

FND-100GH

Ultra-Fast PIN Photodiode



Key Features

- Large Active Area
- Wide Spectral Range
- Low Noise Equivalent Power
- High Responsivity
- Ultra-Fast Rise and Fall Time
- Isolated Photodiode Chip

Applications

- Laser detection systems
- Laser power control systems
- Fast pulse detection in semiconductor inspection systems
- Instrumentation
- High speed switching

Overview

The FND-100GH is a Large-Area Silicon PIN photodiode with a 2.5 mm active diameter in a hermetically sealed TO-5 package with a glass window. This photodiode provides high responsivity from 400 nm to 1150 nm, with a peak responsivity at 920 nm. Along with a fast rise and fall time of <1 ns, the high responsivity and low NEP makes this diode ideal for many fast pulse instrumentation applications.

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All specifications are referring to an ambient temperature of $T_A = 23\text{ °C}$ and typical V_{op} , unless otherwise specified.

Table 1: Key parameters

Parameter	Symbol	Minimum	Typical	Maximum	Units
Operating Voltage	V_{op}	0	90	100	V
Spectral Range	$\Delta\lambda$	400		1150	nm
Bandwidth ¹ @ $R_{load} = 50\ \Omega$	f_{3dB}		350		MHz
Responsivity @850 nm	R_{850}	0.5	0.6		A/W

Table 2: Electrical Specifications

Parameter	Symbol	Minimum	Typical	Maximum	Units
Rise Time / Fall Time @ $R_{load} = 50\ \Omega$	t_r / t_f		<1		ns
Breakdown voltage ²	V_{BD}	125	150		V
Capacitance	C_d		8.5	10	pF
Dark current	I_d		10	25	nA
Series resistance			20		Ω
Noise current	i_n		60	90	fA/√Hz
Noise Equivalent Power ³	NEP		0.10	0.18	pW/√Hz

Table 3: Opto-mechanical Specifications

Parameter	Symbol	Minimum	Typical	Maximum	Units
Active area	A		5.1		mm ²
Field of View ⁴					
Nominal field of view $\alpha/2$	FoV		0		°
Nominal field of view $\alpha'/2$			74		

Note 1: As estimated by $t_{r/f} = \frac{0.35}{f_{3dB}}$.

Note 2: Breakdown voltage measured at 100 μ A reverse current.

Note 3: The NEP is specified in dark conditions as $NEP = \frac{i_n}{R(\lambda)}$.

Note 4: $\alpha/2$ angle limited by internal aperture.

Table 4: Absolute Maximum Ratings

Parameter	Symbol	Value	Units
Storage Temperature	T_S	-40 ... 125	°C
Operating Temperature	T_{Op}	-40 ... 125	°C

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Figure 1: Typical Responsivity

