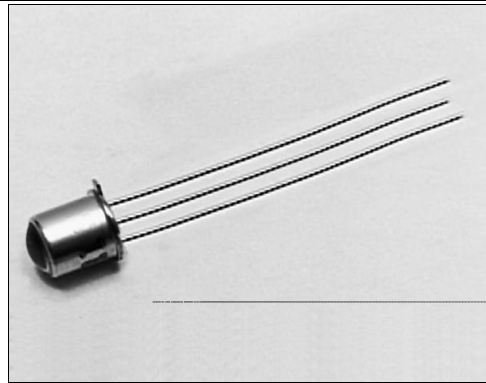


SD5620/5630

Optoschmitt Detector

FEATURES

- TO-46 metal can package
- 6° (nominal) acceptance angle
- TTL/LSTTL/CMOS compatible
- High noise immunity output
- Buffer (SD5620) or inverting (SD5630) logic available
- Two sensitivity ranges
- Mechanically and spectrally matched to SE3450/5450, SE3455/5455 and SE3470/5470 infrared emitting diodes



INFRA-81.TIF

DESCRIPTION

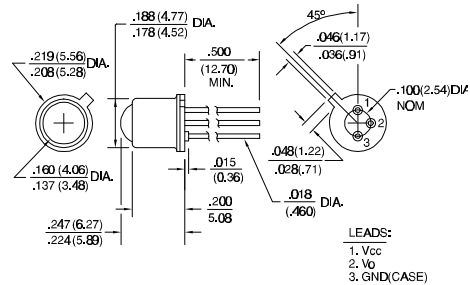
The SD5620/5630 series is family of single chip Optoschmitt IC detectors mounted in a TO-46 metal can package. The photodetector consists of a photodiode, amplifier, voltage regulator, Schmitt trigger and an NPN output transistor with a 10 kΩ (nominal) pull-up resistor. Output rise and fall times are independent of rate of change of incident light. Detector sensitivity has been internally temperature compensated. The TO-46 package is ideally suited for operation in hostile environments.

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



DIM_025.cdr

SD5620/5630

Optoschmitt Detector

ELECTRICAL CHARACTERISTICS (-40°C to +100°C unless otherwise noted)

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	TEST CONDITIONS
Operating Supply Voltage	V_{CC}	4.5	16.0		V	$T_A=25^\circ\text{C}$
Turn-on Threshold Irradiance ⁽²⁾ SD5620-001, SD5630-001 SD5620-002, SD5630-002	$E_{ET(+)}$		0.25 0.13		mW/cm ²	$V_{CC}=5\text{ V}$ $T_A=25^\circ\text{C}$
Hysteresis ⁽³⁾	HYST	5	30		%	
Supply Current	I_{CC}		12.0 15.0		mA	$E_e=0$ Or 3.0 mW/cm ² $V_{CC}=5\text{ V}$ $V_{CC}=16\text{ V}$
High Level Output Voltage SD5620 SD5630	V_{OH}	2.4 2.4			V	$V_{CC}=5\text{ V}$, $I_{OH}=0$ $E_e=3.0\text{ mW/cm}^2$ $E_e=0$
Low Level Output Voltage SD5620 SD5630	V_{OL}		0.4 0.4		V	$V_{CC}=5\text{ V}$, $I_{OL}=12.8\text{ mA}$ $E_e=0$ $E_e=3.0\text{ mW/cm}^2$
Internal Pull-Up Resistor	R_{INT}	5.0	10.0	20.0	k Ω	
Operate Point Temperature Coefficient	OPTC		-0.76		%/ $^\circ\text{C}$	Emitter @ Constant Temperature
Output Rise Time	t_r		60		ns	$R_L=390\ \Omega$, $C_L=50\text{ pF}$
Output Fall Time	t_f		15		ns	$R_L=390\ \Omega$, $C_L=50\text{ pF}$
Propagation Delay, Low-High, High-Low	t_{PLH} , t_{PHL}		5.0		μs	$R_L=390\ \Omega$, $C_L=50\text{ pF}$
Clock Frequency				100	kHz	$R_L=390\ \Omega$, $C_L=50\text{ pF}$

Notes

- 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.
- The radiation source is an IRED with a peak wavelength of 935 nm.
- Hysteresis is defined as the difference between the operating and release threshold intensities, expressed as a percentage of the operate threshold intensity.

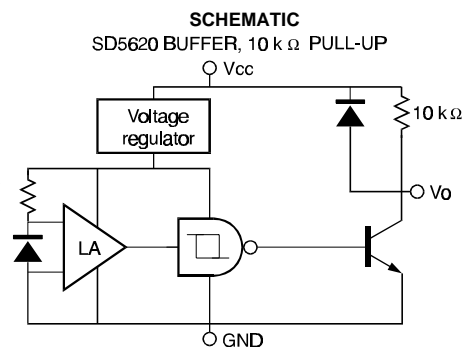
ABSOLUTE MAXIMUM RATINGS

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

Supply Voltage	16 V ⁽¹⁾
Duration of Output Short to V_{CC} or Ground	1.0 sec.
Output Current	18 mA
Operating Temperature Range	-40°C to 100°C
Storage Temperature Range	-55°C to 125°C
Soldering Temperature (10 sec)	260°C

Notes

- Derate linearly from 25°C to 7 V at 100°C.



