

APPLICATIONS

- LiDAR
- Free space optics
- High-sensitivity photometry
- Optical time domain reflectometry
- Optical communication

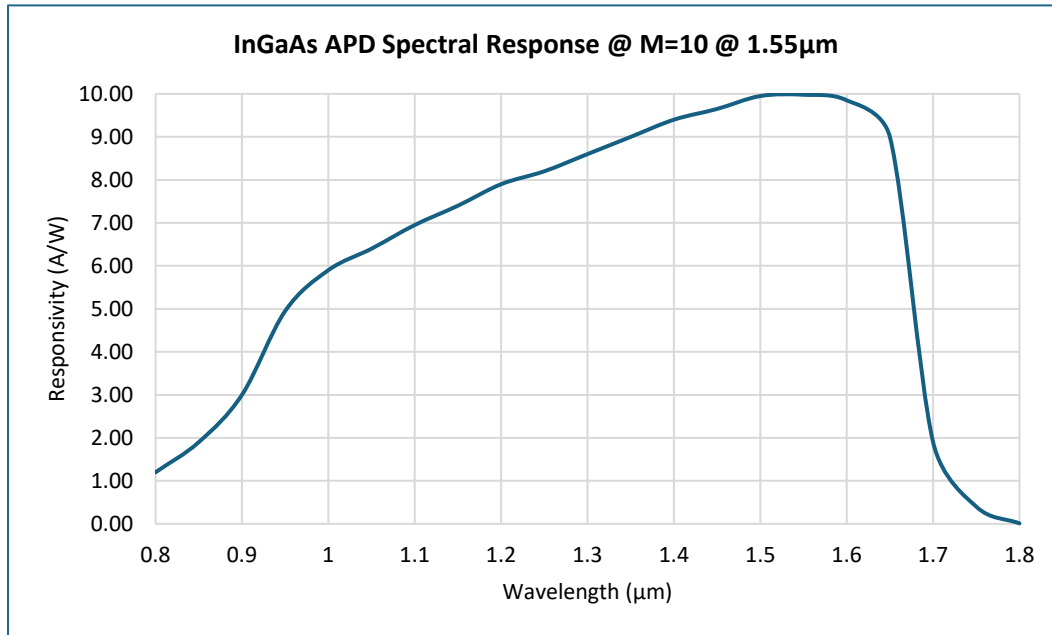
AVAILABLE OPTIONS

- Chip active diameters from 80 to 350 μm
- Low capacitance for high speed
- Fiber pigtail available (single-mode or multi-mode)
- Package flexibility (TO packages and ceramic sub mounts, with ball lens option)

SPECIFICATIONS

InGaAs Avalanche Photodiodes (APD)

Part Number	IAV008-T46	IAV020-T46	IAV035-T46	Units
Optoelectronic Characteristics @ 23 °C \pm 2 °C				
Active Diameter	80	200	350	μm
Spectral Response Range	1.0-1.63	1.0-1.63	1.0-1.63	μm
Responsivity @ M=1 @ 1.55 μm (min/typ/max)	0.85/0.90/0.95	0.85/0.94/1.05	0.85/0.90/0.95	A/W
I_{DARK} @ M=10 (typ/max)	4/15	8/25	30/250	nA
Operating Voltage, V_R @ M=10 (min/typ/max)	43/55/70	43/55/70	37/52/68	V
Breakdown Voltage, V_{BR} ($I_d=10\mu\text{A}$) (min/typ/max)	40/65/80	50/63/75	45/60/75	V
Capacitance @ M=10 (typ/max)	0.38/0.45	1.8/2.2	3.2/4.0	pF
V_{BR} temperature coefficient (typ)	0.06	0.075	0.075	V/°C
Bandwidth @ M=5 (typ)	2.5	1.5	0.6	GHz
Bandwidth @ M=10 (typ)	1.5	1.5	0.6	GHz
Bandwidth @ M=20 (typ)	2.2	1	0.6	GHz
Excess Noise Factor, F @ M=10 (typ/max)	3.2/3.7	3.2/3.7	3.2/3.7	
Excess Noise Factor, F @ M=20 (typ/max)	5.5/6.0	5.5/6.0	5.5/6.0	
Noise Equivalent Power @ M=10 (typ/max)	10/40	32/100	80/100	fW/Hz ^{1/2}
Package	TO-46 window cap	TO-46 window cap	TO-46 window cap	
Maximum Ratings @ 23 °C \pm 2 °C				
Storage Temperature	-40 to 85	-40 to 85	-40 to 85	°C
Operating Temperature	-40 to 70	-40 to 70	-40 to 70	°C
Reverse Current	1	1	1	mA
Forward Current	10	10	10	mA
Optical Input Density (10ns pulse width)	200	200	200	kW/cm ²
Optical Input (ave)	1	1	1	mW



