SD4324

Schmitt Detector

FEATURES

- Fiber optic Schmitt detector
- Plastic capped TO-18 style package
- High speed: 80 ns typical
- High sensitivity: 3 μW typical

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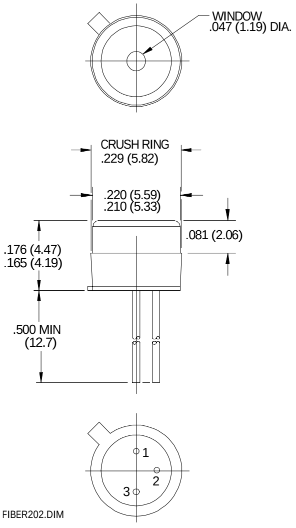
DESCRIPTION

The SD4324 is a fiber optic Schmitt detector, designed for high speed in use in fiber optic links. The subminiature package contains a voltage regulator, photodiode and a Schmitt Trigger. This device provides a high level logic output voltage of 2.4 V, and low level output of 0.4 V.

The SD4324 is designed to be used with fiber optic receptacles which align its optical axis with the axis of the optical fiber. This is accomplished by referencing the precision outside diameter of the window can.

OUTLINE DIMENSIONS in inches (mm)



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Pinout

1. V_{CC}
2. Output (TTL)
3. Case (ground)

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ELECTRO-OPTICAL CHARACTERISTICS

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	TEST CONDITIONS
Input Sensitivity (1)	P_{IN}		3	5	µW	λ = 850 nm
High Level Logic Output Voltage	V_{OH}	2.4			V	V_{CC} = 5 VDC, $P_{IN} \geq$ 5 µW, I_{OL} = 100 µA
Low Level Logic Output Voltage	V_{OL}			0.4	V	V_{CC} = 5 VDC, $P_{IN} \leq$ 0.5 µW, I_{OL} = -8 µA
Propagation Delay (2)					µs	V_{CC} = 5 VDC, R_L = 560 Ω
Low-to-High	T_{DLH}		3	5		
High-to-Low	T_{DHL}		3	5		
Response Time (2)					ns	V_{CC} = 5 VDC, R_L = 560 Ω
Rise Time	t_R		80	150		
Fall Time	t_F		10	15		
Supply Current	I_{CC}		8	12	mA	V_{CC} = 5 VDC

Notes

1. Tested with a 100 µm, 0.28 NA fiber as optical source.
2. See Transition/Delay Time Test Circuit.

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ABSOLUTE MAXIMUM RATINGS

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

Storage temperature	-40 to +100°C
Case operating temperature	-40 to +100°C
Lead solder temperature	260°C, 10 s
Supply voltage	4.5 to 12 VDC
Continuous output sink current	18 mA

Stresses greater than those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. This is a stress rating only and functional operation of the device at these or any other conditions above those indicated in the operational section of this specification is not implied. Exposure to absolute maximum rating conditions for extended periods of time may affect reliability.

ORDER GUIDE

Description	Catalog Listing
Fiber optic Schmitt detector, TO-18 case	SD4324-002

CAUTION

The inherent design of this component causes it to be sensitive to electrostatic discharge (ESD). To prevent ESD-induced damage and/or degradation to equipment, take normal ESD precautions when handling this product.

FIBER INTERFACE

Honeywell detectors are designed to interface with multimode fibers with sizes (core/cladding diameters) ranging from 50/125 to 200/230 microns. Honeywell performs final tests using 100/140 micron core fiber. The fiber chosen by the end user will depend upon a number of application issues (distance, link budget, cable attenuation, splice attenuation, and safety margin). The 50/125 and 62.5/125 micron fibers have the advantages of high bandwidth and low cost, making them ideal for higher bandwidth installations. The use of 100/140 and 200/230 micron core fibers results in greater power being coupled by the transmitter, making it easier to splice or connect in bulkhead areas. Optical cables can be purchased from a number of sources.

