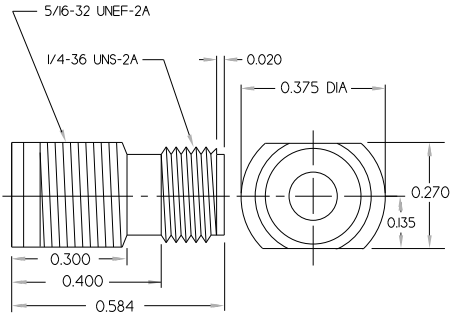
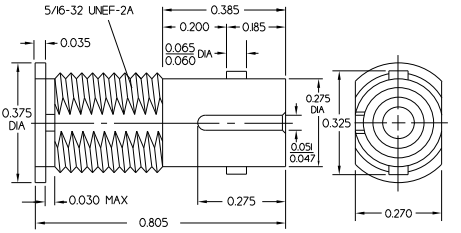
European Connectorized Receivers

Honeywell receiver components are available in the following connector styles. Each style has a three-digit reference used in the order guides.

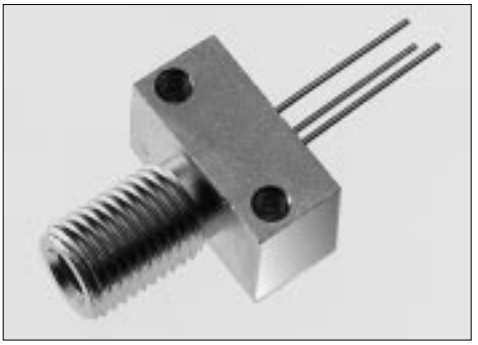
SMA SINGLE HOLE MOUNTING (REF.: AAA)

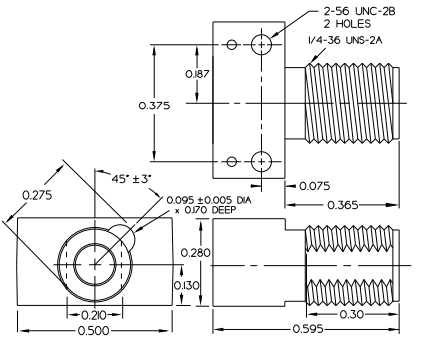


ST SINGLE HOLE MOUNTING (REF.: BAA)



SMA PCB MOUNTING (REF.: ABA)

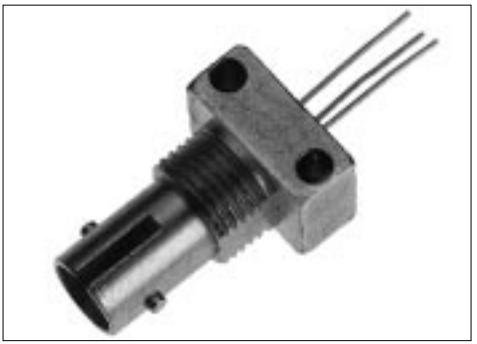


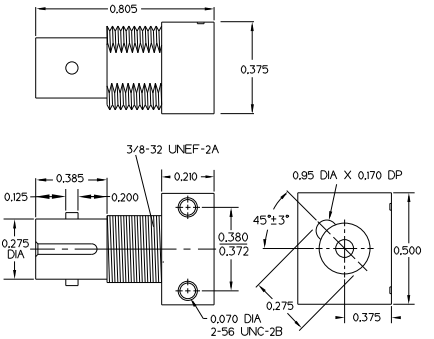


Honeywell

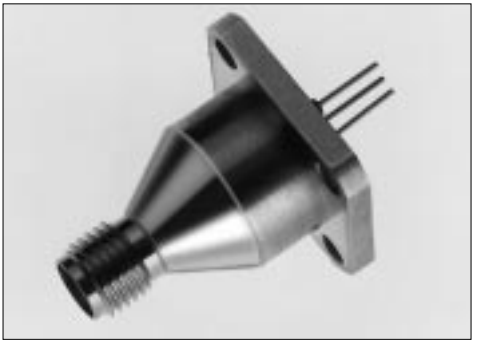
European Connectorized Receivers

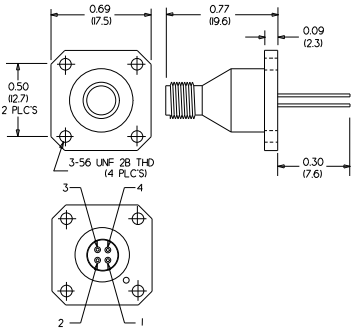
ST PCB MOUNTING (REF.: BBA)





SMA 4 HOLE MOUNTING (REF.: ADA)





Honeywell

HFD3023-002/XXX

5 Mbit Direct Coupled Receiver

FEATURES

- Converts fiber optic input signals to TTL digital outputs
- Typical sensitivity 2 µW peak (-27 dBm)
- Wide variety of cable options, operates with 50/125, 62.5/125, and 100/140 µm cables
- Direct coupled receiver circuit
- Designed to operate with Honeywell 850 nm LEDs
- Single 5 V supply requirement
- Wave solderable
- Mounting options
  - SMA single hole
  - ST single hole
  - SMA PCB
  - ST PCB
  - SMA 4 hole

DESCRIPTION

The HFD3023-002/XXX is a sensitive Direct Coupled (DC) optical receiver designed for use in short distance, 850 nm fiber optic systems. The receiver contains a monolithic IC, consisting of a photodiode, DC amplifier, and open collector Schottky output transistor. The output allows it to be directly interfaced with standard TTL circuits. The HFD3023-002/XXX receiver is comprised of a HFD3023 receiver component packaged in a fiber optic connector.

APPLICATION

The HFD3023-002/XXX fiber optic receiver converts the optical signal in a point to point data communications fiber optic link to a TTL output. Its 0.006 in. photodiode with a 0.024 in. microlens (to enhance the optics) is mechanically centered within the fiber optic connector.

Electrical isolation is important in obtaining the maximum performance. A 0.1 µF bypass capacitor must be connected between V_{CC} and ground. This minimizes power supply noise, increasing the signal quality. Shielding can also reduce coupled noise, through use of ground plane PCB, shielding around the device, and shielding around the leads.

The HFD3023-002/XXX is designed for a wide optical input range. The optical input dynamic range is guaranteed from the maximum sensitivity of 3.0 µW to 100 µW or greater than 15 dB.

Honeywell

HFD3023-002/XXX

5 Mbit Direct Coupled Receiver

APPLICATION (continued)

Optical power from the fiber strikes the photodiode and is converted to electrical current. This current couples to the DC amplifier, which drives an open collector transistor output. The output when connected to a pull up resistor can interface to TTL loads. The electrical signal is the inverse of the input light signal. When light strikes the photodiode, the output is a low logic level. When no light strikes the photodiode, the output is a high logic level.

Pulse Width Distortion (PWD) is an increase in the output pulse width (for high level optical input). The typical performance curves illustrate how PWD varies with optical power, temperature and frequency for the HFD3023-002/XXX. The amount of PWD that a given system can tolerate without an error due to a missing bit of information, is dependent upon system considerations. The output of the HFD3023-002/XXX will typically connect to the input of some form of a serial interface adaptor IC. The specifications for that IC govern the amount of PWD that can be tolerated in the system.

