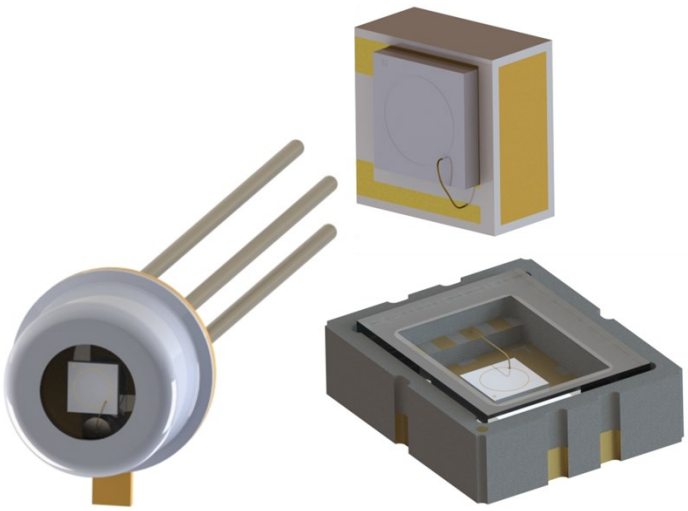
Large Area InGaAs Photodiodes

1.7μm cutoff wavelength

1 - 5 mm dia. active areas



APPLICATIONS

- Optical Power Measurement
- Spectroscopy
- Optical Testing
- Medical Diagnostics
- Fiber Optic receivers
- Free-Space Communication

AVAILABLE OPTIONS

- Through-Hole and Ceramic SMT Packaging
- Extended Wavelengths to 2.6 μm
- High Quantum Efficiency
- Custom Lenses, Filters, and Anti-Reflective Coatings
- Fiber-Optic Packaging
- Devices to 10 mm
- Integrated Electronics:
  - Thermo-Electric Cooler
  - Transimpedance Amplifier

Specifications

Large Area InGaAs Photodiodes

Part Number	N17S100-XX	N17S150-XX	N17S200-XX	N17L200-XX	N17S300-XX	N17L300-XX	N17S500-XX	Units
Optoelectronic Characteristics @ 23 ºC ± 2 ºC								
Active Diameter	**1**	**1.5**	**2**	**2** (Low Capacitance)	**3**	**3** (Low Capacitance)	**5**	mm
Spectral Response Range	800-1700	800-1700	800-1700	800-1700	800-1700	800-1700	800-1700	nm
Peak Wavelength (typ)	1550	1550	1550	1550	1550	1550	1550	nm
Responsivity @ 850 nm (min/typ)	0.2/0.35	0.2/0.35	0.2/0.35	0.2/0.35	0.25/0.35	0.25/0.35	0.2/0.35	A/W
Responsivity @ 1300 nm (min/typ)	0.85/1.0	0.85/1.0	0.85/1.0	0.85/1.0	0.85/1.0	0.85/1.0	0.85/1.0	A/W
Responsivity @ 1550 nm (min/typ)	0.93/1.1	0.9/31.1	0.93/1.1	0.93/1.1	0.93/1.1	0.93/1.1	0.93/1.1	A/W
R_{SHUNT} @ 10 mV (min/typ)	50/180	10/50	5/30	5/30	5/15	5/15	2/10	MΩ
I_{DARK} @ V_R (typ/max)	1/8 @ 5 V	0.8/10 @ 1 V	3/10 @ 2 V	3/10 @ 2 V	5/15 @ 1 V	3/15 @ 5 V	10/200 @ 0.5 V	nA
Capacitance @ 0 V (max)	250	375	800	500	1600	660	4000	pF
Capacitance @ V_R (max)	110 @ 5 V	250 @ 1 V	300 @ 3 V	200 @ 3 V	700 @ 2 V	400 @ 5 V	Not Available	pF
NEP @ λ_{PEAK} @ 0 V (typ)	12	16	25	25	30	40	40	fW/√Hz
Linearity (± 0.2 dB) @ 0 V (min/typ)	6/8	6/8	6/8	6/8	6/8	6/8	6/8	dBm
Storage Temperature	-40 to 125	-40 to 125	-40 to 125	-40 to 125	-40 to 125	-40 to 125	-40 to 125	°C
Operating Temperature	-40 to 85	-40 to 85	-40 to 85	-40 to 85	-40 to 85	-40 to 85	-40 to 85	°C
Maximum Ratings @ 23 °C ± 2 °C								
Reverse Voltage	15	5	5	5	5	5	3	V
Reverse Current	10	10	10	10	10	10	10	mA
Forward Current	10	10	10	10	10	10	10	mA

