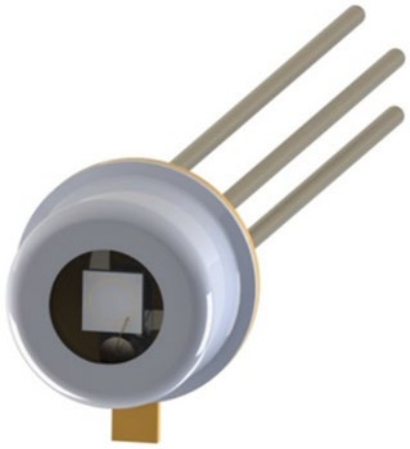
Ge Avalanche Photodiode (APD)

1.7µm cutoff wavelength
40µm dia. active area



APPLICATIONS

- Optical Time Domain Reflectometer
- Infrared Sensing
- Optical Communication
- Short Haul Telecom/Datacom Receivers
- Photon Counting

AVAILABLE OPTIONS

- Small Diameter (40µm)
- 800nm to 1700nm Spectral Response
- Linear and Geiger Mode Operation
- High Sensitivity
- Fiber Pigtail (Single or Multi Mode) including Hi-Reliability Pigtail
- Thermoelectric Cooling Available
- Packages (TO-46 and sub-mount)

SPECIFICATIONS

Ge Avalanche Photodiode (APD)

Part Number	GAV004-T46	Units
Optoelectronic Characteristics @ 23 ºC ± 2 ºC		
Active Diameter	40	µm
Spectral Response Range	0.8-1.7	µm
Responsivity @ M=1 @ 1.3µm (min/typ)	0.76/0.84	A/W
I_{DARK} @ 0.9V_b (typ/max)	0.1/0.2	µA
Quantum Efficiency (peak) (min/typ)	72/80	%
Breakdown Voltage, V_{BR} (I_d=100µA) (min/typ/max)	20/30/40	V
Capacitance @ 20V (typ/max)	0.8/1.0	pF
V_{BR} temperture coefficient (typ)	0.1	%/°C
Multiplied Dark Current @ M=1 (typ)	12	
Cutoff Frequency (-3dB) (min/typ)	1.5/2.0	GHz
Excess Noise Figure @ BW=1MHz, M=10, I_{ph}=2µA (typ)	0.95	
Excess Noise Factor, @ 1.3µm, F=300MHz (typ)	9	
Maximum Ratings @ 23 °C ± 2 °C		
Storage Temperture	-40 to 85	°C
Operating Temperture	-10 to 60	°C
Reverse Current	0.4	mA
Forward Current	80	mA

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PACKAGING CAPABILITIES

Packaging Configurations Options			
Part number	**Diameter**	**TO-46**	**Ceramic Submount**
GAV004-XX	40µm	•	•
Window (Other Options Available)			
Molder Clear Glass	AR Coated Ball Lens	Single or Multi Mode Fiber	Aperture Cap

GPD QUALIFICATIONS

Our compliance, certificates, and capabilities

- ✓ **ISO 9001:2005**
- ✓ **Quality Assurance Provisions**
- ✓ **DDTC/ITAR registered**
- ✓ **MIL-STD-883**
- ✓ **MIL-STD-750**
- ✓ **Space-qualified designs**
- ✓ **High-reliable assembly and environmental/ radiation test**
- ✓ **Manufactured in Salem, NH**