HFD3023-002/XXX

5 Mbit Direct Coupled Receiver

ELECTRO-OPTICAL CHARACTERISTICS

(V_{CC}= 5.0 VDC, T_C = 25°C unless otherwise stated)

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	TEST CONDITIONS
Minimum Input Sensitivity	P_{IN} (Peak)					f = 2.5 MHz, 100/140 µm core fiber
Minimum Input Sensitivity						λ = 850 nm, Duty Cycle = 50%
Minimum Input Sensitivity						PWD ≤ 10%
			2	3	µW	
			-27	-25.2	dBm	
High Level Logic Output Voltage	V_{OH}	2.4	4.5		V	P_{IN} ≤ 0.1 µW, R_L = 560 Ω
Low Level Logic Output Voltage	V_{OL}		0.25	0.5	V	P_{IN} ≥ 3 µW, R_L = 560 Ω
Power Supply Current	I_{CC}		4.5	6.5	mA	P_{IN} ≤ 0.1 µW
Power Supply Current			13	15		P_{IN} ≥ 3 µW
Rise Time	t_R		6	9	ns	P_{IN} = 10µW, V_O = 0.5 to 2.4V
Fall Time	t_F		6	9	ns	P_{IN} = 10 µW, V_O = 2.4 to 0.5 V
Pulse Width Distortion	PWD				%	f = 2.5MHz, Duty Cycle = 50%
			5	10		P_{IN} = 3 µW peak
			25	35		P_{IN} = 80 µW peak

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
Junction temperature	150°C
Supply voltage	+6.0 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 input power	3.0 to 100 µW
Optical signal pulse width	> 100 ns
Optical signal edges (10 to 90%)	< 20 ns

Honeywell

HFD3023-002/XXX

5 Mbit Direct Coupled Receiver

ORDER GUIDE

Description	Catalog Listing
Fiber Optic Direct Coupled Receiver	HFD3023-002/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

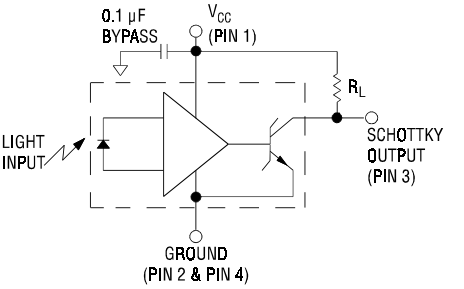
The inherent design of this component causes it to be sensitive to electrostatic discharge (ESD). To prevent ESD-induced damage and/or degradation to equipment, take normal ESD precautions when handling this product.

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.

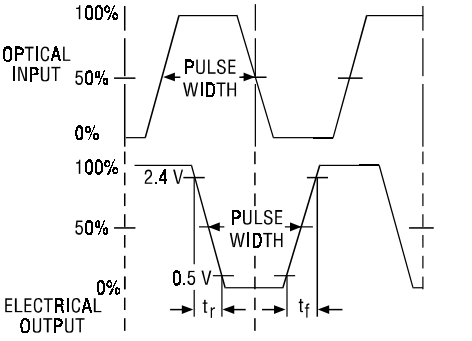
BLOCK DIAGRAM

FIBER004.SCH



SWITCHING WAVEFORM

FIBER004.CIR



Honeywell

HFD3023-002/XXX

5 Mbit Direct Coupled Receiver

Fig. 1 Pulse Width Distortion vs Optical Input Power

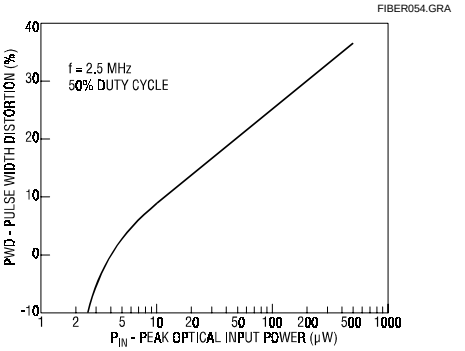


Fig. 2 Pulse Width Distortion vs Temperature

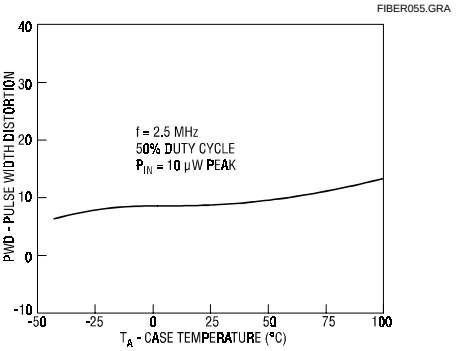


Fig. 3 Pulse Width Distortion vs Frequency

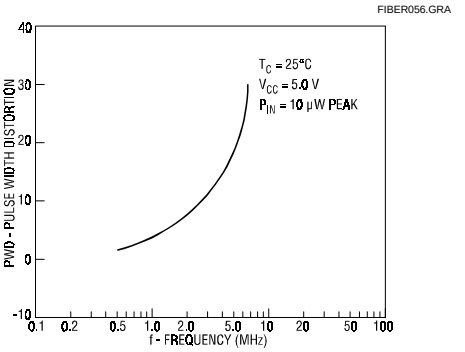
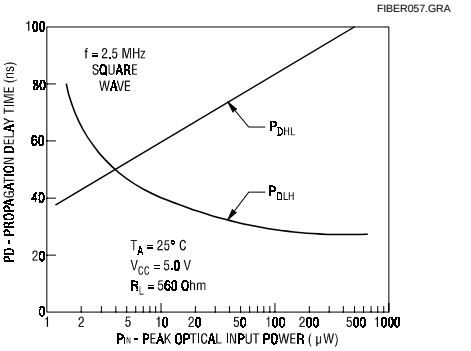


Fig. 4 Propagation Delay Time vs Peak Optical Input Power



Honeywell

HFD3029-002/XXX

Schmitt Input, Non-Inverting TTL Output Receiver

FEATURES

- Converts fiber optic input signals to TTL totem pole outputs
- Maximum sensitivity 1.5 µW peak (-28.2 dBm)
- Wide variety of cable options, operates with 50/125, 62.5/125, and 100/140 µm cables
- Schmitt circuitry gives 17dB minimum dynamic range and low Pulse Width Distortion
- Operates up to 200K bps NRZ
- Designed to operate with Honeywell 850 nm LEDs
- Single 5 V supply requirement
- Wave solderable
- Mounting options
  - SMA single hole
  - ST single hole
  - SMA PCB
  - ST PCB
  - SMA 4 hole

DESCRIPTION

The HFD3029-002/XXX is a sensitive Schmitt triggered optical receiver designed for use in short distance, 850 nm fiber optic systems. The bipolar integrated receiver circuit has internal voltage regulation. The HFD3029-002/XXX also uses an internal photodiode. The TTL non-inverting output allows the HFD3029-002/XXX to be directly interfaced with standard digital TTL circuits.

APPLICATION

The HFD3029-002/XXX fiber optic receiver converts the optical signal in a point to point data communications fiber optic link to a TTL output. It is mounted in a fiber optic connector that aligns the optical axis of the component to the axis of the optical fiber.

Electrical isolation is important in obtaining the maximum performance of this high sensitivity receiver. Shielding can reduce coupled noise and allow maximum sensitivity to be obtained. This can include the use of ground planes in the PCB, shielding around the device, and shielding around the leads.

HFD3029-002/XXX

Schmitt Input, Non-Inverting TTL Output Receiver

APPLICATION (continued)

An internal voltage regulator allows operation with a 5 volt supply. An external bypass capacitor (0.1 µF) between V_{CC} (pin 1) and ground (pin 3) is recommended for maximum power supply noise rejection.

Honeywell also offers companion transmitters designed to operate in conjunction with the HFD3029-002/XXX.

Optical power (photons) from the fiber strikes the photodiode and is converted to electrical current. The current is converted into voltage in the transimpedance preamplifier. The Schmitt trigger circuitry in the comparator stage provides proper output signals. The Schmitt detection circuit monitors the input preamplifier, and triggers when its output exceeds present levels. Preset levels are above worst case RMS noise level, with 1 x 10^{-9} bit error rate, while low enough for enough sensitivity to allow operation over long links. This circuitry recognizes positive and negative going input signals. When the optical input goes from low to high, the electrical output changes to "1" (high). The output changes to "0" (low) when the optical input goes from high to low. Bandwidth has been limited to minimize noise problems. The output of the Schmitt Trigger detector stage is designed for good pulse width distortion (PWD).

