

# HFD3002-002/XXX

## Silicon PIN Photodiode

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### FEATURES

- Low capacitance
- High speed:  $t_r = 30$  ns max. at  $V_R = 5$  V; 10 ns max. at  $V_R = 15$  V
- High responsivity
- Housing electrically isolated
- Wave solderable
- Mounting options
  - SMA single hole
  - ST single hole
  - SMA PCB
  - ST PCB
  - SMA 4 hole

### DESCRIPTION

The HFD3002-002/XXX PIN Photodiode is designed for high speed use in fiber optic receivers. It has a large area detector, providing efficient response to 50 - 1000  $\mu$ m diameter fibers at wavelengths of 650 to 950 nanometers. The HFD3002-002/XXX is comprised of an HFD3002 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 HFD3002-002/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.

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### ELECTRO-OPTICAL CHARACTERISTICS (T<sub>C</sub> = 25°C unless otherwise stated)

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	TEST CONDITIONS
Peak Response Wavelength	$\lambda_P$		850		nm	
Flux Responsivity <sup>(1)</sup>	R				A/W	$\lambda = 850 \text{ nm}$ 50 $\mu\text{m}$ core fiber, 0.20 $\mu\text{A}$ 100 $\mu\text{m}$ core fiber, 0.28 $\mu\text{A}$ 200 $\mu\text{m}$ core fiber, 0.40 $\mu\text{A}$ 1000 $\mu\text{m}$ core fiber, 0.53 $\mu\text{A}$
		0.45	0.6			
			0.6			
			0.55			
			0.30			
Dark Leakage Current	$I_D$		0.05	2	nA	$V_R = 5 \text{ V}$
Reverse Breakdown Voltage	$B_{VR}$	110	250		V	$I_R = 10 \text{ mA}$
Package Capacitance	C		1.4		pF	$V_R = 5 \text{ V}, f = 1 \text{ MHz}$
Rise Time	$t_R$				ns	
10-90%			17	30		$V_R = 5 \text{ V}$
			5	10		$V_R = 15 \text{ V}$
			1			$V_R = 90 \text{ V}$
Field of View	FoV		85		Degrees	

#### Notes

1. Responsivity is measured with a fiber optic cable centered on the mechanical axis, using an 850 nm LED as the optical source to the fiber.

### ABSOLUTE MAXIMUM RATINGS

(T<sub>case</sub> = 25°C unless otherwise noted)

Storage temperature	-65 to +150°C
Operating temperature	-55 to +125°C
Lead solder temperature	260°C for 10 s
Case/cathode (anode) voltage	110 V
Power dissipation	200 mW
Reverse voltage	110 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 reserves the right to make changes in order to improve design and supply the best products possible.

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## Silicon PIN Photodiode

### ORDER GUIDE

Description	Catalog Listing
Standard silicon PIN photodiode	HFD3002-002/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 Rise/Fall Time vs Reverse Bias Voltage

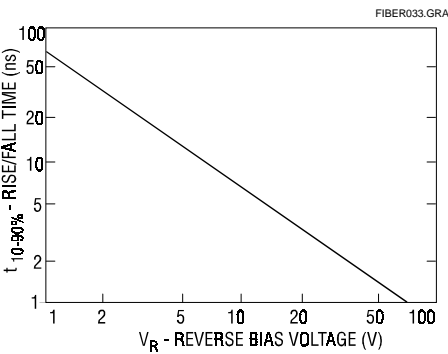
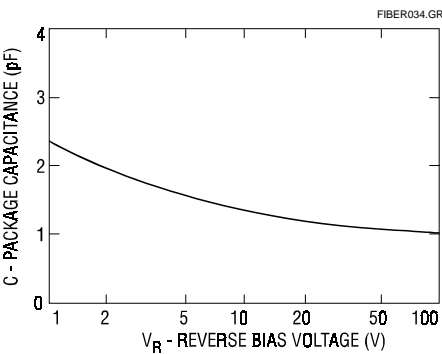


