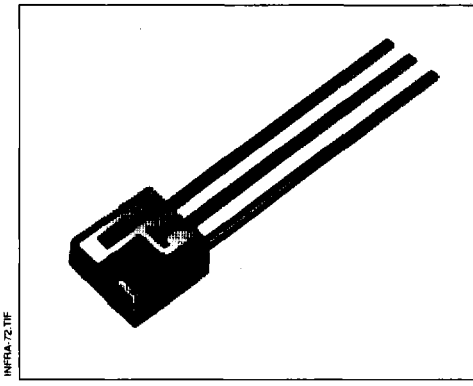
SDP8371

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 SEP8506/8526 and SEP8706 infrared emitting diodes



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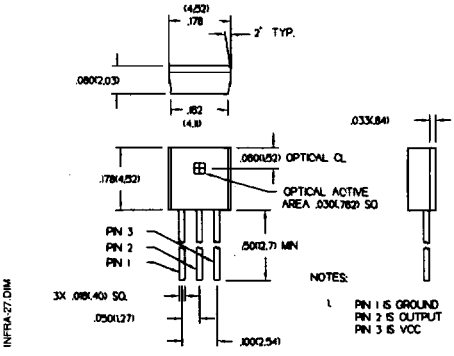
DESCRIPTION

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)



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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 E_e=0, V_{OH}=5 V
Low Level Output Voltage	V_{OL}			0.5	V	V_{CC}=5 V, I_{OL}=15 mA E_e=0
Release Point	R_P				µW/cm²	V_{CC}=5 V
SDP8371-001		45	55	65		(1)
Operate Point	O_P		62		µW/cm²	V_{CC}=5 V, (1)
Hysteresis(2)	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. The radiation source is an IRED with a peak wavelength of 880 nm.
2. Hysteresis is defined as the difference between the operating and release threshold intensities, expressed as a percentage of the operate threshold intensity.
3. 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.

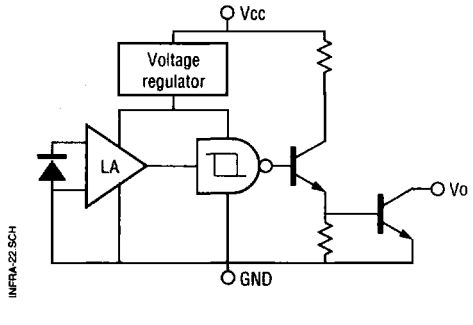
ABSOLUTE MAXIMUM RATINGS
(25°C Free-Air Temperature unless otherwise noted)

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

Notes
1. Derate linearly from 25°C to 10 V at 70°C.

SCHEMATIC

SDP8371 BUFFER, OPEN-COLLECTOR



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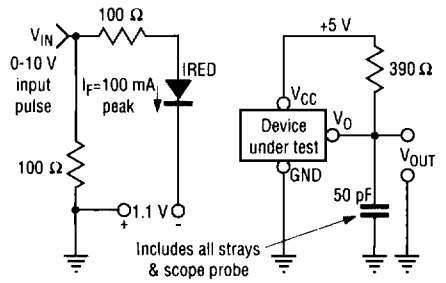
SWITCHING TIME TEST CIRCUIT



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SWITCHING WAVEFORM

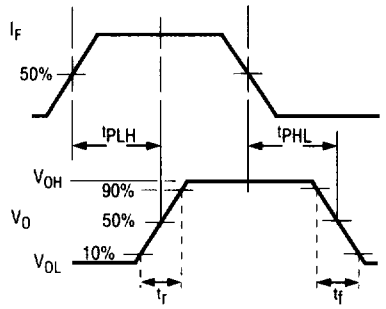

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Fig. 1 Responsivity vs Angular Displacement

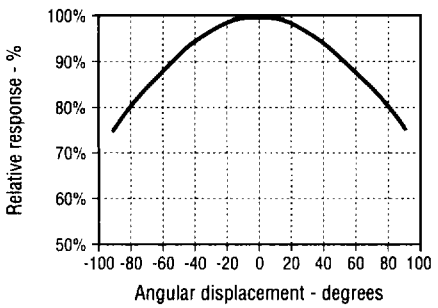

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Fig. 2 Propagation Delay as a Function of Illumination Intensity

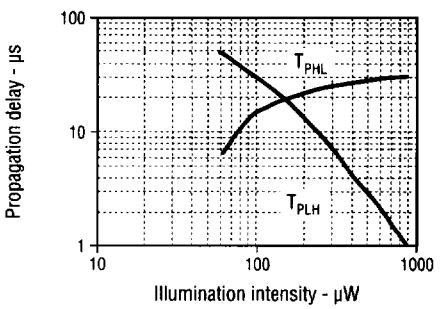

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Fig. 3 Low Level Output Voltage vs Temperature

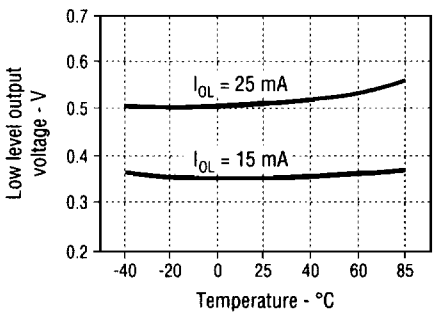

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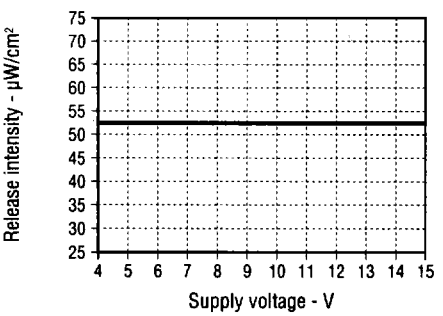
Fig. 4 Sensitivity vs Supply Voltage



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All Performance Curves Show Typical Values

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Fig. 5 Spectral Responsivity

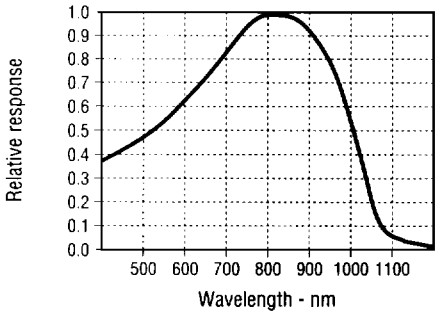

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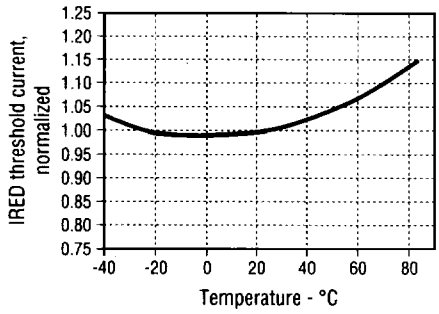
Fig. 6 Sensitivity vs Temperature



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