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Figure 1. InGaAs Response vs. Wavelength vs. Temperature

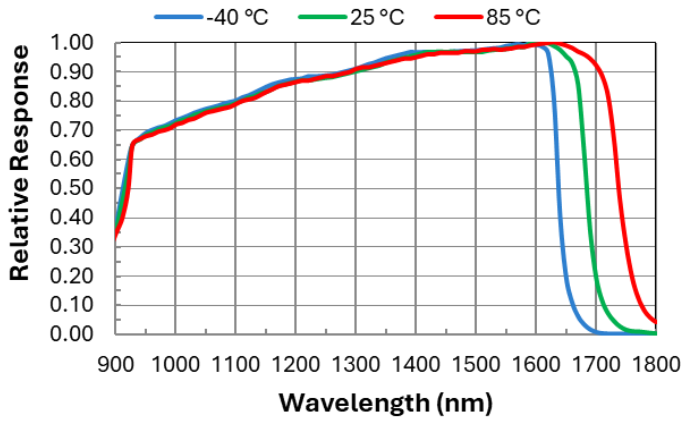


Figure 2. InGaAs Response vs. Wavelength vs. Temperature (Cont.)

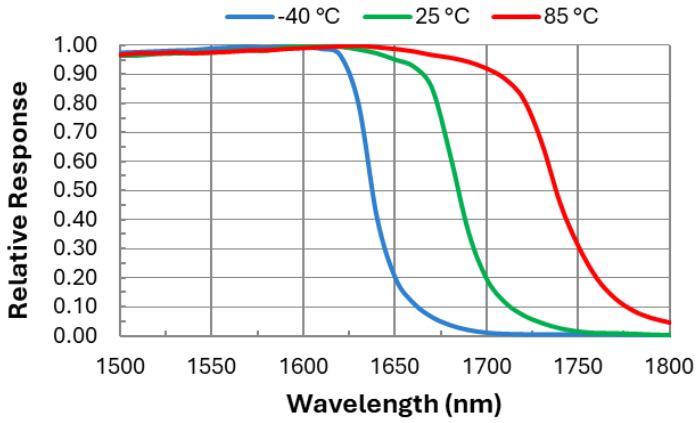


Figure 3. Dark Current vs. Reverse Voltage vs. Diameter

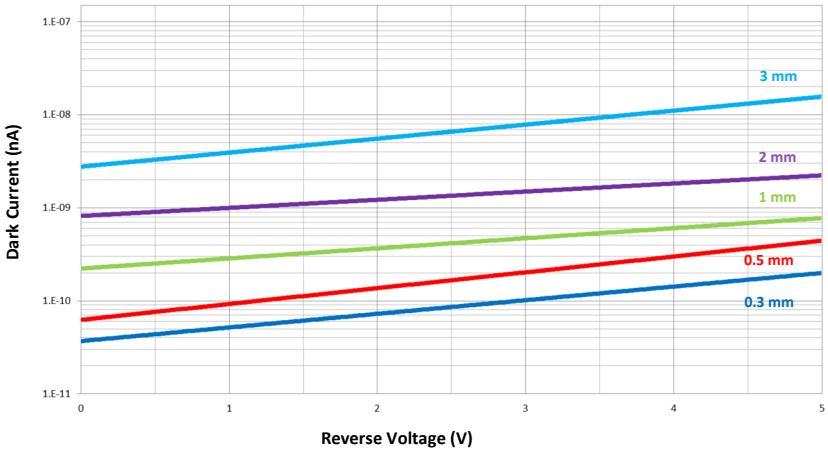
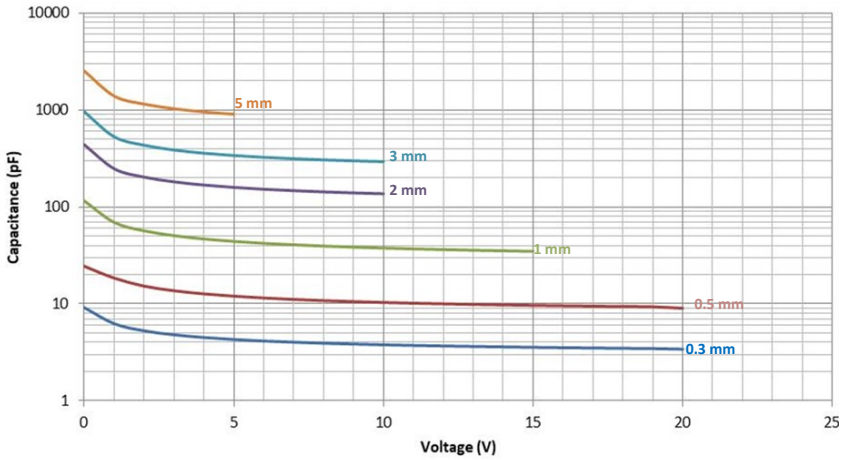