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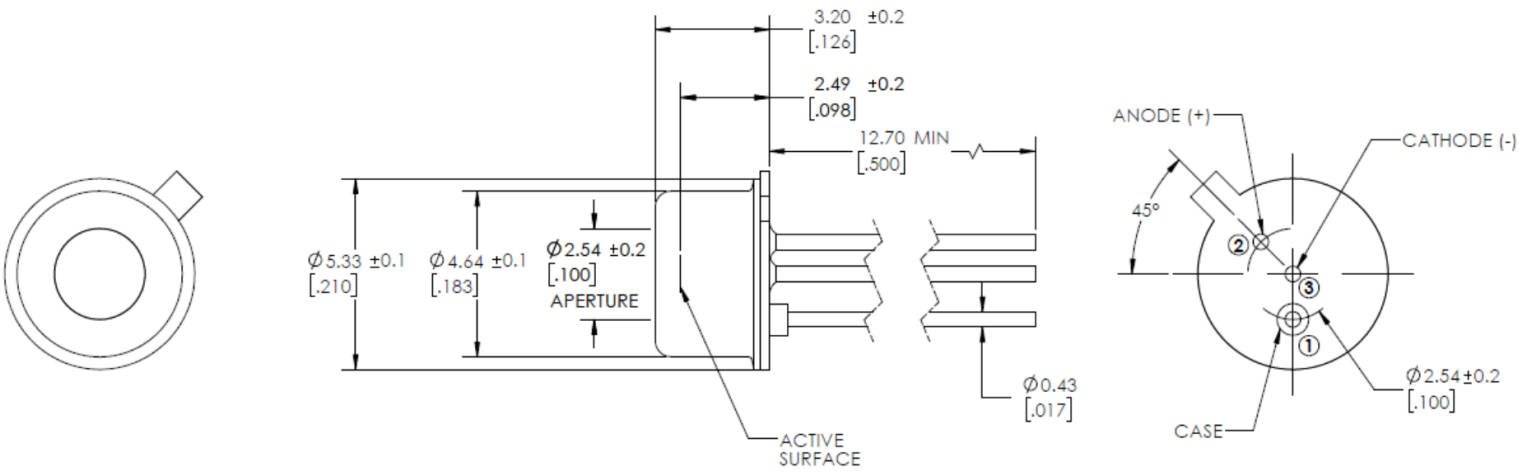
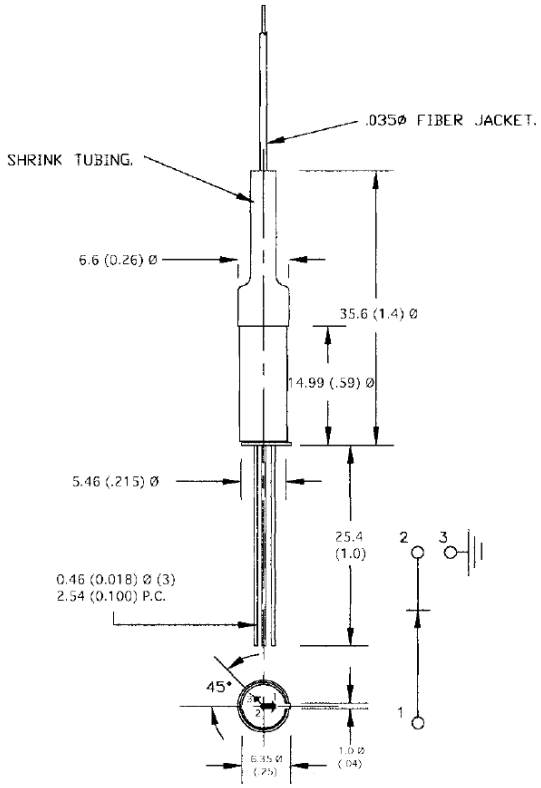
Packaging Outline

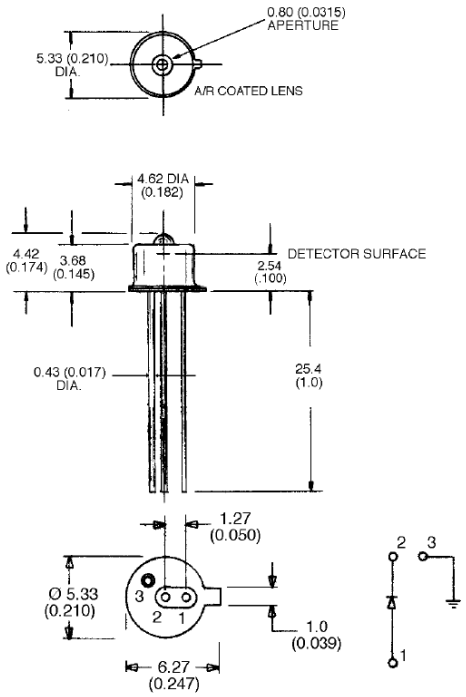
TO-46



TO-46 SM Pigtail



TO-46 AR Coated Lens



DIMENSIONS IN MM [INCH]