Honeywell

HFD3029-002/XXX

Schmitt Input, Non-Inverting TTL Output Receiver

ELECTRO-OPTICAL CHARACTERISTICS (V_{CC} = 5.0 V ±0.5 VDC, -40°C < T_C < +85°C unless otherwise stated)

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	TEST CONDITIONS
Minimum Input Sensitivity T= 25°C	P_{IN} (Peak)		1	1.5	µW	100 µm core fiber Duty Cycle = 50%, 850 µm
High Level Logic Output Voltage	V_{OH}	2.4	3.3		V	P_{IN} ≥ 1.5 µW, V_{CC} = 5.0 VDC
Low Level Logic Output Voltage	V_{OL}		0.3	0.4	V	P_{IN} ≤ 0.1 µW, V_{CC} = 5.0 VDC I_O ≤ 16 mA
Power Supply Current	I_{CC}		6	12	mA	
Rise Time	t_R		12		ns	P_{IN} ≥ 1.5µW, V_O = 0.4 to 2.4V
Fall Time	t_F		3		ns	P_{IN} ≤ 0.1µW, V_O = 2.4 to 0.4V
Pulse Width Distortion T = 25°C	PWD		 5 5	 10 10	%	f = 20 kHz, Duty Cycle = 50% P_{IN} ≥ 1.5 µW peak P_{IN} ≥ 100 µW
Bandwidth	BW			200	kHz	P_{IN} ≥1.0µW, Duty Cycle = 50%
Output Impedance	I_O		20		Ω	

ABSOLUTE MAXIMUM RATINGS

(Tcase = 25°C unless otherwise noted)

Storage temperature	-40 to +100°C
Supply voltage	+4.5 to +7.0 V
Lead solder temperature	260°C for 10 s
Junction temperature	150°C

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 +100°C
Supply voltage	+4.5 to +7.0 V
Optical input power	1.5 to 100 µW
Optical signal pulse width	> 4 µs

HFD3029-002/XXX

Schmitt Input, Non-Inverting TTL Output Receiver

ORDER GUIDE

Description	Catalog Listing
Fiber Optic Schmitt Input, Non inverting, TTL Output Receiver	HFD3029-002/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

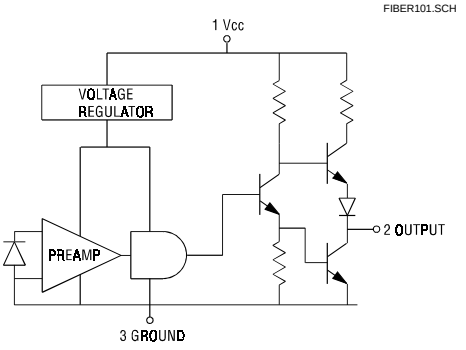
CAUTION

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.

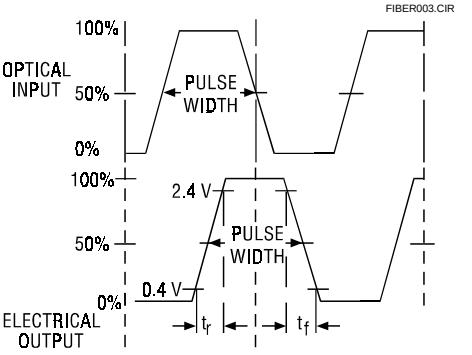
FIBER INTERFACE

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



SWITCHING WAVEFORM



Honeywell

HFD3029-002/XXX

Schmitt Input, Non-Inverting TTL Output Receiver

Fig. 1 Pulse Width Distortion vs Temperature

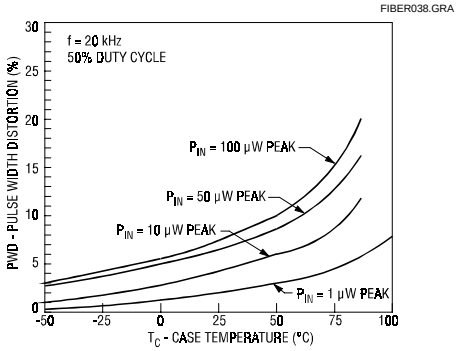


Fig. 2 Pulse Width Distortion vs Frequency

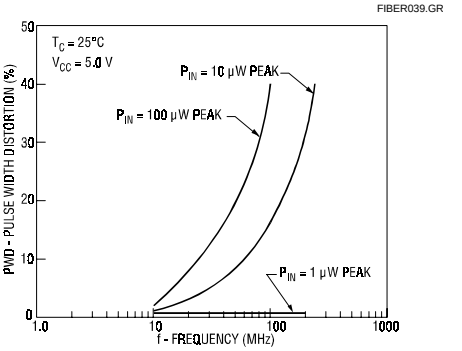


Fig. 3 Pulse Width Distortion vs Optical Input Power

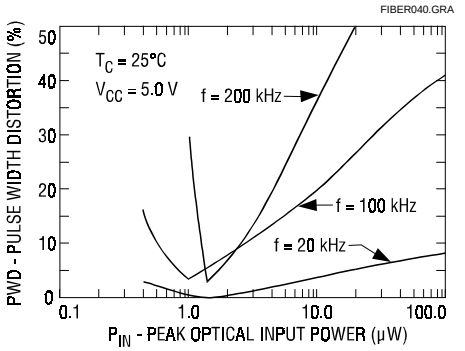
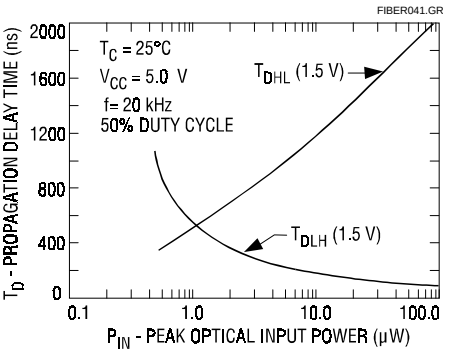


Fig. 4 Propagation Delay vs Optical Input Power



HFD3033-002/XXX

Silicon PIN Photodiode

FEATURES

- Low capacitance
- High speed: t_r = 1.2 ns typical
- High responsivity: 0.33 A/W typical
- Housing electrically isolated
- Wave solderable
- Mounting options
  - SMA single hole
  - ST single hole
  - SMA PCB
  - ST PCB
  - SMA 4 hole

DESCRIPTION

The HFD3033-002/XXX PIN Photodiode is designed for high speed use in fiber optic receivers. It has a large area detector, providing efficient response to 50 - 100 µm diameter fibers at wavelengths of 650 to 950 nanometers. Light is collected using a 600 micron micro lens mounted on the detector surface. The HFD3033-002/XXX is comprised of an HFD3033 PIN photodiode which is mounted in a fiber optic connector which aligns the component's optical axis with the axis of the optical fiber.

The HFD3033-002/XXXs case is electrically isolated from the anode and cathode terminals to enhance the EMI/RFI shielding which increases the sensitivity and speed. The housing acts as a shield for the PIN photodiode component.

HFD3033-002/XXX

Silicon PIN Photodiode

ELECTRO-OPTICAL CHARACTERISTICS (T_C = 25°C unless otherwise stated)

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	TEST CONDITIONS
Flux Responsivity, λ= 850 nm	R	0.30	0.33		A/W	50 µm core fiber
Dark Current	I_D		0.05	1.5	nA	V_R = 30 V
Total Capacitance	C		1.5		pF	V_R = 5 V
Response Time						
10-90%	t_R		1.2	3	ns	V_R = 3.5 V
90-10%	t_F		1.2	3	ns	V_R = 3.5 V
Field of View	FoV		32		Degrees	

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
Reverse voltage	50 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.

Honeywell

HFD3033-002/XXX

Silicon PIN Photodiode

ORDER GUIDE

Description	Catalog Listing
Standard silicon PIN photodiode	HFD3033-002/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.

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.