Figure 4. Capacitance (pF) vs. Reverse Voltage (V) vs. Diameter (mm)



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Packaging Capabilities

Packaging Configurations							
Diameter (mm)	TO Headers				Ceramic Leadless Chip Carriers		
	TO-46	TO-18	TO-5	TO-8	LCC-6	LCC-28	BNC
1	•	•	•		•		
1.5	•	•	•		•		
2			•		•		
3			•			•	•
5			•	•		•	•
Window (Other Options Available)							
Material	Molded Clear Glass				Borosilicate Glass		
Thickness (mm)	0.25				0.5		

GPD QUALIFICATIONS

Our compliance, certificates, and capabilities

- ✓ ISO 9001:2015
- ✓ Quality Assurance Provisions
- ✓ DDTC/ITAR registered
- ✓ MIL-STD-883
- ✓ MIL-STD-750
- ✓ Space-qualified designs
- ✓ High-reliability assembly and environmental/ radiation test
- ✓ Manufactured in Salem, NH

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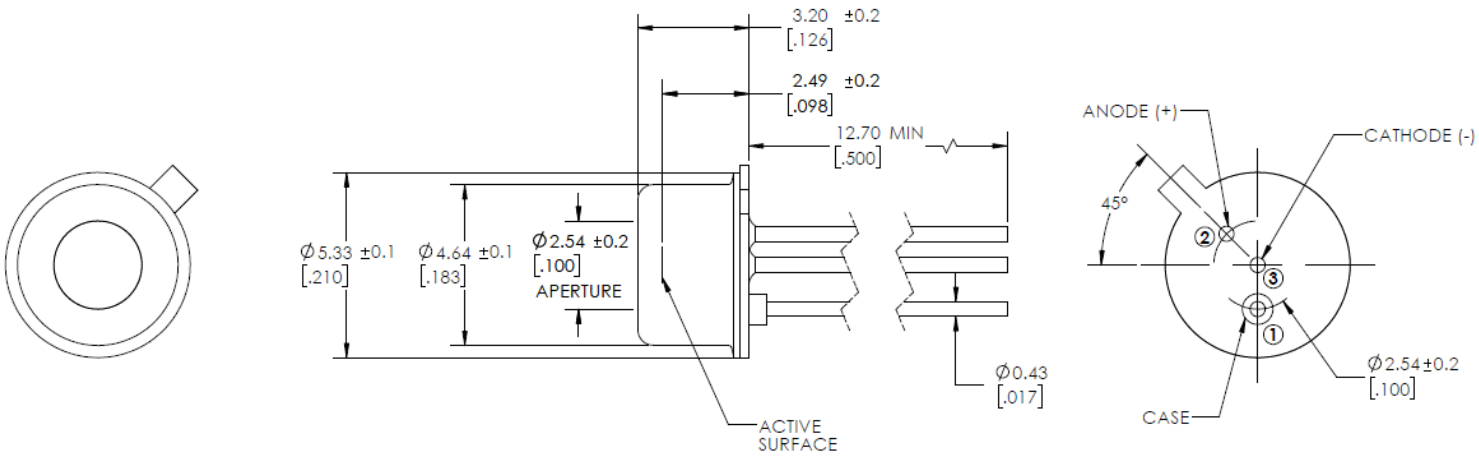
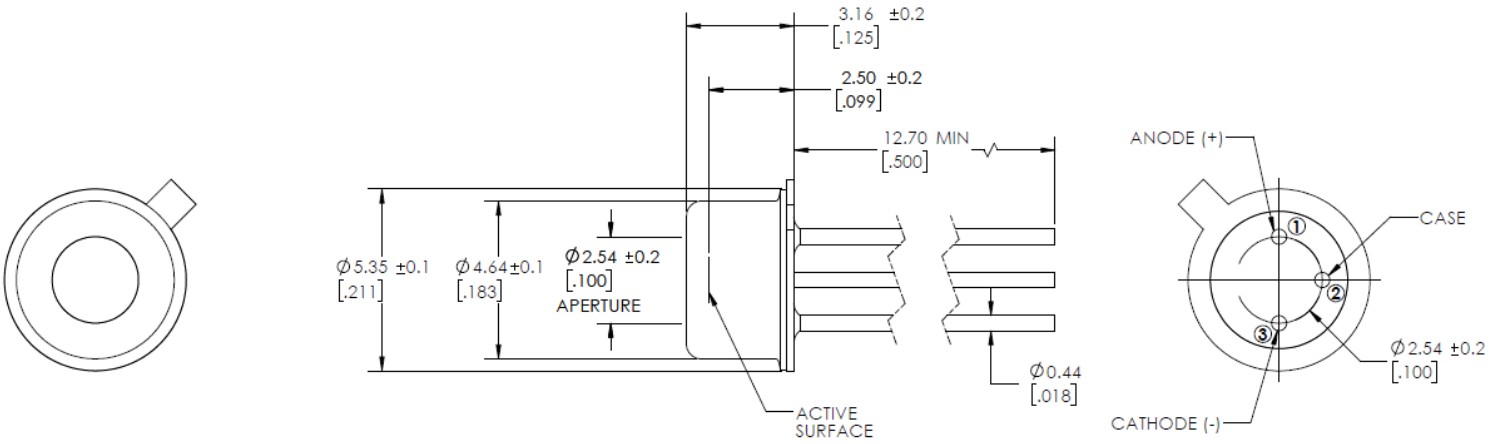
Package Outlines

TO-46



TO-18



DIMENSIONS IN MM [INCH]