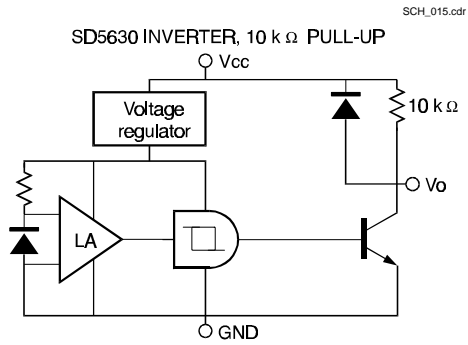
Honeywell reserves the right to make changes in order to improve design and supply the best products possible.

Honeywell

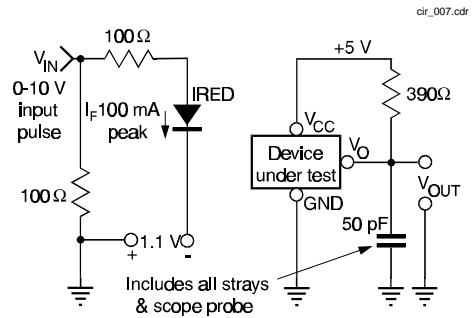
SD5620/5630

Optoschmitt Detector

SCHEMATIC



SWITCHING TIME TEST CIRCUIT



SWITCHING WAVEFORM FOR BUFFERS

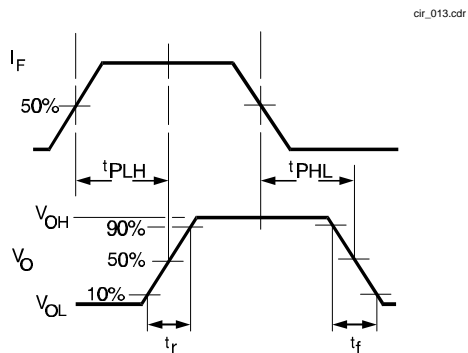
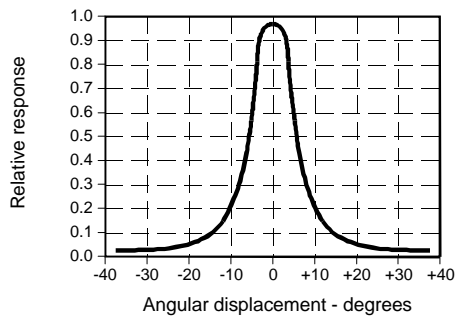


Fig. 1 Responsivity vs Angular Displacement



SWITCHING WAVEFORM FOR INVERTERS

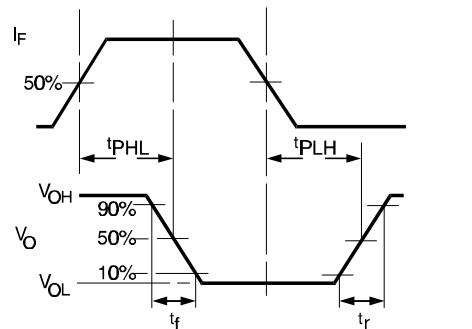
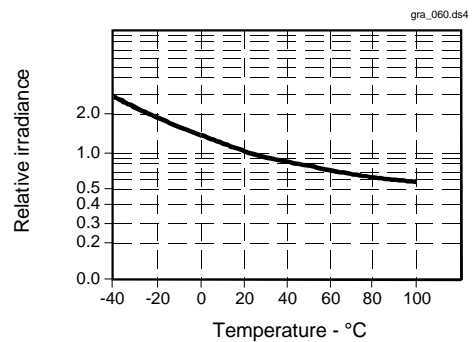


Fig. 2 Threshold Irradiance vs Temperature



SD5620/5630

Optoschmitt Detector

Fig. 3 Output Rise Time (t_r) and Output Fall Time (t_f) vs Temperature gra_061.ds4

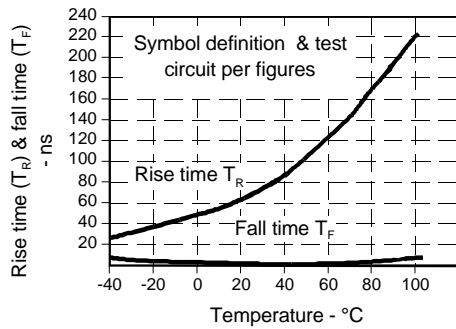


Fig. 4 Delay Time vs Temperature gra_062.ds4

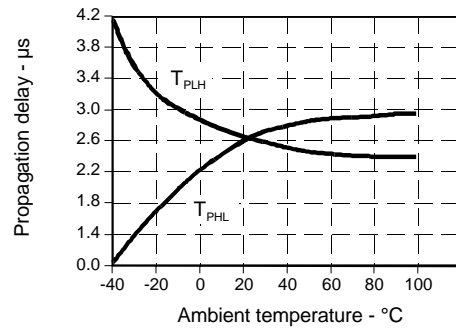
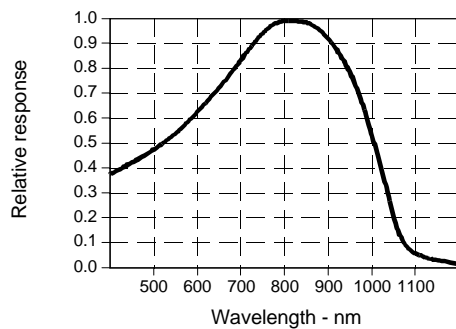


Fig. 5 Spectral Responsivity gra_063.ds4



All Performance Curves Show Typical Values