Detectors

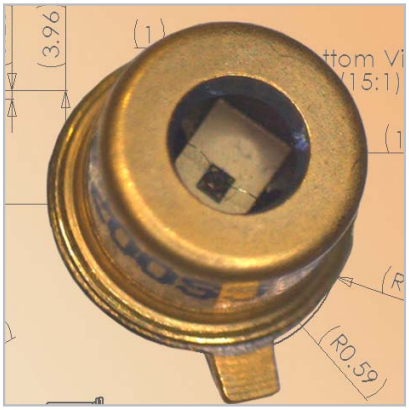
Only available on request!

InGaAs Avalanche Photodiode
IAE-Series

Description

The IAE-series avalanche photodiode is a large area InGaAs APD with high responsivity and extremely fast rise and fall times throughout the 1000 to 1650 nm wavelength range. The peak responsivity at 1550 nm is ideally suited to eye-safe rangefinding applications, free space optical communications, OTDR and high resolution Optical Coherence Tomography.

The chip is hermetically sealed in a modified TO-46 package or mounted on a ceramic submount.



Features

- 80 or 200 µm active area
- Typical bandwidth over 400 MHz
- Over 70% QE from 1000 to 1650 nm
- Low dark current & noise
- Modified TO-46 or ceramic submount

Applications

- Rangefinding
- Optical Communication Systems
- Optical Coherence Tomography
- Low-light-level detection

Generic Characteristics at T= 21°C

	IAE080X			IAE200X			
	Min	Typ	Max	Min	Typ	Max	Units
Wavelength Range	1000		1650	1000		1650	nm
Peak Sensitivity		1550			1550		nm

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Absolute Maximum Ratings

	IAE080X			IAE200X			
	Min	Typ	Max	Min	Typ	Max	Units
Storage Temperature	-55		125	-55		125	°C
Operating Temperature*	-45		85	-45		85	°C
Optical Power (cw) (beam spot > 50 µm diameter)			1			1	mW
Reverse Current			0.5			0.5	mA
Reverse Voltage			V_b			V_b	V
Forward Current			1			1	mA
Soldering (for 5 sec.)			200			200	°C

*Extended operating temperature range possible for special design considerations

Electrical Characteristics
(Tc= 21°C, V_{op}= V_{br} –1V, λ=1550 nm)

	IAE080X			IAE200X			
	Min	Typ	Max	Min	Typ	Max	Units
Diameter		80			200		µm
Breakdown Voltage, Vb (Id= 10 µA)	40		80	40		80	Volt
Peak Responsivity	8	10		8	10		A/W
V breakdown Temp Coefficient		0.1			0.1		V/°C
Dark Current		3	12		10	40	nA
Noise Current		0.2	0.4		0.4	0.8	pA/sqrt Hz
Capacitance		0.8	1.0		2.0	2.5	pF
Bandwidth		1000			400		MHz

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Fig. 1: Spectral Response (M= 10 @ 1550 nm)

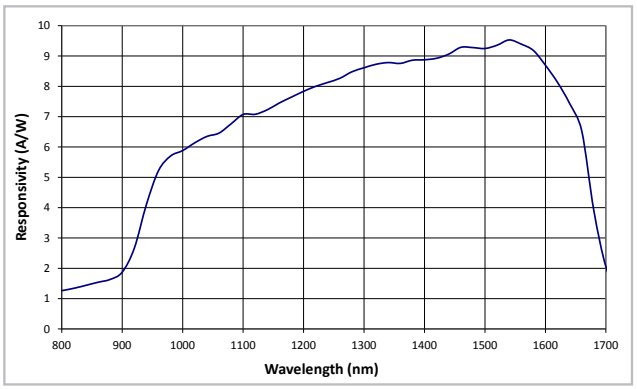

Fig. 2: Effective Quantum Efficiency vs. Wavelength (M= 10 @ 1550 nm)

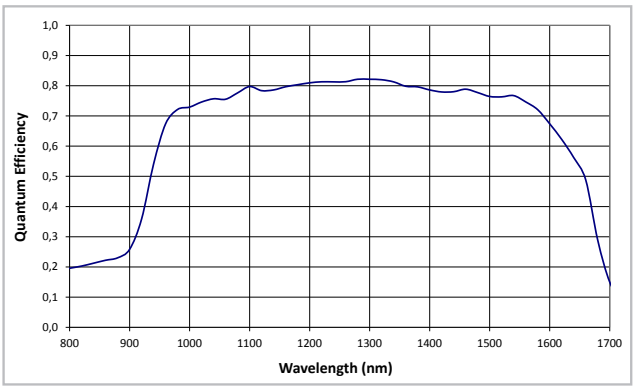

Fig. 3: Typical Dark Current Characteristics (25 degrees C)