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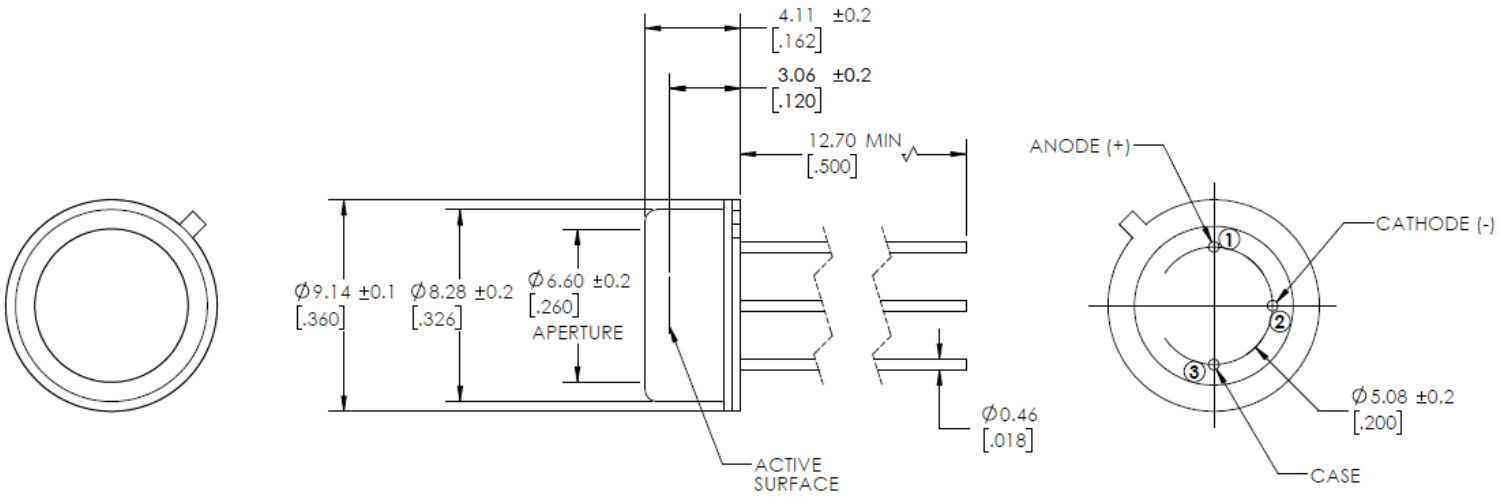
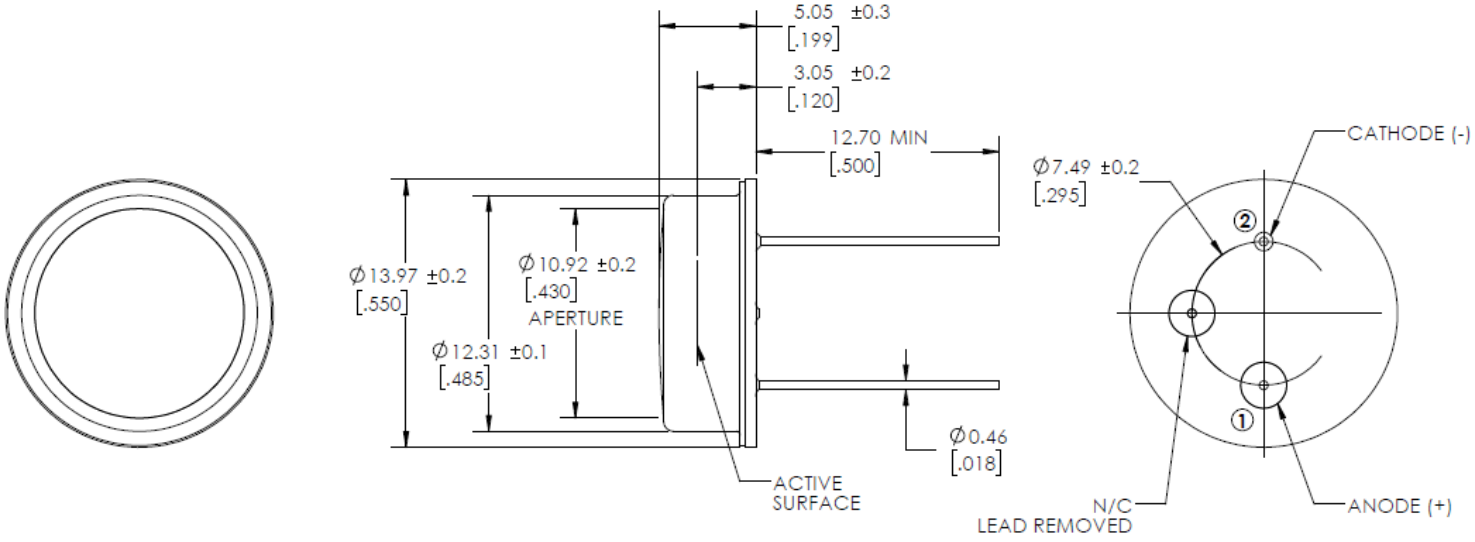
Package Outlines

TO-5



TO-8



DIMENSIONS IN MM [INCH]

