

# HFD3026-002/XXX

## Analog Output Receiver

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### FEATURES

- High-speed operation, Rise/Fall times are 14 ns typical
- 35 MHz analog output receiver
- +5 V operation
- Wave solderable
- Optical input signal from 0.5 to 100  $\mu$ W
- Mounting options
  - SMA single hole
  - ST single hole
  - SMA PCB
  - ST PCB
  - SMA 4 hole

### DESCRIPTION

The HFD3026-002/XXX is a 35 MHz fiber optic analog receiver with an on-chip voltage regulator to assure improved noise immunity. The linear output voltage swing is inverted from the optical input and is proportional to the optical input power levels between 0.5  $\mu$ W and 100  $\mu$ W. It has an equivalent circular active diameter of 0.020 inch. The HFD3026-002/XXX is comprised of an HFD3026 analog output receiver component packaged in a fiber optic connector. Companion optical LEDs are available.

The HFD3026-002/XXX fiber optic analog receiver has on-chip voltage regulation which requires an external 0.1  $\mu$ F bypass capacitor. This capacitor should be connected between pin # 1 (bypass capacitor) and pin 4 (ground). Noise immunity is enhanced by keeping lead lengths as short as possible. The output has a linear voltage swing proportional to the optical power striking the photodiode between input luminance of 0.5  $\mu$ W and 100  $\mu$ W. Guaranteed minimum response is 4 mV/ $\mu$ W, which provides 2.0 mV output for 0.5  $\mu$ W input.

For standard electrical loads, a post-amplifier should be used with the HFD3026-002/XXX. When a load capacitance of 3 pF or more is encountered, a 330  $\Omega$  resistance in series with the output is required to minimize ringing of the output signal. This provides an excellent electrical signal for the system designer.

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ELECTRO-OPTICAL CHARACTERISTICS ( $V_{CC} \pm 10\%$ ,  $T_C = 25^\circ\text{C}$  unless otherwise stated)

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	TEST CONDITIONS
Responsivity	R				mV/ $\mu\text{W}$	$f = 10 \text{ MHz}$ , $P_{IN} = 10 \text{ } \mu\text{W peak}$ , $\lambda = 850 \text{ nm}$ , $100 \text{ } \mu\text{m core fiber}$
$T = 25^\circ\text{C}$		4	5	10		
$-40 < T < +100^\circ\text{C}$		3	5	12		
Input Power	$P_{IN}$				$\mu\text{W}$ dBm	$f = 10 \text{ MHz}$ , $\text{PWD} \leq 10\%$
DC Output Voltage	$V_{ODC}$		1.4		V	$P_{IN} \leq 0.1 \text{ } \mu\text{W peak}$
Power Supply Current	$I_{CC}$	5	6.6	10	mA	$V_{CC} = 5 \text{ V} \pm 10\%$
Rise/Fall Time	$t_{R/F}$		14	18	ns	$f = 10 \text{ MHz}$ , $P_{IN} = 10 \text{ } \mu\text{W peak}$ , $\lambda = 850 \text{ nm}$
Pulse Width Distortion					ns	$f = 10 \text{ MHz}$ , $P_{IN} = 60 \text{ } \mu\text{W peak}$ $\lambda = 850 \text{ nm}$
	$t_{PHL}$			2		
	$t_{PLH}$			2		
Bandwidth	BW		35		MHz	$P_{IN} = 10 \text{ } \mu\text{W peak}$ , $\lambda = 850 \text{ nm}$
RMS Noise Output Voltage <sup>(1)</sup>	$V_{NO}$		0.16	0.35	mV	$R = 0.707 R_{Max}$ , $P_{IN} = 0 \text{ } \mu\text{W}$
$T = 25^\circ\text{C}$						
$-40 < T < +100^\circ\text{C}$				0.43		
Output Impedance	$z_o$		20		$\Omega$	

Notes

1. Tested using a 30 MHz bandwidth filter.

### ABSOLUTE MAXIMUM RATINGS

( $T_{Case} = 25^\circ\text{C}$  unless otherwise noted)

Storage temperature	-40 to +100°C
Operating temperature	-40 to +100°C
Lead solder temperature	260°C for 10 s
Supply voltage	-0.5 to +7.0 V

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.