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GPD OPTOELECTRONICS

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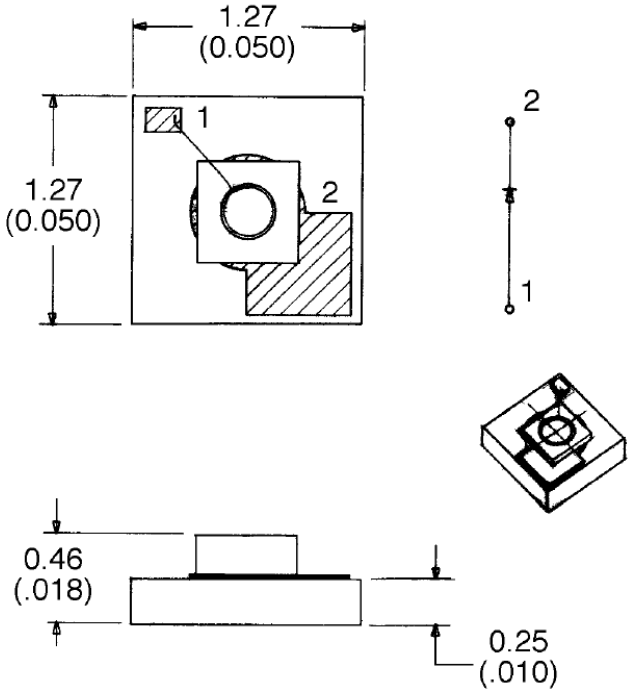
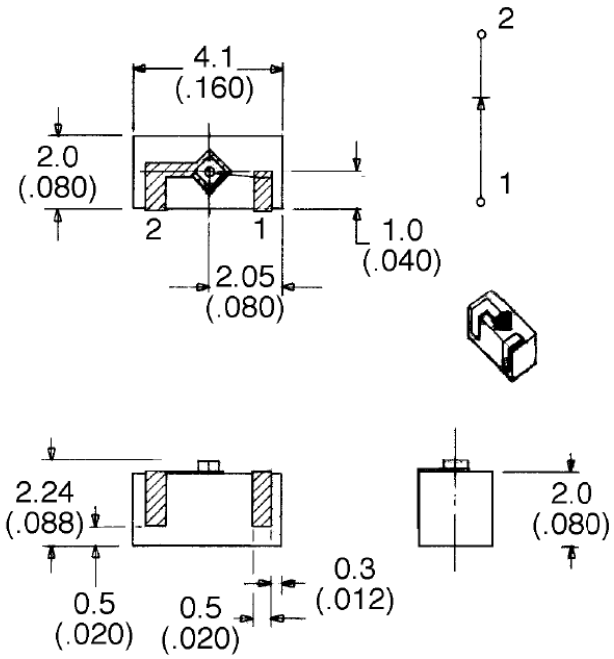
Packaging Outline

Ceramic Sub Mount (1)



Ceramic Sub Mount (2)



DIMENSIONS IN MM [INCH]

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ORDERING INFORMATION

GPD is proud to offer multiple packaging solutions to best fit the needs of your application. Our Standard configurations are mentioned below, and custom packaging is also available.

Selection is based on the size of the photodiode and the package requirements of your application. Refer to packaging capabilities chart below for more information.

GAV004-T46BL

Material	
IAV	1.7um InGaAs
GAV	Germanium

Diameter	
004	40µm

Package*	
T46	TO-46
CS	Ceramic Substrate
*More packages available upon request	

Window & Cap*	
BL	Ball Lens
BG	Borosilicate Glass
S9	Single Mode Fiber
*More windows & caps available upon request	

NOTE: GPD Optoelectronics may update product details without prior notice, and any use or application of our products is at your own discretion.

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Handling and Processing Precautions

Electrostatic Discharge (ESD) Warning

Our detectors are highly susceptible to damage from electrostatic discharge (ESD). To prevent damage, use ESD protective measures, such as grounding straps, when unpacking and handling these devices.

To guarantee the optimal performance of a photodiode, it is crucial to adhere strictly to the device's electrical specifications. Photodiodes are highly sensitive to values that surpass their absolute maximum ratings. Exceeding these limits can lead to damage or total failure of the device. Users should employ handling techniques that avoid electrostatic discharges and other electrical surges during both the handling and operation of these devices.

Cleanroom Packaging and Handling

Our detectors are packaged in a clean state under cleanroom conditions, eliminating the need for cleaning before processing. In fact, cleaning is not recommended as it may introduce contaminants.

Processing Guidelines

To maintain the cleanliness of our detectors:

- Process under the cleanest conditions possible, including clean workplaces and room air.
- Wear suitable gloves or fingerstalls to prevent fingerprint contamination (mainly fats and organic acids).
- Ensure the soldering process is designed to prevent the need for post-soldering cleaning.

Cleaning Optical Windows (if necessary)

If exceptional circumstances require cleaning the optical windows:

- First, identify the type of contamination.
- For loose particles, gently blow them off with nitrogen gas or clean, dry air.
- For attached particles or other contaminating materials, clean with solvents such as isopropyl alcohol, or First Contact™ Polymer

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