

HFD3854

Silicon PIN Photodiode

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
- Industry standard ST®-LP fiber connector
- Housing electrically isolated
- Wave solderable



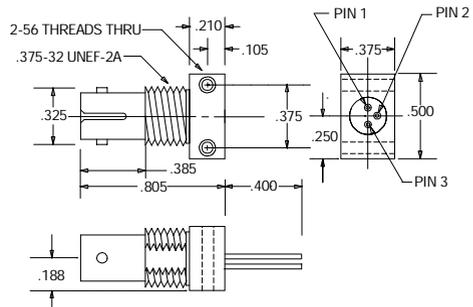
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DESCRIPTION

The HFD3854 PIN Photodiode is designed for high speed use in fiber optic receivers. It has a large area detector, providing efficient response to 50 - 1000 mm diameter fibers at wavelengths of 650 to 950 nanometers. The HFD3854 is comprised of an HFD3002 PIN photodiode which is mounted in a low profile ST® fiber optic connector. The ST® connector housing aligns the component's optical axis with the axis of the optical fiber.

The HFD3854s case is electrically isolated from the anode and cathode terminals to enhance the EMI/RFI shielding which increases the sensitivity and speed. The metal ST® housing acts as a shield for the PIN photodiode component.

OUTLINE DIMENSIONS in inches (mm)



FIBER103.DIM

Pinout

1. Anode (P type)
2. Cathode (N type)
3. Ground

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

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	TEST CONDITIONS
Peak Response Wavelength	λ_P		850		nm	
Flux Responsivity ⁽¹⁾	R	0.45	0.6		A/W	$\lambda = 850$ nm 50 μ m core fiber, 0.20 μ A 100 μ m core fiber, 0.28 μ A 200 μ m core fiber, 0.40 μ A 1000 μ m core fiber, 0.53 μ A
			0.55			
			0.30			
Dark Leakage Current	I _D		0.05	2	nA	V _R = 5 V
Reverse Breakdown Voltage	B _{VR}	110	250		V	I _R = 10 mA
Package Capacitance	C		1.4		pF	V _R = 5 V, f = 1 MHz
Rise Time	t _R				ns	
10-90%			17	30		V _R = 5 V
			5	10		V _R = 15 V
			1			V _R = 90 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_{case} = 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.

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ORDER GUIDE

Description	Catalog Listing
Standard silicon PIN photodiode	HFD3854-002

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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Fig. 1 Rise/Fall Time vs Reverse Bias Voltage

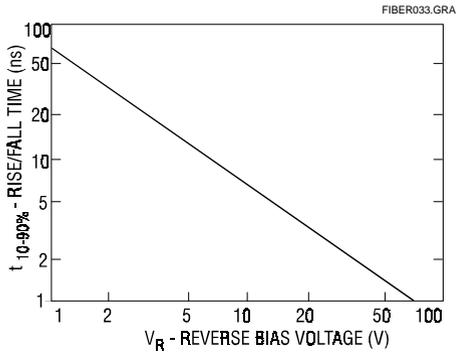


Fig. 2 Package Capacitance vs Reverse Bias Voltage

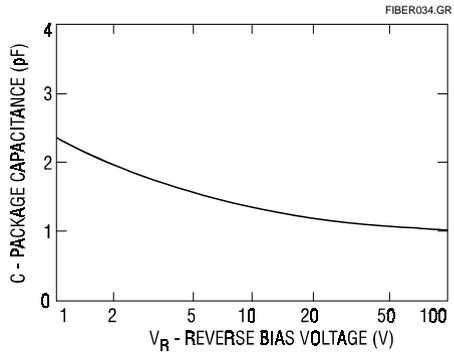


Fig. 3 Spectral Responsivity

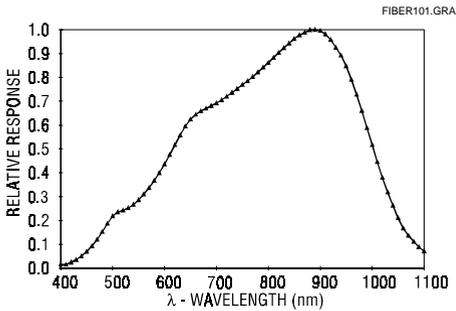


Fig. 4 Dark Leakage Current vs Temperature

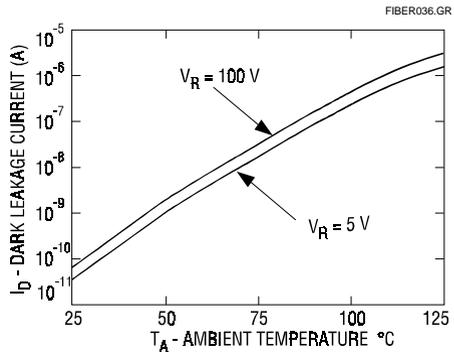
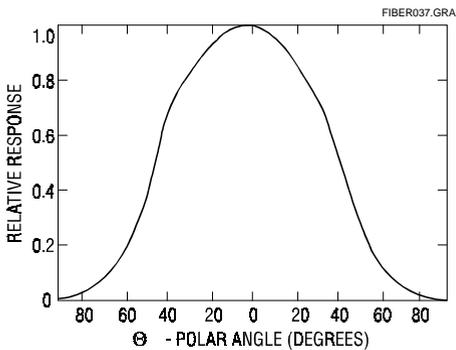


Fig. 5 Angular Response



Honeywell reserves the right to make changes in order to improve design and supply the best products possible.

Honeywell