Fig. 1 Relative Response vs Polar Angle

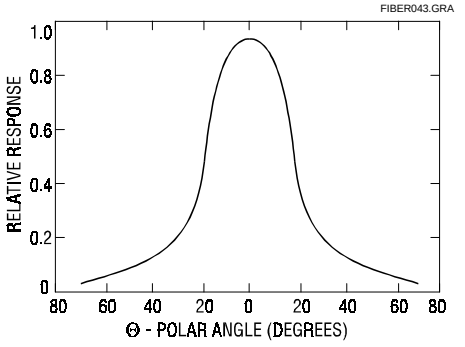
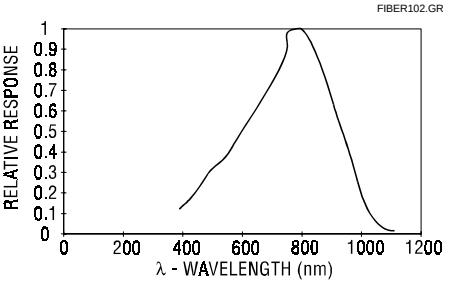


Fig. 2 Spectral Responsivity



Honeywell

HFD3033-002/XXX

Silicon PIN Photodiode

Fig. 3 Relative Responsivity vs Temperature

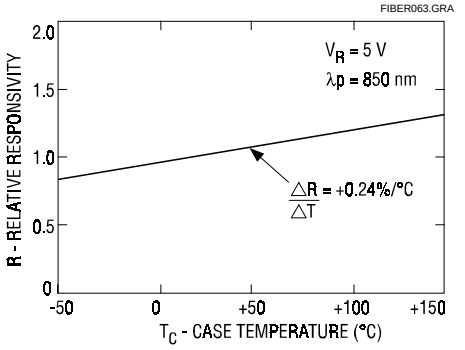
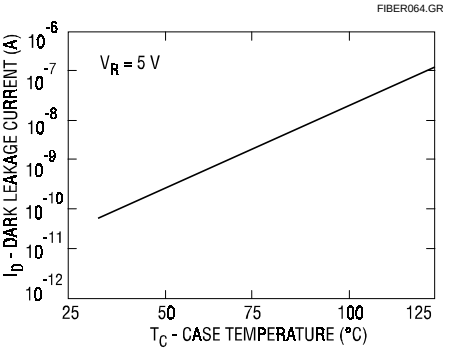


Fig. 4 Dark Leakage Current vs Temperature



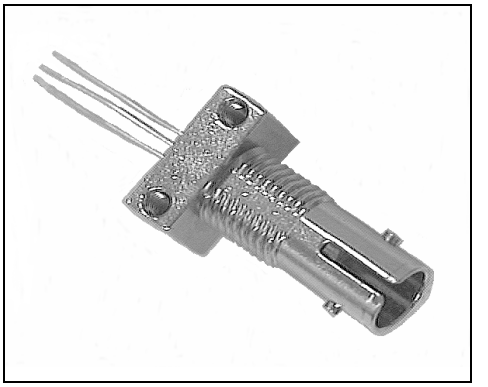
Honeywell

HFD8000-002/XBA

1300 nm PIN Diode

FEATURES

- InGaAs PIN Diode
- 400 MHz operating bandwidth
- Mounted in industry standard ST*-LP fibre connector



OPHO_229.doc

DESCRIPTION

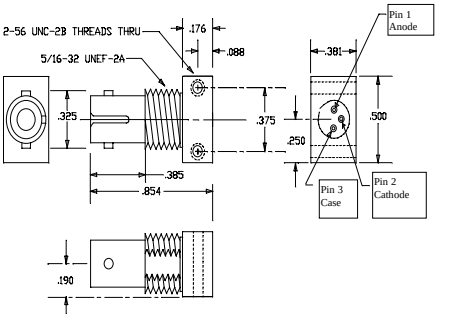
The HFD8000-002/XBA is a high-performance InGaAs PIN photodiode designed for use in 1300 nm fiber optic transmission applications. The PIN diode is mounted in an industry standard low profile ST connector receptacle, optimized for low cost multimode systems where high bandwidth and long distance links are required.

APPLICATION

The HFD8000-002/XBA employs a high speed 1300 nm PIN diode packaged in a TO-18 metal can and mounted within a low profile ST connector receptacle. Data rates can vary from DC to 400 MHz depending upon component application. The PIN is designed to convert optical energy into electrical output power that can be used in fiber optic communications and other applications. As the level of incident optical power varies the component's reverse bias current varies proportionally.

The HFD8000-002/XBA is designed to be used within 1300 nm multimode systems but has excelent response from 900 nm to 1700 nm allowing usage in various other applications including singlemode.

OUTLINE DIMENSIONS in inches (mm)



ODIM_231.doc

Pin 1 identified by black sleeve

ST is a registered trademark of AT & T.

Honeywell

HFD8000-002/XBA

1300 nm PIN Diode

ELECTRO-OPTICAL CHARACTERISTICS (Tests made at 25°C unless otherwise specified)

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	TEST CONDITIONS
Flux Responsivity	R		0.9		A/W	λ = 1300 nm (1)
Active Area	A		0.3		mm^2	
Dark Current	I_D		0.3	3	nA	V_R = 5 V
Response Time						
10-90%	t_R		1.3		ns	
90-10%	t_F		1.3		ns	
Cut Off Frequency	F_C			400	MHz	V_R = 5 V, R_L = 50 Ω
Capacitance	C		5		pF	V_R = 5 V, f = 1 MHz

Notes

1. This product is tested with a 50/125 micron fiber.

ABSOLUTE MAXIMUM RATINGS

Storage temperature	-40 to +100°C
Case operating temperature	-40 to +85°C
Lead solder temperature	260°C, 10 sec.
Reverse voltage	20 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.

HFD8000-002/XBA

1300 nm PIN Diode

ORDER GUIDE

Description	Catalog Listing
1300 nm PIN diode	HFD8000-002/XBA

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.

Honeywell

HFE4020-313/XXX

Fiber Optic LED

FEATURES

- Power out designed for drive currents between 10 and 100 mA
- Wave solderable
- Optimized for linear optical output with drive currents between 10 mA and 100 mA
- High speed: 85 MHz
- Mounting options
  - SMA single hole
  - ST single hole
  - SMA PCB
  - ST PCB
  - SMA 4 hole

DESCRIPTION

The HFE4020-313/XXX is a high radiance GaAlAs 850 nanometer LED optimized for coupling into small fiber core diameters at a forward current of 10 to 100 mA. The patented "Caprock"™ LED chip combines high power coupling with wide bandwidth. The peak wavelength is matched for use with Honeywell silicon fiber optic detectors and receivers. When the HFE4020-313/XXX is used at elevated temperatures, thermal resistance must be taken into consideration.

APPLICATION

The HFE4020-313/XXX is a high radiance LED packaged in a fiber optic connector that aligns the optical axis of the base component to the axis of the optical fiber. Data rates can vary from DC to above 85 MHz depending upon component application. The LED converts electrical current into optical power that can be used in fiber optic communications. As the current varies (typically from 10 to 100 mA), the light intensity increases proportionally.

The HFE4020-313/XXX LED is designed to give high fiber coupled power (high radiance into a standard fiber optic cable). In order to enhance the light being sent into a fiber optic cable, a 0.30 mm diameter glass microlens is placed over the "Caprock"™ junction. The microlens collimates the light, increasing the intensity directed toward a fiber optic cable. This creates a "SWEET SPOT" of power, allowing greater power to be launched into standard fiber optic cables.

HFE4020-313/XXX

Fiber Optic LED

ELECTRO-OPTICAL CHARACTERISTICS (-40°C < T_C < 100°C unless otherwise stated)

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	TEST CONDITIONS
Fiber Coupled Power	P_{OC}	30 -15.2	60 -12.2		µW dBm	I_F = 50 mA, 100/140 micron, 0.29 NA fiber, T = 25°C (1)
Forward Voltage	V_F		1.70	2.00	V	I_F = 100 mA
Reverse Voltage	B_{VR}	1.0	5.0		V	I_R = 10 µA
Peak Wavelength	λ_P		850		nm	I_F = 100 mA DC
Spectral Bandwidth	$\Delta\lambda$		50		nm	I_F = 100 mA DC
Response Time					ns	1 V Prebias, 100 mA peak
T = 25°C, 10-90%	t_R		6	8		
T = 25°C, 90-10%	t_F		8	10		
-40 < T < +100°C, 10-90%	t_R		6	9		
-40 < T < +100°C, 90-10%	t_F		8	11		
Analog Bandwidth	BWE		85		MHz	I_F = 100 mA DC, small signal sinusoidal modulation
P_O Temperature Coefficient	$\Delta P_O/\Delta T$		-0.019		dB/°C	I_F = 100 mA
Series Resistance	r_S		4.0		Ω	DC
Capacitance	C		70		pF	V_R = 0 V, f = 1 MHz
Thermal Resistance			250		°C/W	Heat sinked

Notes

1. HFE4020-313/XXX is tested using a 100/140 micron fiber cable. Actual coupled power values may vary due to mechanical alignment procedures and/or receptacle and fiber tolerances.