BLOCK DIAGRAM

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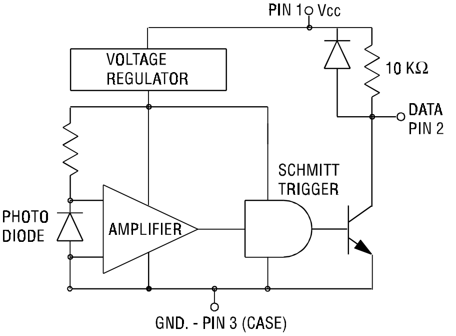

TRANSITION/DELAY TEST TIME CIRCUIT

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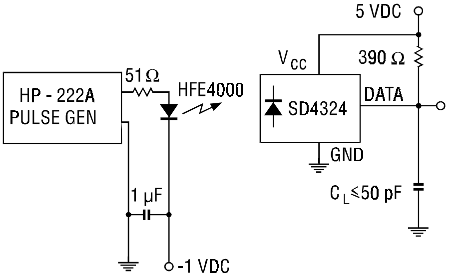

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SWITCHING WAVEFORM

FIBER008.CIR

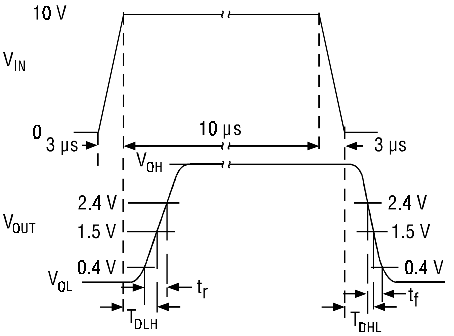

Fig. 1 Angular Response

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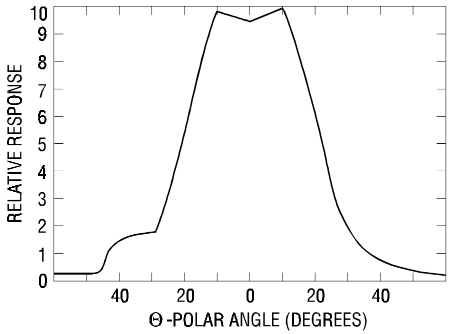

Fig. 2 Spectral Responsivity

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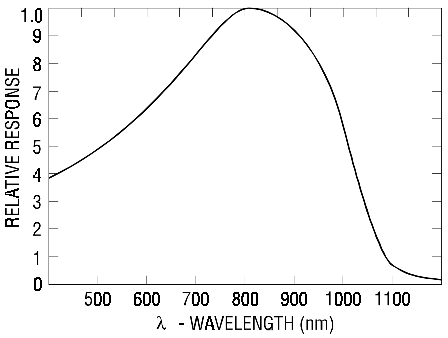

Fig. 3 Delay Time vs Temperature

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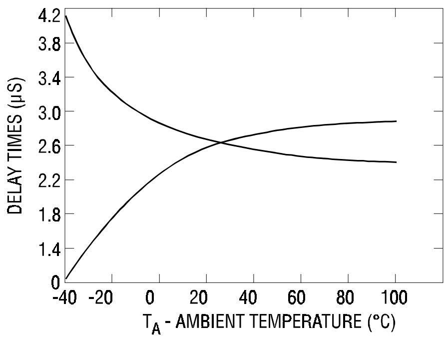

Fig. 4 Relative Input Power vs Temperature

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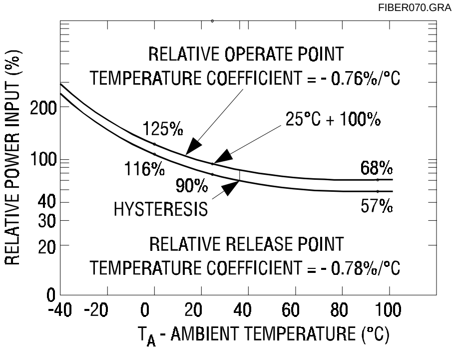

Fig. 5 Rise/Fall Time vs Temperature

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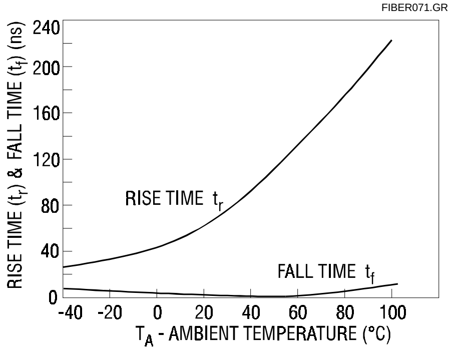

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Fig. 6 Pulse Stretching vs Received Power