PACKAGING CAPABILITIES

Packaging Configurations Options						
Part number	Diameter	TO-46 Header		Ceramic Submount	Ceramic Package	Ceramic Wrap Around
		2 pin	3 pin			
IAV008-T46	80 μ m		•	•		
IAV020-T46	200 μ m	•	•		•	
IAV035-T46	350 μ m	•	•	•		•
Window (Other Options Available)						
	Molder Clear Glass	Ball Lens	AR Coated Ball Lens	Single Mode Fiber	Aperture Cap	

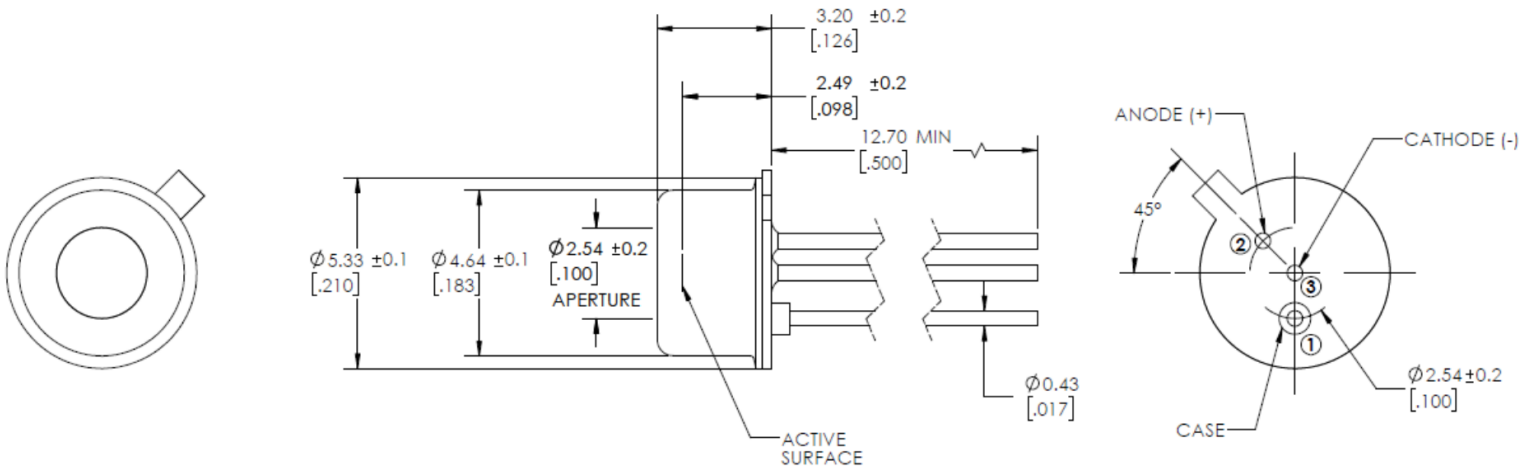
GPD QUALIFICATIONS

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

Packaging Outline

TO-46



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.

IAV008-T46BL

Material	
IAV	1.7 μ m InGaAs
GAV	Germanium

Diameter	
008	80 μ m
200	200 μ m
350	350 μ m

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

Package*	
T46	TO-46
CS	Ceramic Substrate
*More packages 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.

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