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
Continuous forward current (heat sinked)	100 mA
Reverse voltage	1 V @ 10 µA

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.

FIBER INTERFACE

Honeywell LEDs are designed to interface with multimode fiber with sizes ranging from 50/125 to 200/230 microns. Honeywell performs final tests using 50/125 micron core fiber. All multimode fiber optic cables between 50/125 and 200/230 should operate with similar excellent performance. See table for typical powers.

TYPICAL COUPLED POWER (µW/dBm) @ I_F=50 mA

Dia.	Index	N.A.	-313
50/125	Graded	0.20	10/-19.9
62.5/125	Graded	0.28	19/-17.1
100/140	Graded	0.29	60/-12.2

Honeywell

HFE4020-313/XXX

Fiber Optic LED

ORDER GUIDE

Description	Catalog Listing
Standard screening, typical power out 60 µW	HFE4020-313/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 203

WARNING

Under certain application conditions, the infrared optical output of this device may exceed Class 1 eye safety limits, as defined by IEC 825-1 (1993-11). Do not use magnification (such as a microscope or other focusing equipment) when viewing the device's output.

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.

Fig. 1 Typical Optical Power Output vs Forward Current

FIBER001.GRA

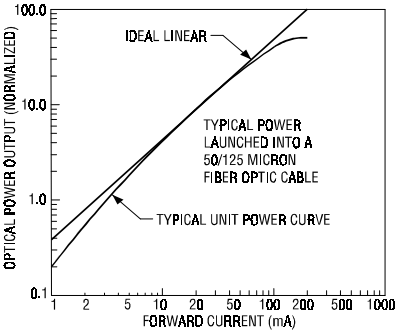


Fig. 2 Typical Spectral Output vs Wavelength

FIBER103.GRA

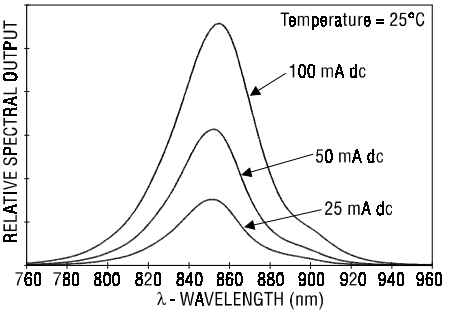
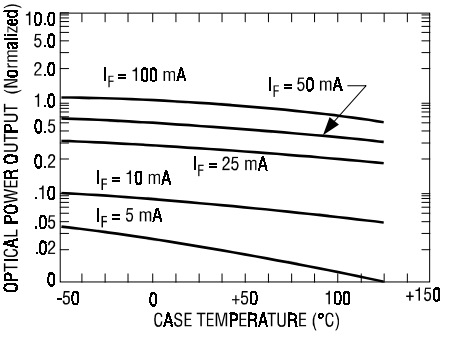


Fig. 3 Typical Optical Power Output vs Case Temperature

FIBER020.GRA



All Performance Curves Show Typical Values

Honeywell

HFE4020-313/XXX

Fiber Optic LED

Honeywell

HFE4023-323/XXX

High Speed Fiber Optic LED

FEATURES

- High speed: 150 MHz
- Optimized for linear optical output with drive currents between 10 and 50 mA
- Wave solderable
- Mounting options
  - SMA single hole
  - ST single hole
  - SMA PCB
  - ST PCB
  - SMA 4 hole

DESCRIPTION

The HFE4023-323/XXX is a high radiance GaAlAs 850 nanometer LED optimized for coupling into small fiber core diameters at a forward current of 10 to 100 mA. The patented "Caprock"™ LED chip combines high power coupling with wide bandwidth. The peak wavelength is matched for use with Honeywell silicon fiber optic detectors and receivers. When the HFE4023-323/XXX is used at elevated temperatures, thermal resistance must be taken into consideration.

APPLICATION

The HFE4023-323/XXX is a high radiance LED packaged in a fiber optic connector that aligns the optical axis of the base component to the axis of the optical fiber. Data rates can vary from DC to 150 MHz depending upon component application. The LED converts electrical current into optical power that can be used in fiber optic communications. As the current varies (typically from 10 to 100 mA), the light intensity increases proportionally.

The HFE4023-323/XXX LED provides high fiber coupled power (high radiance into a standard fiber optic cable). A 0.30 mm diameter glass microlens is placed over the "Caprock"™ junction. The microlens collimates the light, increasing the intensity directed toward a fiber optic cable. The "SWEET SPOT" of power sends greater power into standard fiber optic cables.

Honeywell

HFE4023-323/XXX

High Speed Fiber Optic LED

ELECTRO-OPTICAL CHARACTERISTICS (-40°C < T_C < 100°C unless otherwise stated)

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	TEST CONDITIONS
Fiber Coupled Power	P_{OC}	30 -15.2	60 -12.2		µW dBm	I_F = 50 mA, 100/140 micron, 0.29 NA fiber, T = 25°C (1)
Forward Voltage	V_F		1.70	2.00	V	I_F = 100 mA
Reverse Voltage	B_{VR}	1.0	5.0		V	I_R = 10 µA
Peak Wavelength	λ_P		850		nm	I_F = 100 mA DC
Spectral Bandwidth	$\Delta\lambda$		50		nm	I_F = 100 mA DC
Response Time					ns	1 V Prebias, 100 mA peak
T = 25°C, 10-90%	t_R		3	6		
T = 25°C, 90-10%	t_F		4	6		
-40 < T < +100°C, 10-90%	t_R		3	7		
-40 < T < +100°C, 90-10%	t_F		4	7		
Analog Bandwidth	BWE		150		MHz	I_F = 100 mA DC, small signal sinusoidal modulation
P_O Temperature Coefficient	$\Delta P_O/\Delta T$		-0.019		dB/°C	I_F = 100 mA
Series Resistance	r_S		4.0		Ω	DC
Capacitance	C		70		pF	V_R = 0 V, f = 1 MHz
Thermal Resistance			250		°C/W	Heat sinked

Notes

1. HFE4023-323/XXX is tested using a 100/140 micron fiber cable. Actual coupled power values may vary due to mechanical alignment procedures and/or receptacle and fiber tolerances.

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
Continuous forward current (heat sinked)	100 mA
Reverse voltage	1 V @ 10 µA

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.

FIBER INTERFACE

Honeywell LEDs are designed to interface with multimode fiber with sizes ranging from 50/125 to 200/230 microns. Honeywell performs final tests using 50/125 micron core fiber. All multimode fiber optic cables between 50/125 and 200/230 should operate with similar excellent performance. See table for typical powers.

TYPICAL COUPLED POWER (µW/dBm) @ I = 50 mA

Dia.	Index	N.A.	-323
50/125	Graded	0.20	10/-19.9
62.5/125	Graded	0.28	19/-17.1
100/140	Graded	0.29	60/-12.2

HFE4023-323/XXX

High Speed Fiber Optic LED

ORDER GUIDE

Description	Catalog Listing
Standard screening, typical power out 60 µW	HFE4023-323/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 203

WARNING

Under certain application conditions, the infrared optical output of this device may exceed Class 1 eye safety limits, as defined by IEC 825-1 (1993-11). Do not use magnification (such as a microscope or other focusing equipment) when viewing the device's output.

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.