### RECOMMENDED OPERATING CONDITIONS

Operating temperature	-40 to +85°C
Supply voltage	4.5 to 5.5 V
Optical signal input	0.5 to 100 $\mu\text{W}$
Optical signal pulse width	> 25 ns

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### ORDER GUIDE

Description	Catalog Listing
Standard Analog Output Receiver	HFD3026-002/XXX

### MOUNTING OPTIONS

Substitute XXX with one of the following 3 letter combinations

SMA single hole	- AAA
ST single hole	- BAA
SMA PCB	- ABA
ST PCB	- BBA
SMA 4 hole	- ADA

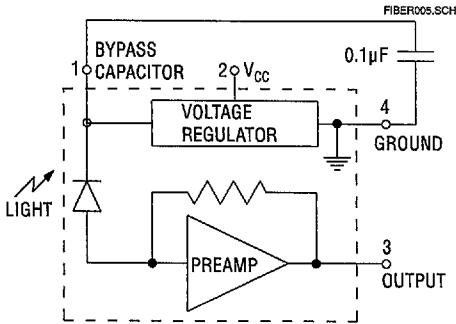
Dimensions on page 441

### 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.



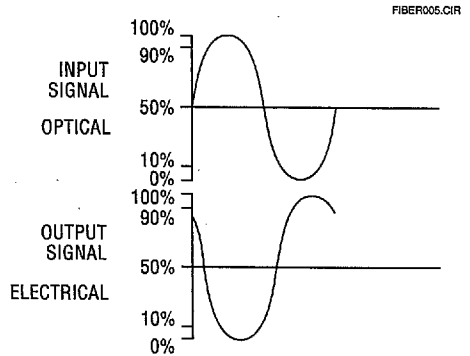
### BLOCK DIAGRAM



### 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.

### SWITCHING WAVEFORM



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Fig. 1 Responsivity vs Frequency

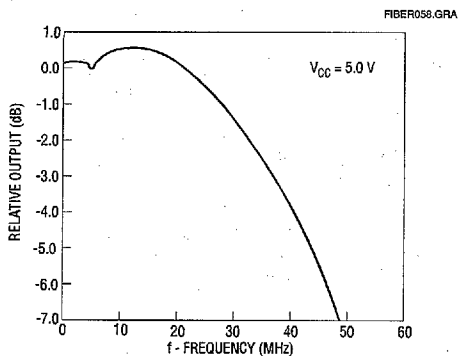


Fig. 2 Spectral Responsivity

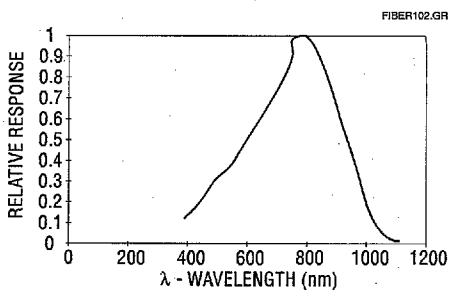


Fig. 3 Output Power Supply Rejection Ratio vs Frequency

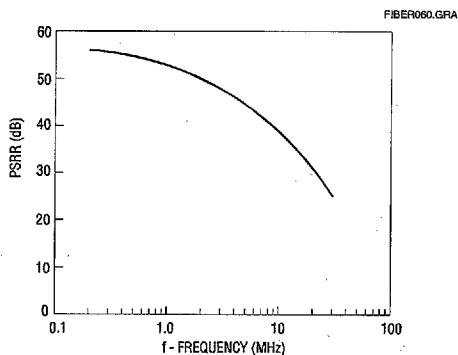
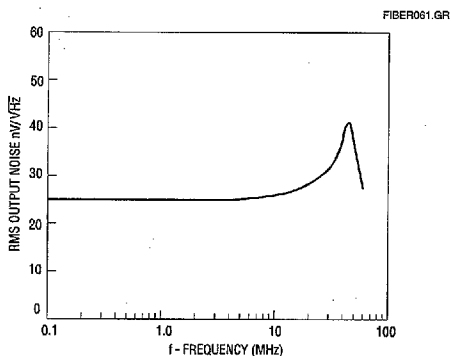


Fig. 4 RMS Output Noise vs Frequency



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