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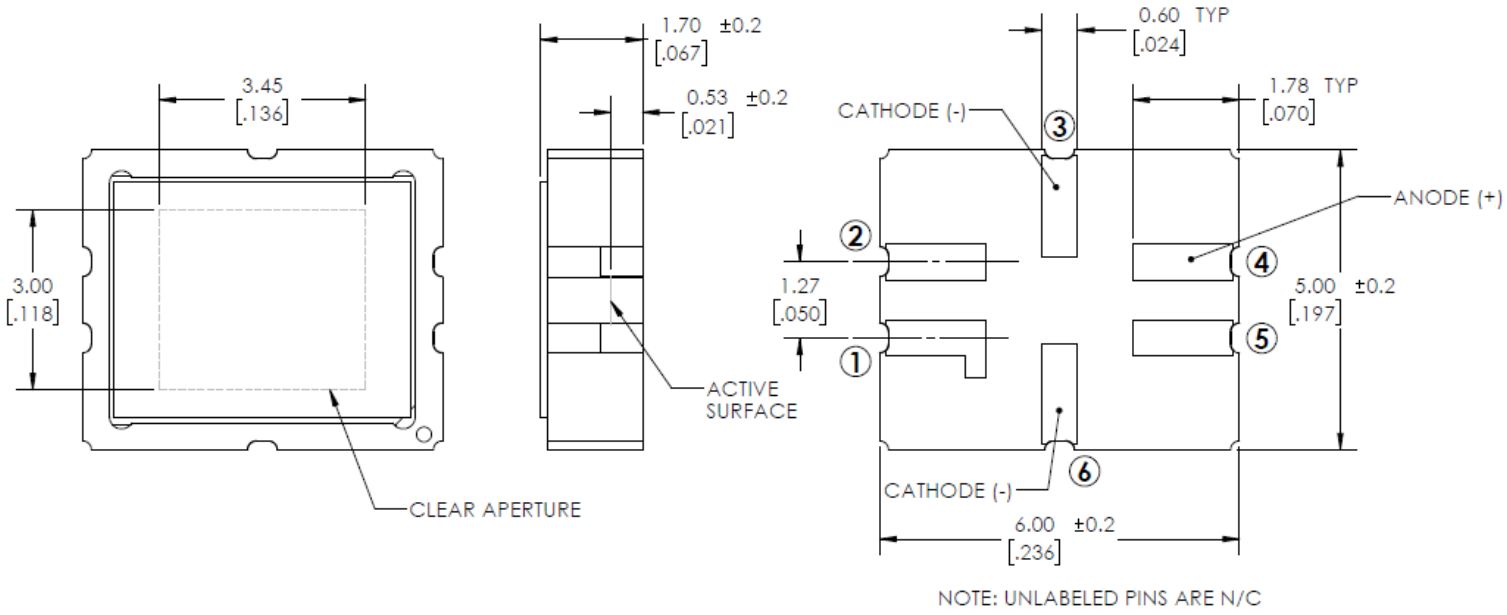