Fig. 1 Typical Optical Power Output vs Forward Current

FIBER001.GRA

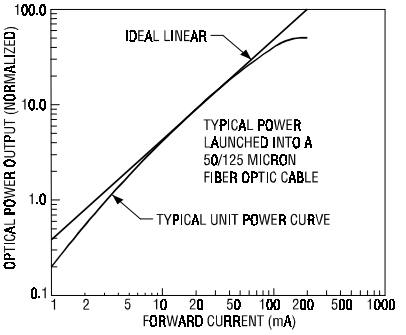


Fig. 2 Typical Spectral Output vs Wavelength

FIBER103.GRA

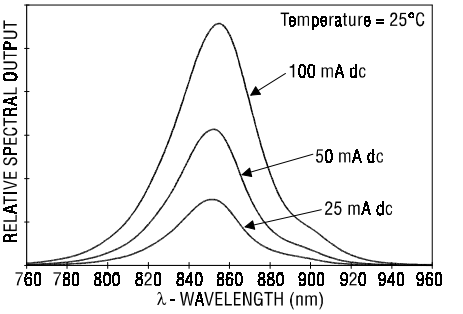
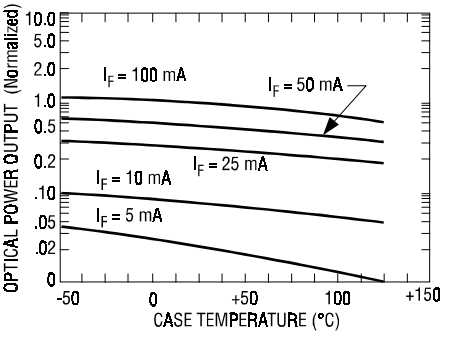


Fig. 3 Typical Optical Power Output vs Case Temperature

FIBER020.GRA



All Performance Curves Show Typical Values

Honeywell

HFE4023-323/XXX

High Speed Fiber Optic LED

HFE4026-313/XXX

Low Drive Current Fiber Optic LED

FEATURES

- Power out designed for drive currents between 5 and 50 mA
- SMA small hole mounting fiber optic connector
- Optimized for linear optical output with drive currents between 5 and 50 mA
- High speed: 85 MHz
- Mounting options
  - SMA single hole
  - ST single hole
  - SMA PCB
  - ST PCB
  - SMA 4 hole

DESCRIPTION

The HFE4026-313/XXX is a high radiance GaAlAs 850 nanometer LED optimized for coupling into small fiber core diameters at a forward current of 5 to 50 mA. The patented "Caprock"™ LED chip combines high power coupling with wide bandwidth. The peak wavelength is matched for use with Honeywell silicon fiber optic detectors and receivers. When the HFE4026-313/XXX is used at elevated temperatures, thermal resistance must be taken into consideration.

APPLICATION

The HFE4026-313/XXX is a high radiance LED packaged in a fiber optic connector that aligns the optical axis of the base component to the axis of the optical fiber. Data rates can vary from DC to above 85 MHz depending upon component application. The LED converts electrical current into optical power that can be used in fiber optic communications. As the current varies (typically from 5 to 50 mA), the light intensity increases proportionally.

The HFE4026-313/XXX LED is designed to give high fiber coupled power (high radiance into a standard fiber optic cable). In order to enhance the light being sent into a fiber optic cable, a 0.30 mm diameter glass microlens is placed over the "Caprock"™ junction. The microlens collimates the light, increasing the intensity directed toward a fiber optic cable. This creates a "SWEET SPOT" of power, allowing greater power to be launched into standard fiber optic cables.

HFE4026-313/XXX

Low Drive Current Fiber Optic LED

ELECTRO-OPTICAL CHARACTERISTICS (-40°C < T_C < 100°C unless otherwise stated)

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	TEST CONDITIONS
Fiber Coupled Power	P_{OC}	10.0 -20.0	12.0 -19.0		µW dBm	I_F = 6 mA, 100/140 micron, 0.29 NA fiber, T = 25°C (1)
Forward Voltage	V_F		1.70	2.00	V	I_F = 50 mA
Reverse Voltage	B_{VR}	1.0	5.0		V	I_R = 10 µA
Peak Wavelength	λ_P		850		nm	I_F = 25 mA DC
Spectral Bandwidth	$\Delta\lambda$		50		nm	I_F = 25 mA DC
Response Time					ns	1 V Prebias, 50 mA peak
T = 25°C, 10-90%	t_R		12	20		
T = 25°C, 90-10%	t_F		12	20		
Analog Bandwidth	BWE		85		MHz	I_F = 50 mA DC, small signal sinusoidal modulation
P_O Temperature Coefficient	$\Delta P_O/\Delta T_O$		-0.019		mV/°C	I_F = 50 mA
Series Resistance	r_S		4.0		Ω	DC
Capacitance	C		70		pF	V_R = 0 V, f = 1 MHz
Thermal Resistance			250		°C/W	Heat sinked

Notes

1. HFE4026-313/XXX is tested using a 100/140 micron fiber cable. Actual coupled power values may vary due to mechanical alignment procedures and/or receptacle and fiber tolerances.

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
Continuous forward current (heat sinked)	50 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.

FIBER INTERFACE

Honeywell LEDs are designed to interface with multimode fiber with sizes ranging from 50/125 to 200/230 microns. Honeywell performs final tests using 50/125 micron core fiber. All multimode fiber optic cables between 50/125 and 200/230 should operate with similar excellent performance. See table for typical powers.

TYPICAL COUPLED POWER (µW/dBm) @ I_F=50 mA

Dia.	Index	N.A.	-013
50/125	Graded	0.20	14.0/-18.5
62.5/125	Graded	0.28	30.2/-15.1
100/140	Graded	0.29	125.0/-9.0

Honeywell

HFE4026-313/XXX

Low Drive Current Fiber Optic LED

ORDER GUIDE

Description	Catalog Listing
Standard screening, typical power out 12 µW	HFE4026-313/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 203

WARNING

Under certain application conditions, the infrared optical output of this device may exceed Class 1 eye safety limits, as defined by IEC 825-1 (1993-11). Do not use magnification (such as a microscope or other focusing equipment) when viewing the device's output.

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.

Fig. 1 Typical Optical Power Output vs Forward Current

FIBER001.GRA

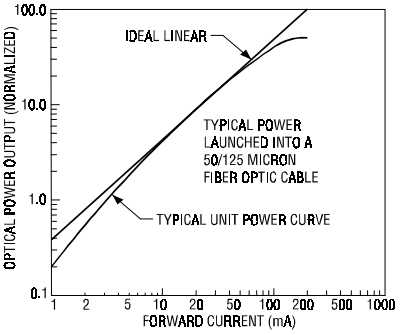


Fig. 2 Typical Spectral Output vs Wavelength

FIBER104.GRA

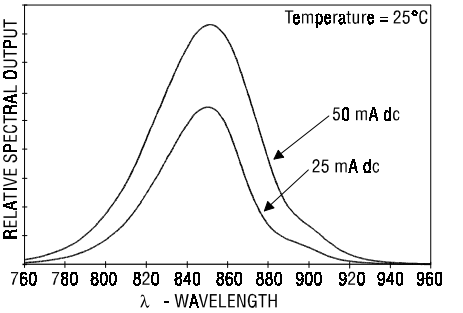
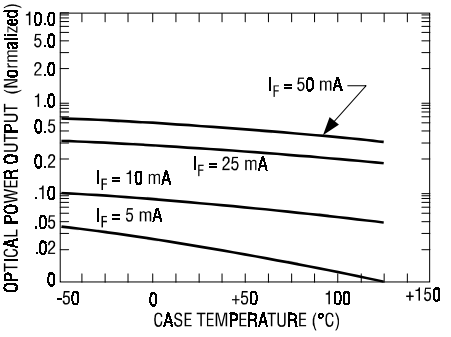


Fig. 3 Typical Optical Power Output vs Case Temperature

FIBER106.GRA



All Performance Curves Show Typical Values

Honeywell

HFE4026-313/XXX

Low Drive Current Fiber Optic LED

Honeywell

HFE4050-01X/XXX

High Power Fiber Optic LED

FEATURES

- High power LED sends 410 µW into 100/140 micron fiber
- High speed: 85 MHz
- Rated to 100 mA forward current operation
- Wave solderable
- Designed to operate with Honeywell fiber optic receivers
- Mounting options
  - SMA single hole
  - ST single hole
  - SMA PCB
  - ST PCB
  - SMA 4 hole

DESCRIPTION

The HFE4050-01X/XXX is a high radiance GaAlAs 850 nanometer LED optimized for coupling into small fiber core diameters at a forward current up to 100 mA. The patented "Caprock"™ LED chip combines high power coupling with wide bandwidth. The peak wavelength is matched for use with Honeywell silicon fiber optic detectors and receivers.