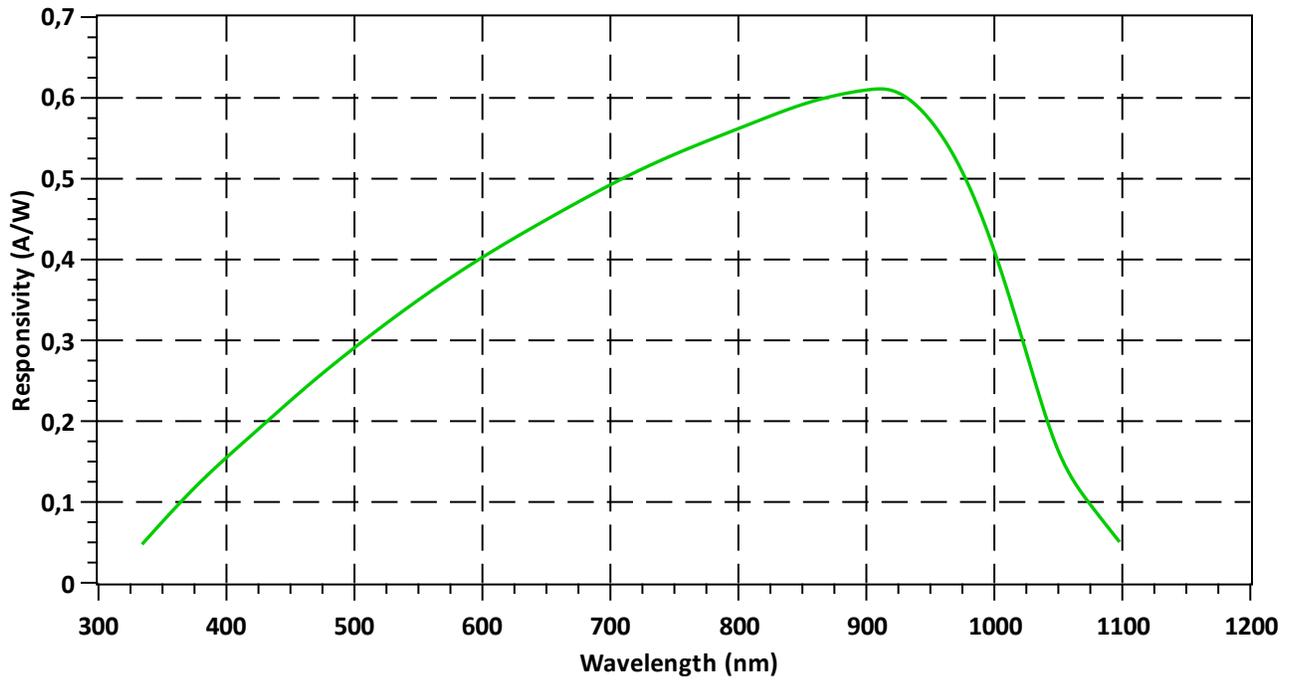
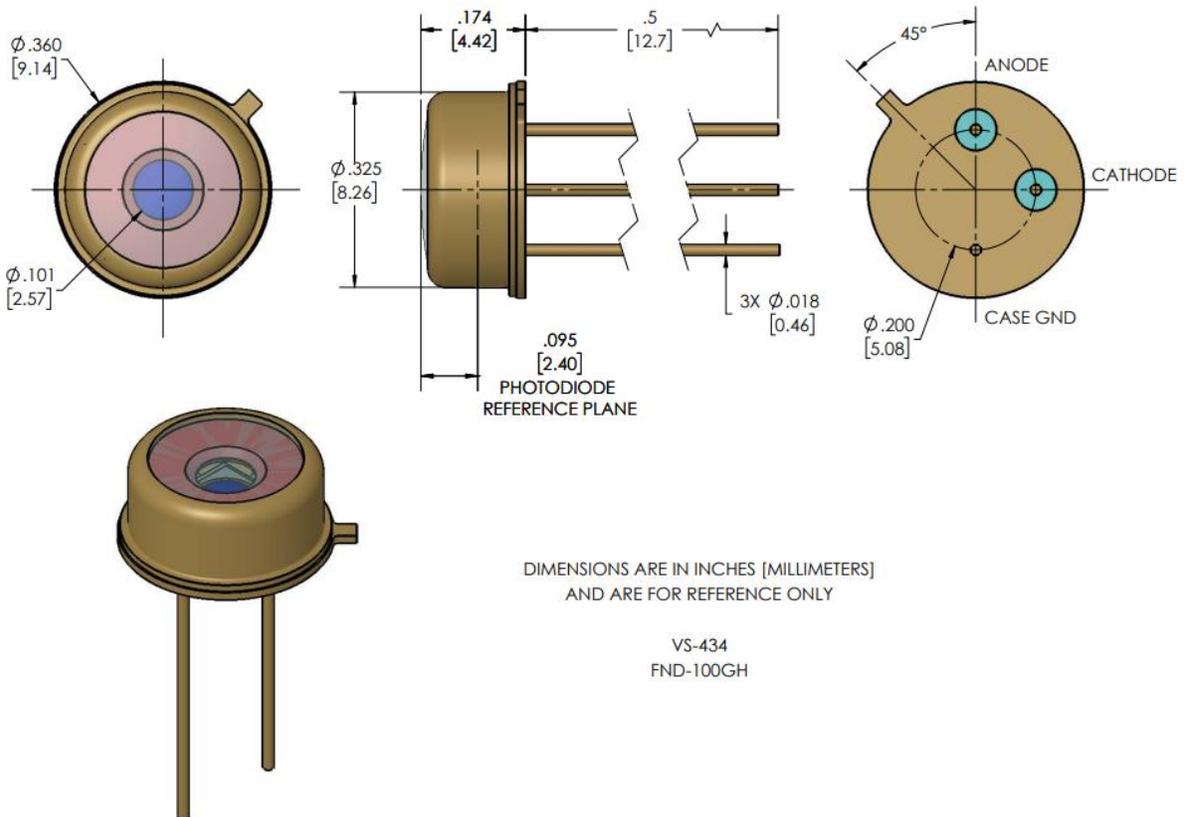


Figure 2: Dimensions



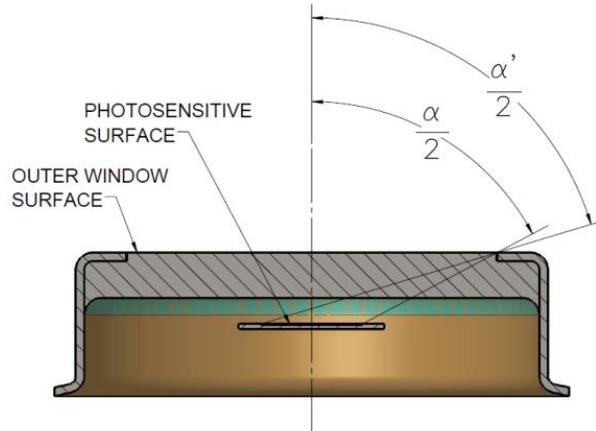
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Figure 3: Approximate Field of View

For incident radiation at angles $\leq \alpha/2$, the photosensitive surface is totally illuminated.

For incident radiation at angles $> \alpha/2$, but $\leq \alpha'/2$, the photosensitive surface is partially illuminated.



VS-383

Testing Methods

Our quality standard includes visual inspection during fabrication and removal of failed dies.

Excelitas Technologies meets the certification requirements of ISO-9001 and design criteria to meet MIL-STD-883 and/or MIL-STD-750 specifications.

Packaging and Shipping

Parts are shipped in sealed plastic trays.

RoHS Compliance

This series of APD diodes is fully compliant with the European Union Directive on restrictions of the use of certain hazardous substances in electrical and electronic equipment.



Warranty

A standard 12-month warranty following shipment applies.

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About Excelitas Technologies

Excelitas Technologies is a global technology leader focused on delivering innovative, customized solutions to meet the lighting, detection, and other high-performance technology needs of OEM customers.

Excelitas has a long and rich history of serving our OEM customer base with optoelectronic sensors and modules for more than 45 years beginning with PerkinElmer, EG&G, and RCA. The constant throughout has been our innovation and commitment to delivering the highest quality solutions to our customers worldwide.

From aerospace and defense to analytical instrumentation, clinical diagnostics, medical, industrial, and safety and security applications, Excelitas Technologies is committed to enabling our customers' success in their specialty end-markets. Excelitas Technologies has approximately 7,000 employees in North America, Europe, and Asia, serving customers across the world.

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