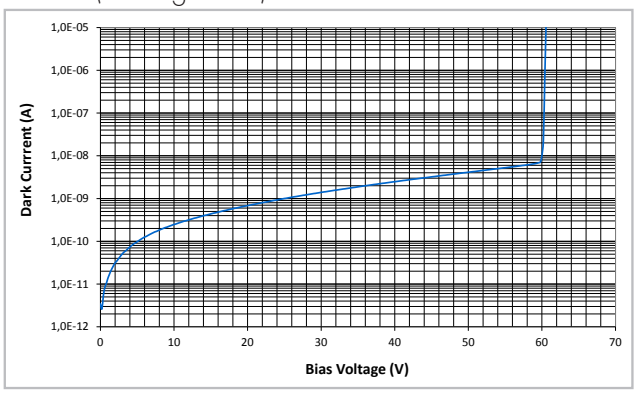

Fig. 4: Gain-Voltage Characteristics (25 degrees C)

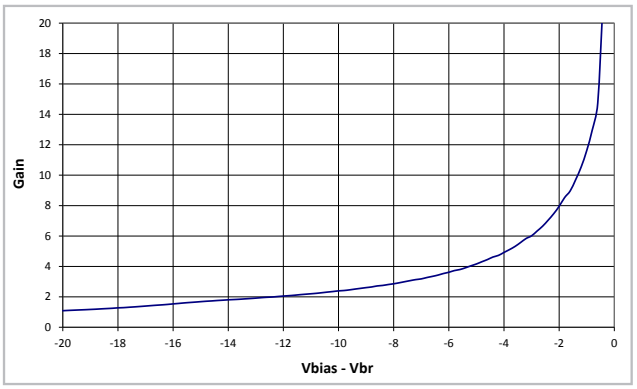

Fig. 5: Typical APD Noise Density as a Function of Gain

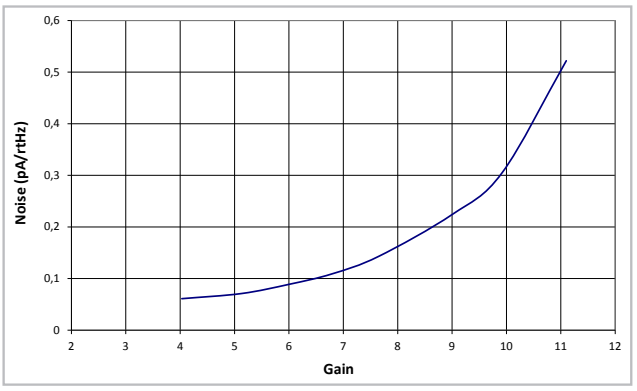

Fig. 6: Capacitance vs. Reverse Voltage

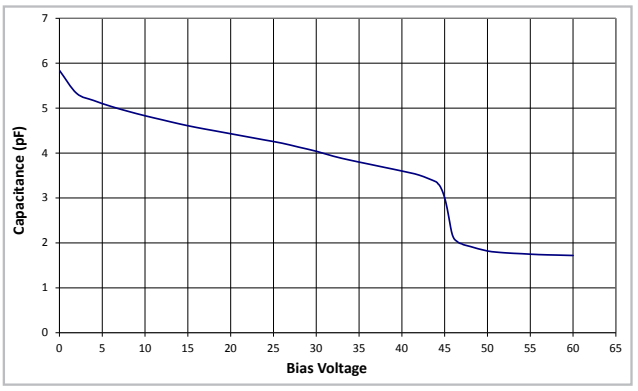

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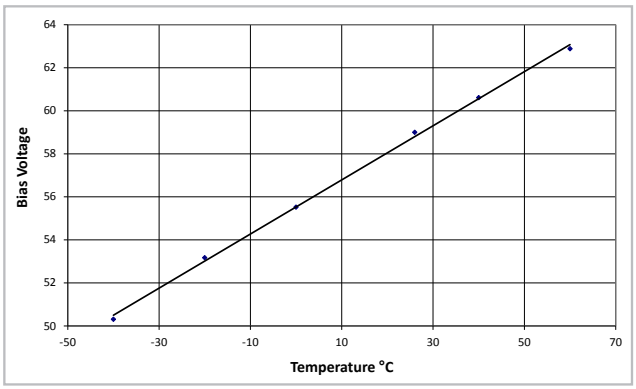
Fig. 7: Bias Voltage vs. Temperature
(M= 10 @ 1550 nm)