APPLICATION

The HFE4050-01X/XXX is a high radiance LED packaged in a fiber optic connector that aligns the optical axis of the base component to the axis of the optical fiber. Data rates can vary from DC to above 85 MHz depending upon component application. The LED converts electrical current into optical power that can be used in fiber optic communications. As the current varies (typically from 10 to 100 mA), the light intensity increases proportionally.

The HFE4050-01X/XXX LED provides the maximum amount of radiance for the amount of forward current in the industry. A 0.25 mm diameter glass microlens over the "Caprock"™ junction collimates the light, increasing the intensity. Thus, greater power is directed toward standard fiber optic cables.

HFE4050-01X/XXX

High Power Fiber Optic LED

ELECTRO-OPTICAL CHARACTERISTICS (T_C = -40°C to +100°C unless otherwise stated)

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	TEST CONDITIONS
Fiber Coupled Power (1)	P_{OC}					I_F = 100 mA, 50/125 micron, (2) 0.20 NA fiber, T = 25°C (3)
HFE4050-013/XXX		30	40		µW	
		-15.2	-14.0		dBm	
Over Temp. Range		20			µW	
		-17.0			dBm	
HFE4050-014/XXX		50	70		µW	
		-13.0	-11.5		dBm	
Over Temp. Range		33			µW	
		-14.8			dBm	
Forward Voltage	V_F	1.50	1.85	2.25	V	I_F = 100 mA
Reverse Voltage	B_{VR}	1.0	5.0		V	I_R = 10 µA
Peak Wavelength	λ_P	810	850	885	nm	I_F = 50 mA DC
Spectral Bandwidth (FWHM)	$\Delta\lambda$		50		nm	I_F = 50 mA DC
Response Time					ns	1 V Prebias, 100 mA peak (3)
T = 25°C, 10-90%	t_R		6	10		
T = 25°C, 90-10%	t_F		6	10		
Analog Bandwidth	BWE		85		MHz	I_F = 100 mA DC, sinusoidal modulation (3)
P_O Temperature Coefficient	$\Delta P_O/\Delta T$		-0.02		dB/°C	I_F = 100 mA (over 25 to 125°C)
Series Resistance	r_S		4.0		Ω	DC
Capacitance	C		70		pF	V_R = 0 V, f = 1 MHz
Thermal Resistance			150		°C/W	Heat sinked (3)
			300		°C/W	Not heat sinked

Notes

1. Dash numbers indicate power output. See ORDER GUIDE.
2. HFE4050-01X/XXX is tested using a 10 meter length of 50/125 µm dia. fiber cable, terminated in a precision ST ferrule. Actual coupled power values may vary due to alignment procedures and/or receptacle and fiber tolerances.
3. HFE4050-01X/XXX must be heat sinked for continuous I_F > 100 mA operation for maximum reliability (i.e. mounted in a metal connector with thermally conductive epoxy).

ABSOLUTE MAXIMUM RATINGS

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

Storage temperature	-65 to + 150°C
Case operating temperature	-55 to + 125°C
Lead solder temperature	260°C , 10 s
Continuous forward current (heat sinked)	100 mA
Reverse voltage	1 V @ 10 µA

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.

FIBER INTERFACE

Honeywell LEDs are designed to interface with multimode fiber with sizes ranging from 50/125 to 200/230 microns. Honeywell performs final tests using 50/125 micron core fiber. All multimode fiber optic cables between 50/125 and 200/230 should operate with similar excellent performance. See table for typical powers.

TYPICAL COUPLED POWER (µW/dBm) @ I_F= 100 mA

Dia.	Index	N.A.	-013	-014
8/125	Step	---	1.0/-30.0	1.8/-27.5
50/125	Graded	0.20	40/-14.0	70/-11.5
62.5/125	Graded	0.28	88/-10.6	153/-8.1
100/140	Graded	0.29	232/-6.4	406/-3.9

HFE4050-01X/XXX

High Power Fiber Optic LED

ORDER GUIDE

Description	Catalog Listing
Standard screening, typical power out 25 µW	HFE4050-013/XXX
Standard screening, typical power out 33 µW	HFE4050-014/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 203

WARNING

Under certain application conditions, the infrared optical output of this device may exceed Class 1 eye safety limits, as defined by IEC 825-1 (1993-11). Do not use magnification (such as a microscope or other focusing equipment) when viewing the device's output.

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.

Fig. 1 Typical Optical Power Output vs Forward Current

FIBER021.GRA

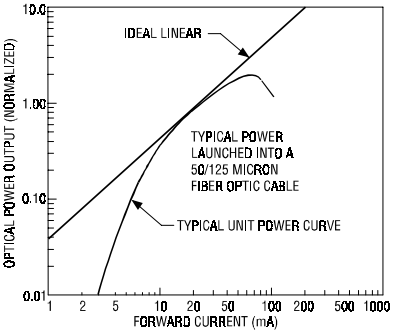
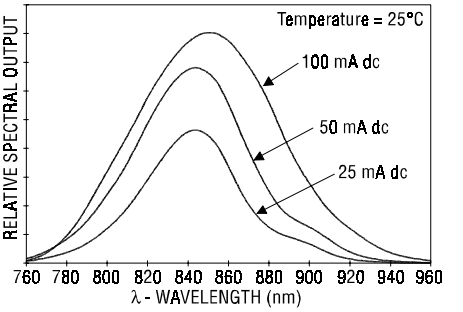


Fig. 2 Typical Spectral Output vs Wavelength

FIBER105.GRA



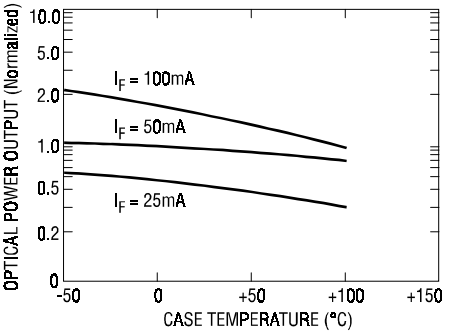
Honeywell

HFE4050-01X/XXX

High Power Fiber Optic LED

Fig. 3 Typical Optical Power Output vs Case Temperature

FIBER023.GRA



All Performance Curves Show Typical Values

HFE4070-313/XXX

High Power Fiber Optic LED

FEATURES

- High power LED sends 115 µW into 100/140 micron fiber
- High speed: 85 MHz
- Optimized for 50 mA operation
- Wave solderable
- Designed to operate with Honeywell fiber optic receivers
- Mounting options
  - SMA single hole
  - ST single hole
  - SMA PCB
  - ST PCB
  - SMA 4 hole

DESCRIPTION

The HFE4070-313/XXX is a high radiance GaAlAs 850 nanometer LED optimized for coupling into small fiber core diameters at a forward current of upto 50 mA. The patented "Caprock"™ LED chip combines high power coupling with wide bandwidth. The peak wavelength is matched for use with Honeywell silicon fiber optic detectors and receivers.

APPLICATION

The HFE4070-313/XXX is a high radiance LED packaged in a fiber optic connector that aligns the optical axis of the base component to the axis of the optical fiber. Data rates can vary from DC to above 85 MHz depending upon component application. The LED converts electrical current into optical power that can be used in fiber optic communications. As the current varies (typically from 10 to 100 mA), the light intensity increases proportionally.

The HFE4070-313/XXX LED provides the maximum amount of radiance for the amount of forward current in the industry. A 0.25 mm diameter glass microlens over the "Caprock"™ junction collimates the light, increasing the intensity. Thus, greater power is directed toward standard fiber optic cables.

