

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



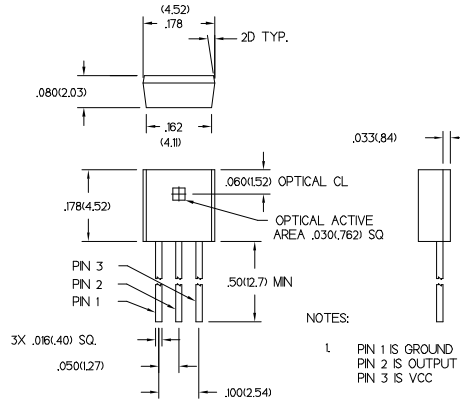
INFRA-72.TIF

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

SDP8371

Precision Optoschmitt Detector

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	$T_A=25^\circ\text{C}$
Supply Current	I_{CC}		4.0	8.0	mA	$V_{CC}=5.5\text{ V}$
High Level Output Current	I_{OH}			1.0	μA	$V_{CC}=5\text{ V}$
Low Level Output Voltage	V_{OL}			0.5	V	$E_e=.1\text{mW/cm}^2$, $V_{OH}=5\text{ V}$ $V_{CC}=5\text{ V}$, $I_{OL}=15\text{ mA}$ $E_e=0$
Release Point SDP8371-001	R_P	45	55	65	$\mu\text{W/cm}^2$	$V_{CC}=5\text{ V}$ (2)
Operate Point	O_P		62		$\mu\text{W/cm}^2$	$V_{CC}=5\text{ V}$ (2)
Hysteresis (3)	HYST	8	12	20	%	
Operate Point Temperature Coefficient			-1.0		$\%/^\circ\text{C}$	Emitter @ Constant Temperature
Output Rise Time	t_r		200		ns	$R_L=390\ \Omega$, $C_L=50\text{ pF}$
Output Fall Time	t_f		200		ns	$R_L=390\ \Omega$, $C_L=50\text{ pF}$

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.

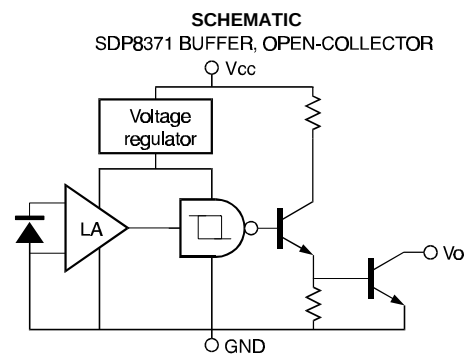
ABSOLUTE MAXIMUM RATINGS

(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.



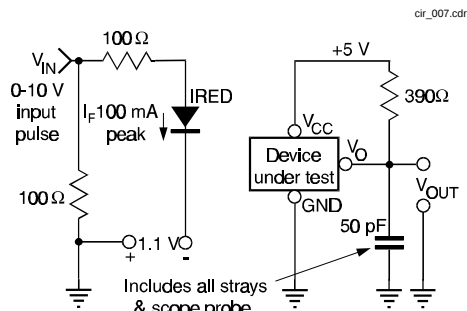
Honeywell reserves the right to make changes in order to improve design and supply the best products possible.

Honeywell

SDP8371

Precision Optoschmitt Detector

SWITCHING TIME TEST CIRCUIT



SWITCHING WAVEFORM

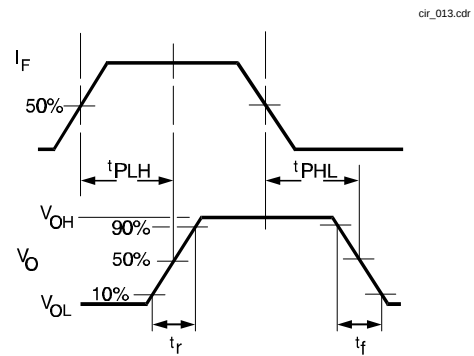


Fig. 1 Responsivity vs Angular Displacement

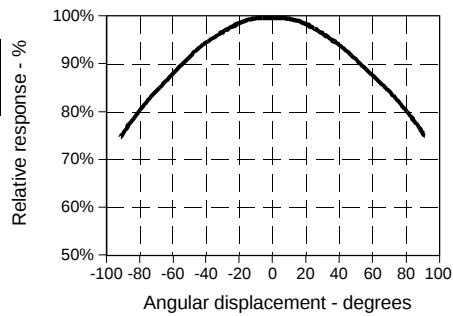


Fig. 2 Propagation Delay as a Function of Illumination Intensity

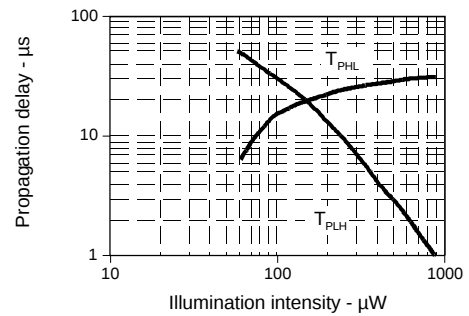


Fig. 3 Low Level Output Voltage vs Temperature

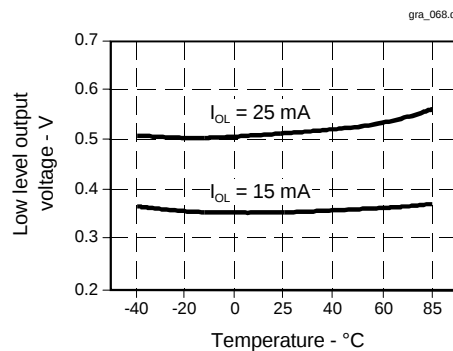
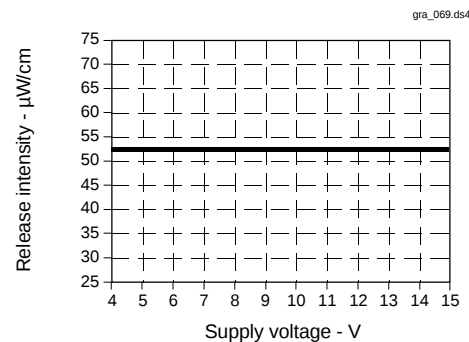


Fig. 4 Sensitivity vs Supply Voltage



SDP8371

Precision Optoschmitt Detector

Fig. 5 Spectral Responsivity

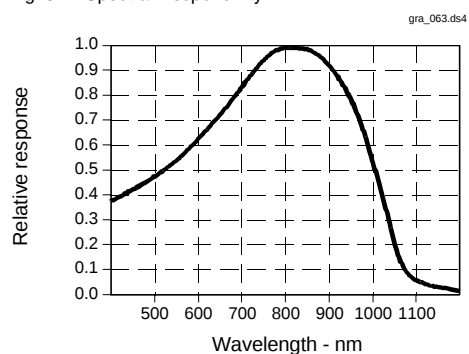
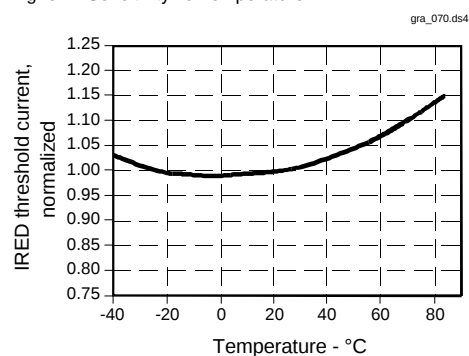


Fig. 6 Sensitivity vs Temperature



All Performance Curves Show Typical Values

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

Honeywell