Fig. 2 Package Capacitance vs Reverse Bias Voltage



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Fig. 3 Spectral Responsivity

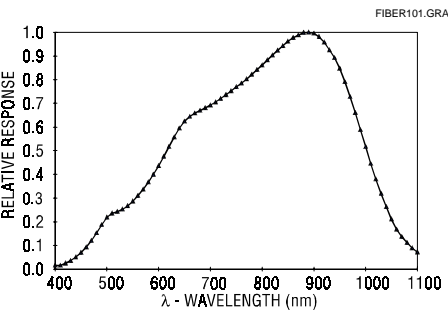


Fig. 4 Dark Leakage Current vs Temperature

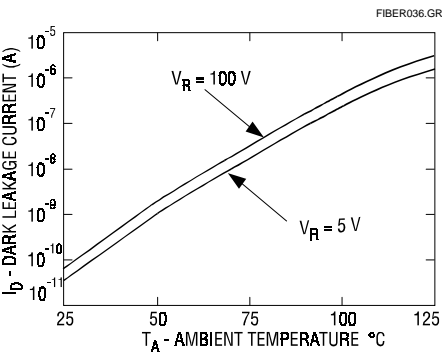
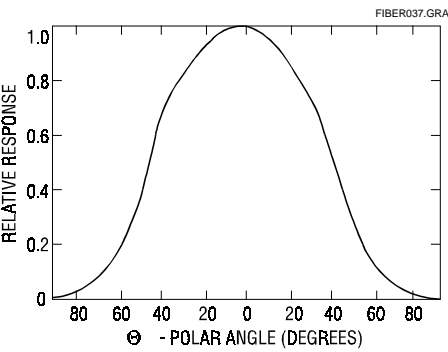


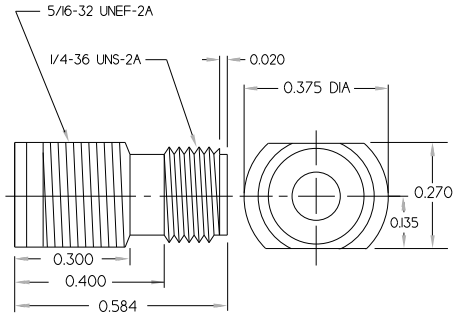
Fig. 5 Angular Response



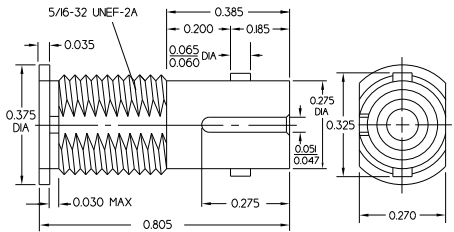
# European Connectorized Receivers

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

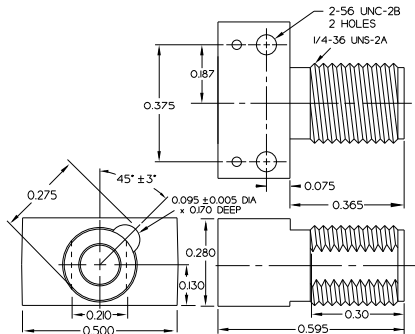
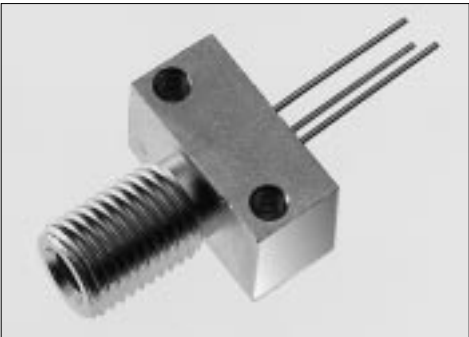
## SMA SINGLE HOLE MOUNTING (REF.: AAA)



## ST SINGLE HOLE MOUNTING (REF.: BAA)



## SMA PCB MOUNTING (REF.: ABA)



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## ST PCB MOUNTING (REF.: BBA)