HFE4070-313/XXX

High Power Fiber Optic LED

ELECTRO-OPTICAL CHARACTERISTICS (T_C = -40°C to +100°C unless otherwise stated)

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	TEST CONDITIONS
Fiber Coupled Power	P_{OC}					I_F = 50 mA, 50/125 micron, (1) 0.20 NA fiber (2)
HFE4070-313/XXX		10	20		µW	
		-20.0	-17.0		dBm	
Over Temp. Range		7			µW	
		-21.5			dBm	
Forward Voltage	V_F	1.50	1.70	2.1	V	I_F = 50 mA
Reverse Voltage	B_{VR}	1.0	5.0		V	I_R = 10 µA
Peak Wavelength	λ_P	810	850	885	nm	I_F = 50 mA DC
Spectral Bandwidth	$\Delta\lambda$		50		nm	I_F = 50 mA DC
Response Time					ns	1 V Prebias, 100 mA peak
T = 25°C, 10-90%	t_R		6	10		
T = 25°C, 90-10%	t_F		8	10		
Analog Bandwidth	BWE		85		MHz	I_F = 100 mA DC, sinusoidal modulation (2)
P_O Temperature Coefficient	$\Delta P_O/\Delta T$		-0.02		dB/°C	I_F = 50 mA, +40°C < T_A < +100°C
Series Resistance	r_S		4.0		Ω	DC
Capacitance	C		70		pF	V_R = 0 V, f = 1 MHz
Thermal Resistance			250		°C/W	Heat sinked (2)
			500		°C/W	Not heat sinked

Notes

1. HFE4070-313/XXX is tested using a 10 meter length of 100/140 µm dia. fiber cable, terminated in a precision ST ferrule. Actual coupled power values may vary due to alignment procedures and/or receptacle and fiber tolerances.
2. HFE4070-313/XXX must be heat sinked for continuous I_F > 50 mA operation for maximum reliability (i.e. mounted in a metal connector with thermally conductive epoxy).

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
Continuous forward current	50 mA
Continuous forward current (heat sinked)	100 mA
Reverse voltage	1 V @ 10 µA

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.

FIBER INTERFACE

Honeywell LEDs are designed to interface with multimode fiber with sizes ranging from 50/125 to 200/230 microns. Honeywell performs final tests using 50/125 micron core fiber. All multimode fiber optic cables between 50/125 and 200/230 should operate with similar excellent performance. See table for typical powers.

TYPICAL COUPLED POWER (µW/dBm) @ I_F=50 mA

Dia.	Index	N.A.	-313
8/125	Step	---	0.6/-32.0
50/125	Graded	0.20	20/-17.0
62.5/125	Graded	0.28	44/-13.6
100/140	Graded	0.29	116/-9.4

HFE4070-313/XXX

High Power Fiber Optic LED

ORDER GUIDE

Description	Catalog Listing
Standard screening, typical power out 20 µW	HFE4070-313/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 203

WARNING

Under certain application conditions, the infrared optical output of this device may exceed Class 1 eye safety limits, as defined by IEC 825-1 (1993-11). Do not use magnification (such as a microscope or other focusing equipment) when viewing the device's output.

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.

Fig. 1 Typical Optical Power Output vs Forward Current

FIBER021.GRA

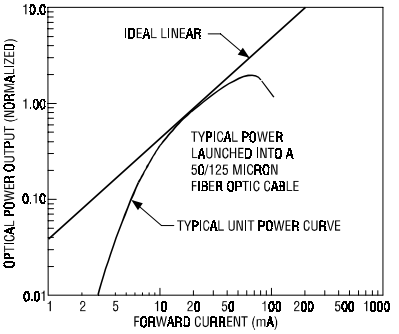


Fig. 2 Typical Spectral Output vs Wavelength

FIBER105.GRA

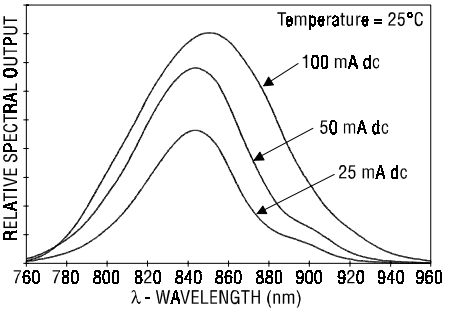
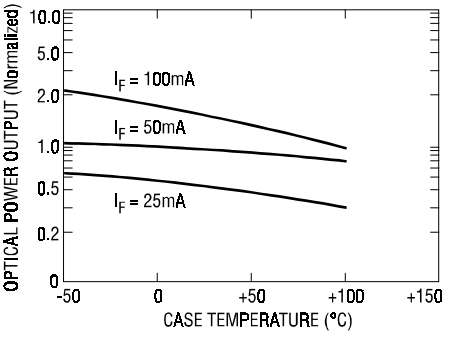


Fig. 3 Typical Optical Power Output vs Case Temperature

FIBER023.GRA



All Performance Curves Show Typical Values

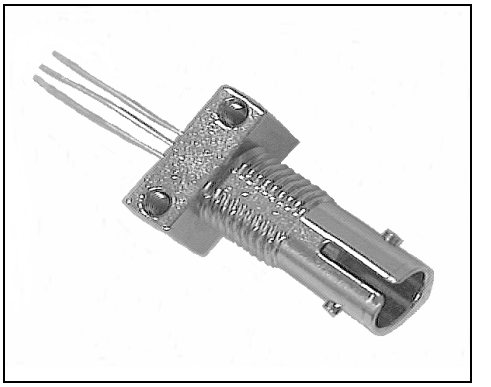
Honeywell

HFE8500-022/XBA

1300 nm SLED

FEATURES

- InGaAsP Surface Emitting LED
- 115 MHz operating bandwidth
- Mounted in industry standard ST*-LP fibre connector



OPHO_229.doc

DESCRIPTION

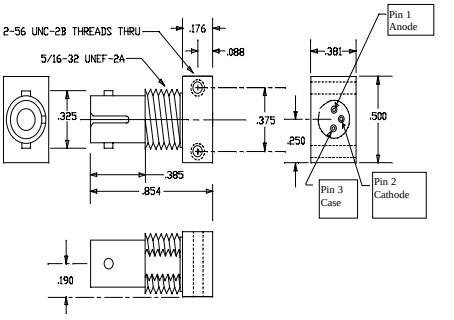
The HFE8500-022/XBA is a high-performance InGaAsP surface emitting LED that offers high coupling powers in 1300 nm fiber optic transmission applications. The LED is mounted in an industry standard low profile ST connector receptacle, optimized for low cost multimode systems where high bandwidth and long distance links are required.

APPLICATION

The HFE8500-022/XBA employs a high speed 1300 nm SLED packaged in a TO-18 metal can and opticaly aligned within a low profile ST connector receptacle. Data rates can vary from DC to 115 MHz depending upon component application. The LED is designed to convert electrical energy into optical output power that can be used in fiber optic communications and other applications. As the drive current varies above the component's threshold the optical output increases proportionally.

The HFE8500-022/XBA is designed to be used with inexpensive silicon or gallium arsenide detectors in 1300 nm multimode applications but can also be used in some singlemode systems.

OUTLINE DIMENSIONS in inches (mm)



ODIM_231.doc

Pin 1 identified by red sleeve

ST is a registered trademark of AT & T.

Honeywell

HFE8500-022/XBA

1300 nm SLED

ELECTRO-OPTICAL CHARACTERISTICS (Tests made at 25°C unless otherwise specified)

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	TEST CONDITIONS
Fiber Coupled Power	P_{OC}	20 -17	30 -15		dBM	I_F = 100 mA (1) 50/125 µm fibre
Forward Voltage	V_F		1.4	1.7	V	I_F = 100 mA
Peak Wavelength	λ_P	1290	1300	1350	nm	
Spectral Bandwidth	$\Delta\lambda$			170	nm	
Response Time -40 < T < +100°C, 10-90% -40 < T < +100°C, 90-10%	 t_R t_F		 2.5 2.5	 4.0 4.0	 ns ns	 I_F = 100 mA, 50% duty cycle, f = 12.5 MHz
Analog Bandwidth	BWE		115		MHz	
P_O Temperature Coefficient	$\Delta P_O/\Delta T$		-0.03		dBm/°C	-40°C to +85°C
Capacitance	C		15	50	pF	f = 100 MHz, V_F = 0 V

Notes

1. This product is tested with a 50/125 micron fiber.

ABSOLUTE MAXIMUM RATINGS

Storage temperature	-40 to +100°C
Case operating temperature	-40 to +70°C
Lead solder temperature	260°C, 10 sec.
Forward current	150 mA
Reverse voltage	2 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.

Honeywell

HFE8500-022/XBA

1300 nm SLED

ORDER GUIDE

Description	Catalog Listing
1300 nm LED	HFE8500-022/XBA

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.