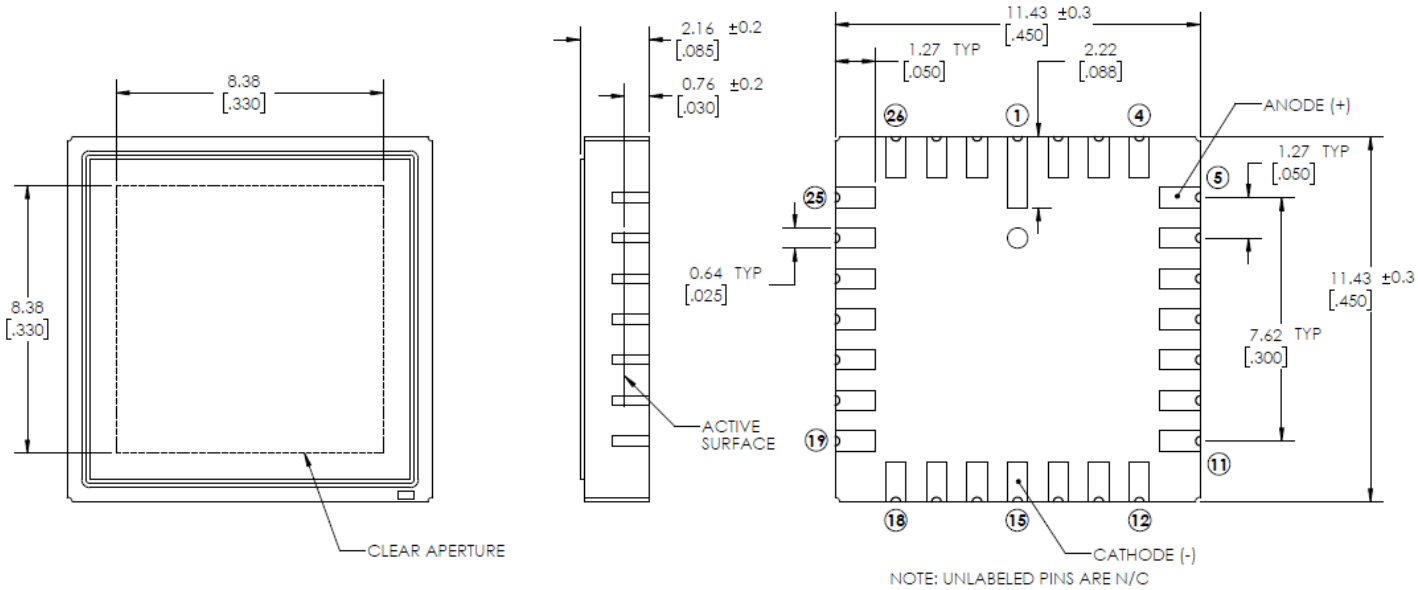
Package Outlines

