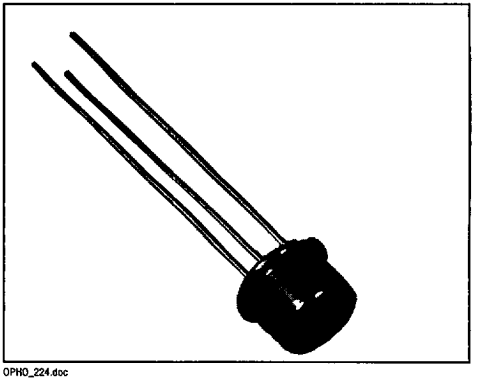
HFD3080

PIN Plus Preamplifier Detector

FEATURES

- High speed ≥ 1 GHz



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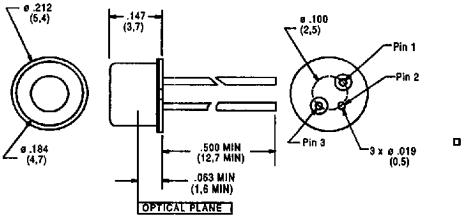
DESCRIPTION

The HFD3080 is a high-performance 850 nm PIN (P-Type / Intrinsic / N-type detector) plus amplifier packaged for high-speed data communications. The product is designed for ease of use by the module designer and manufacturer.

The HFD3080 is a PIN plus preamplifier packaged on a TO46 type package. Data rates can vary from DC to above 2 Gb/s. The PIN plus preamplifier is designed to convert optical power into an electrical signal that can be used in fiber optic communications and other applications. As the light increases, the output voltage changes linearly with light input. The output can be coupled either ac or dc.

The Honeywell HFD3080 is specifically designed to interface with 50/125 and 62.5/125 multimode fiber. It has an optically active area approximately 100 µm in diameter. Appropriate lensing is required to collect the maximum power.

OUTLINE DIMENSIONS in inches (mm)



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Pinout

1. V_{CC}
2. Ground: GND (Case)
3. Output

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ELECTRO-OPTICAL CHARACTERISTICS (0°C<T<70°C, V_{CC} = +5V unless otherwise specified)

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	TEST CONDITIONS
Responsivity	R	0.90	1.30	1.65	mV/µW	P_{IN} = 200 µW Peak (1) (2) (3) 6.25/125 µm fiber NA = 0.275
DC output voltage	V_{ODC}		1.6 1.8	2.5	mV	P_{IN} = 0 µW, R_{LOAD} = 50 Ω P_{IN} = 0 µW, R_{LOAD} = ∞
Supply Current	I_{CC}		50 22	70 30	mA	P_{IN} = 0 µW, R_{LOAD} = 50 Ω P_{IN} = 0 µW, R_{LOAD} = ∞
-3 dB Bandwidth	BW	0.8	1.1		GHz	P_{IN} = 50 µW Avg. (1) (4)
RMS Output Referred Noise				10	mV	800 MHz 4-pole bessel filter on the output
RMS Input Referred Noise				480	nW	800 MHz 4-pole bessel filter (5) on the output
Power Supply Rejection Ratio			20		dB	Freq = DC, P_{IN} = 0 µW
Pulse Wdth Distortion	PWD			100	ps	P_{IN} = 1.4 mW (1) (6)
Rise Time/Fall Time	t_R/t_F		300	400	ps	P_{IN} = 1.4 mW 20%-80% (1)

Notes

1. P_{IN} refers to the total optical power at the face of the component and assumes the light has been focused so that the photodiode active area collects all the available optical power.
2. Responsivity measured with λ source=850 nm CW light.
3. V_{OUT} decreases as received light power increases (V_{CC} = +5V)
4. Bandwidth is measured with a small signal sinusoidal light source with 50 µW average power.
5. RMS input referred noise is obtained by measuring the RMS output referred noise into an 800 MHz, 4-pole bessel filter, then dividing by the DC responsivity.
6. Measured at the 50% level of output pulses using 0.5 GHz square wave with <200 ps rise time.

ABSOLUTE MAXIMUM RATINGS

Storage temperature	-55 to +125°C
Operating temperature	0 to + 85°C
Lead solder temperature	260°C for 10 sec.
Output bias voltage	6 V
Power supply voltage	6 V
Incident optical power	+3 dBm

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.

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ORDER GUIDE

Description	Catalog Listing
PIN Plus Preamplifier Detector	HFD3080

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.

TEST AND INTERFACE CIRCUITRY

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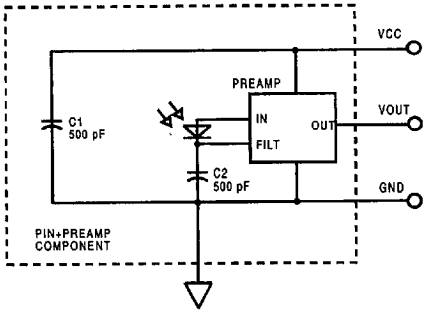

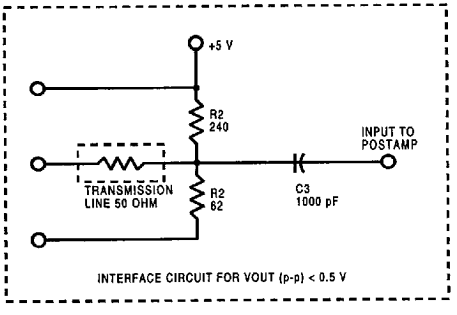

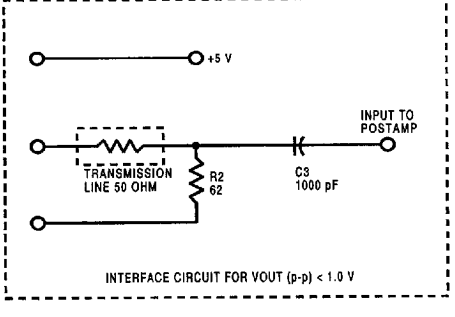

Fig. 1 Spectral dependence of responsivity

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