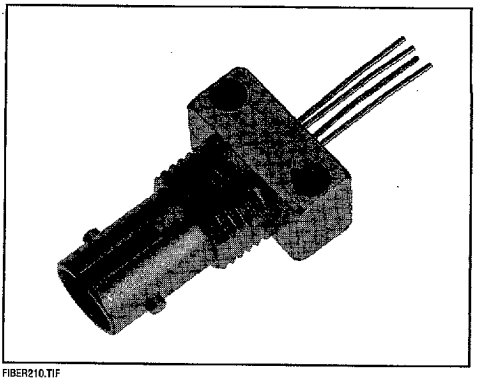
HFD3866

Analog Output Receiver

FEATURES

- High-speed operation, Rise/Fall times are 14 ns typical
- 35 MHz analog output receiver
- Industry standard ST®-LP fiber connector
- +5 V operation
- Wave solderable
- Optical input signal from 0.5 to 100 µW



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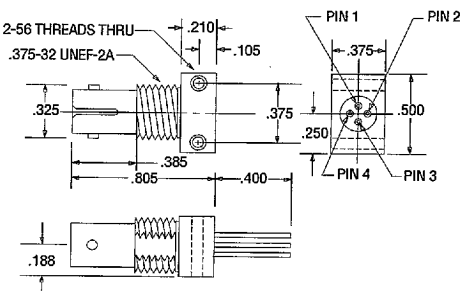
DESCRIPTION

The HFD3866 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 µW and 100 µW. It has an equivalent circular active diameter of 0.020 inch. The HFD3866 is comprised of an HFD3026 analog output receiver component packaged in a low profile ST®-LP fiber optic connector. Companion optical LEDs are available.

The HFD3866 fiber optic analog receiver has on-chip voltage regulation which requires an external 0.1 µF 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 µW and 100 µW . Guaranteed minimum response is 4 mV/µW, which provides 2.0 mV output for 0.5 µW input.

For standard electrical loads, a post-amplifier should be used with the HFD3866. When a load capacitance of 3 pF or more is encountered, a 330 Ω resistance in series with the output is required to minimise ringing of the output signal. This provides an excellent electrical signal for the system designer.

OUTLINE DIMENSIONS in inches (mm)



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Pinout

1. Bypass capacitor
2. Vcc
3. Data output
4. Ground

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ELECTRO-OPTICAL CHARACTERISTICS (V_{CC} ±10%, T_C= 25°C unless otherwise stated)

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	TEST CONDITIONS
Responsivity	R				mV/µW	f = 10 MHz, P_{IN} = 10 µW peak, λ = 850 nm, 100 µm core fiber
T = 25°C		4	5	10		
-40 < T < +100°C		3	5	12		
Input Power	P_{IN}					f = 10 MHz, PWD ≤ 10%
		0.5		100	µW	
		-33		-10	dBm	
DC Output Voltage	V_{ODC}		1.4		V	P_{IN} ≤ 0.1 µW peak
Power Supply Current	I_{CC}	5	6.6	10	mA	V_{CC} = 5 V ± 10%
Rise/Fall Time	t_R/t_F		14	18	ns	f = 10 MHz, P_{IN} = 10 µW peak, λ = 850 nm
Pulse Width Distortion					ns	f = 10 MHz, P_{IN} = 60 µW peak λ = 850 nm
	t_{PHL}			2		
	t_{PLH}			2		
Bandwidth	BW		35		MHz	P_{IN} = 10 µW peak, λ = 850 nm R = 0.707 R Max.
RMS Noise Output Voltage (1)	V_{NO}				mV	P_{IN} = 0 µW
T = 25°C			0.16	0.35		
-40 < T < +100°C				0.43		
Output Impedance	I_O		20		Ω	

Notes

1. Tested using a 30 MHz bandwidth filter.

ABSOLUTE MAXIMUM RATINGS

(Tcase = 25°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 µW
Optical signal pulse width	> 25 ns

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ORDER GUIDE

Description	Catalog Listing
Standard Analog Output Receiver	HFD3866-002

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.

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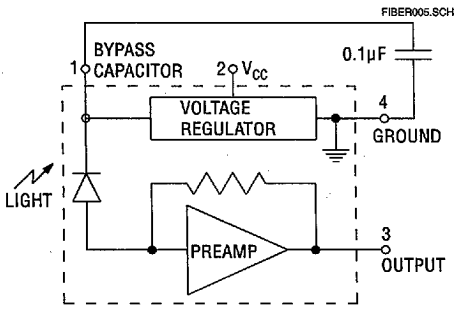
BLOCK DIAGRAM



SWITCHING WAVEFORM

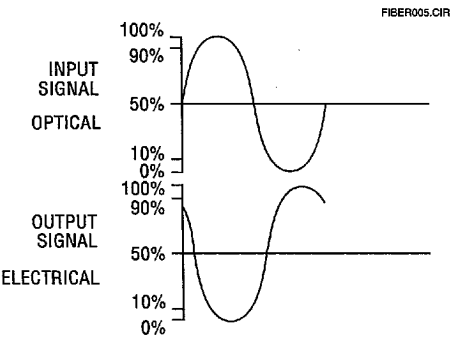


Fig. 1 Responsivity vs Frequency

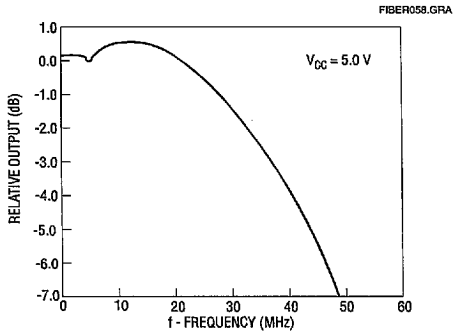


Fig. 2 Spectral Responsivity

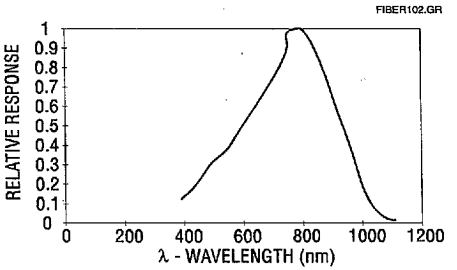


Fig. 3 Output Power Supply Rejection Ratio vs Frequency

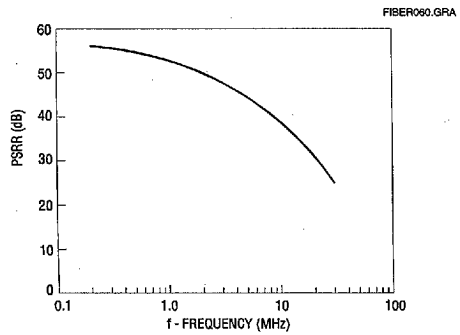
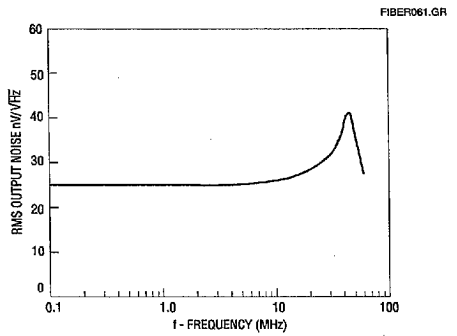


Fig. 4 RMS Output Noise vs Frequency



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