	I _{CC}		4.0	8.0	mA	V _{CC} =5.5 V
High Level Output Current	I _{OH}			1.0	μA	V _{CC} =5 V
Low Level Output Voltage	V _{OL}			0.5	V	E _e =0.1mW/cm ² , V _{OH} =5 V
Release Point SDP8371-001	R _P	45	55	65	μW/cm ²	V _{CC} =5 V (2)
Operate Point	O _P		62		μW/cm ²	V _{CC} =5 V (2)
Hysteresis (3)	HYST	8	12	20	%	
Operate Point Temperature Coefficient			-1.0		%/°C	Emitter @ Constant Temperature
Output Rise Time	t _r		200		ns	R _L =390 Ω, C _L =50 pF
Output Fall Time	t _f		200		ns	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 880 nm.
3. Hysteresis is defined as the difference between the operating and release threshold intensities, expressed as a percentage of the operate threshold intensity.

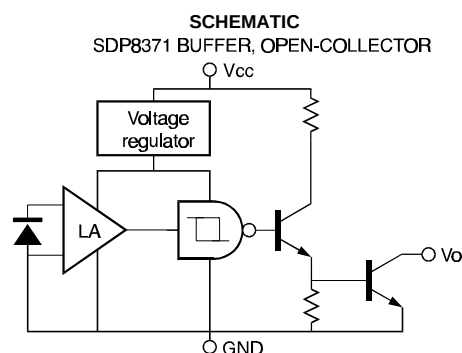
ABSOLUTE MAXIMUM RATINGS

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

Supply Voltage	15 V (1)
Duration of Output	1.0 sec
Short to V _{CC} or Ground	15 V
Applied Output Voltage	25 mA
Output Current	-40°C to 70°C
Operating Temperature Range	-40°C to 85°C
Storage Temperature Range	240°C
Soldering Temperature (5 sec)	

Notes

1. Derate linearly from 25°C to 5.5 V at 70°C.



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

Honeywell

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SWITCHING TIME TEST CIRCUIT

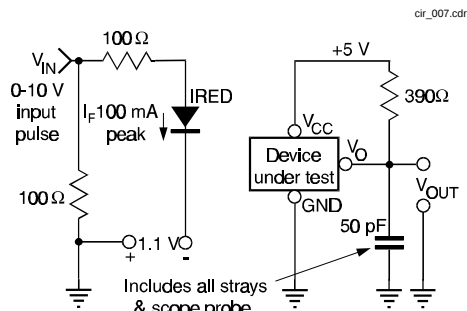


Fig. 1 Responsivity vs Angular Displacement

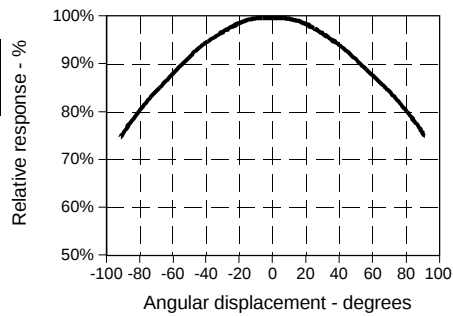
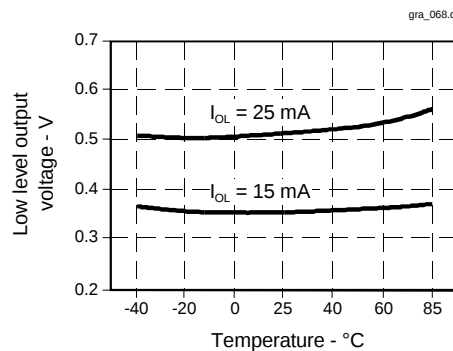


Fig. 3 Low Level Output Voltage vs Temperature



SWITCHING WAVEFORM

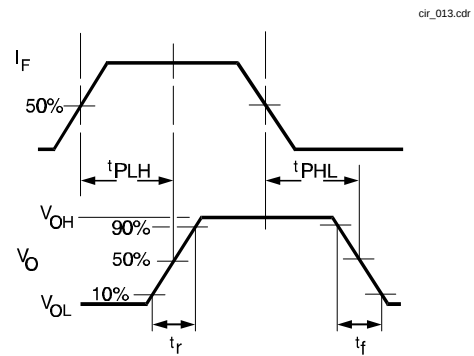


Fig. 2 Propagation Delay as a Function of Illumination Intensity

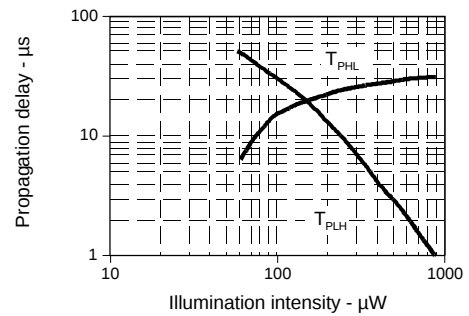
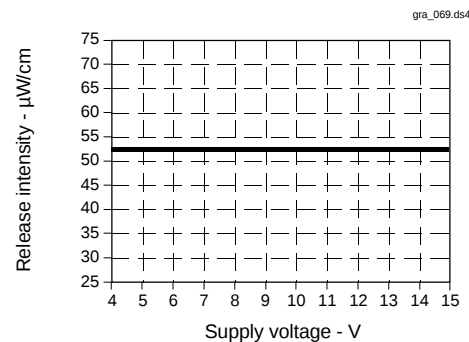


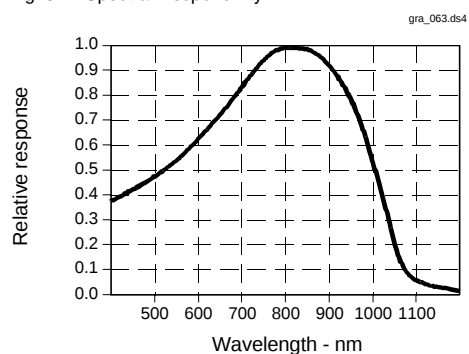
Fig. 4 Sensitivity vs Supply Voltage



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Fig. 5 Spectral Responsivity



All Performance Curves Show Typical Values

Fig. 6 Sensitivity vs Temperature