LCC-6



LCC-28



DIMENSIONS IN MM [INCH]

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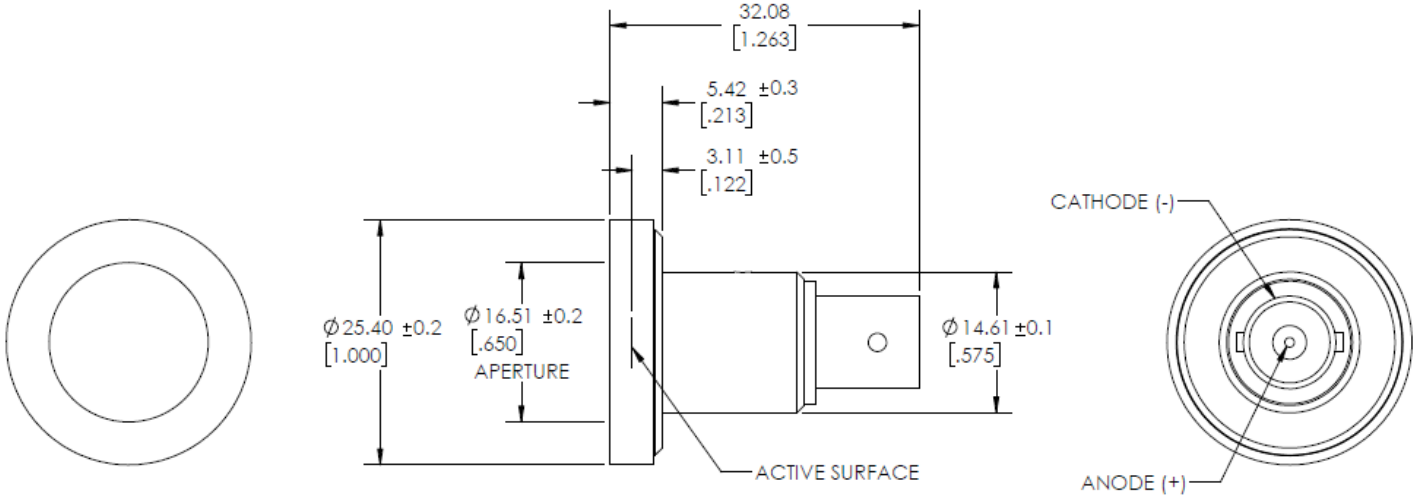
Package Outlines

BNC



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.

N17S100-T46

Material
InGaAs PIN Photodiode

Cut-off Wavelength	
17	1.7 μm
19	1.9 μm
21	2.05 μm
22	2.2 μm
26	2.6 μm

Performance	
S	Standard Capacitance
L	Low Capacitance
C	Custom

Diameter	
100	1 mm
150	1.5 mm
200	2 mm
300	3 mm
500	5 mm

Package*	
T46	TO-46
T18	TO-18
T5	TO-5
T8	TO-8
LCC6	6 contact
LCC28	28 contact
BNC	BNC
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.

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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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