Product Number Designations

I	A	E				

Diameter
080 = 80 µm
200 = 200 µm

Package Style
S5= TO-46 (2 pin)
S6= TO-46 (3 pin)
S7= TO-46 (low profile)
T6= TO-37 (with TEC)
T8= TO-8 (with TEC)
Y1= ceramic submount

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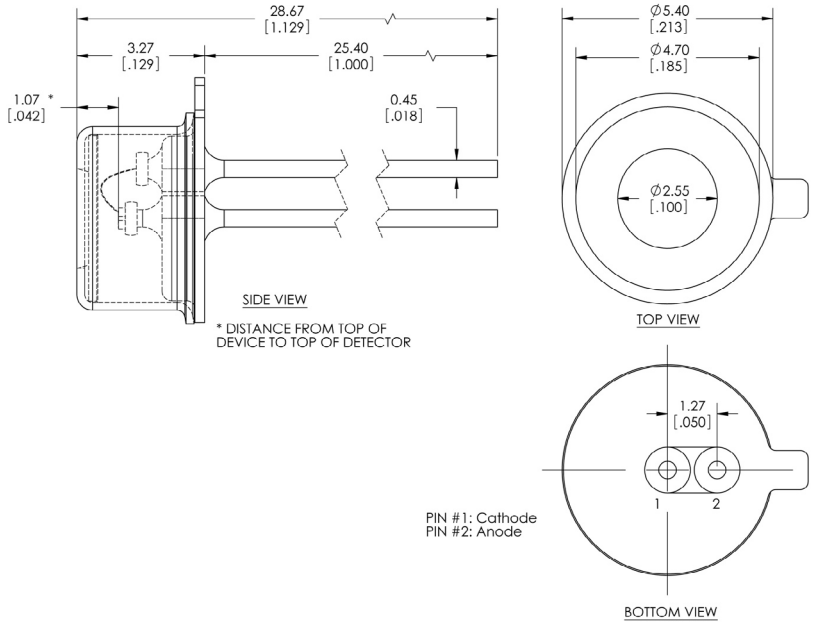
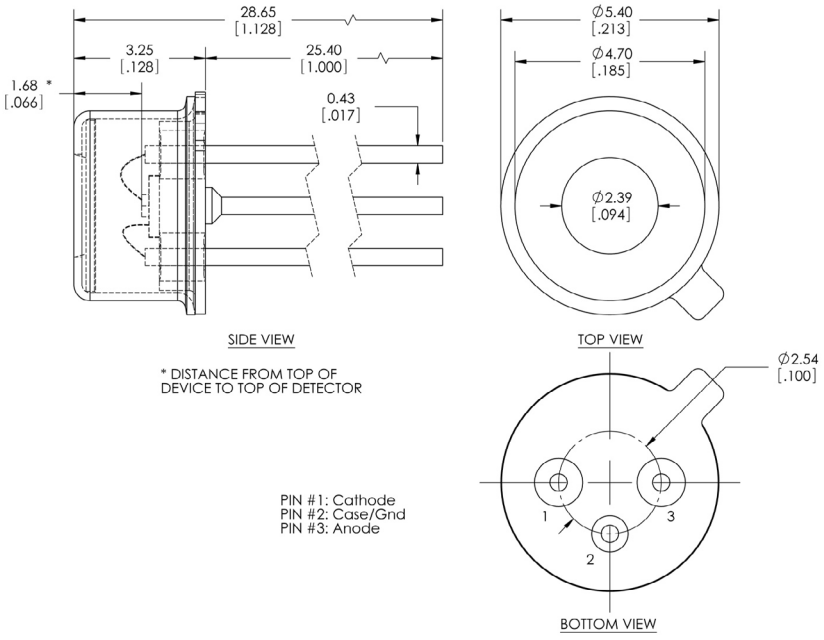
Package Drawings

Package S5 TO-46 (2 pin)



Package S6 TO-46 (3 pin)



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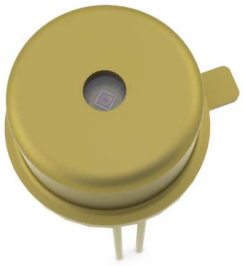
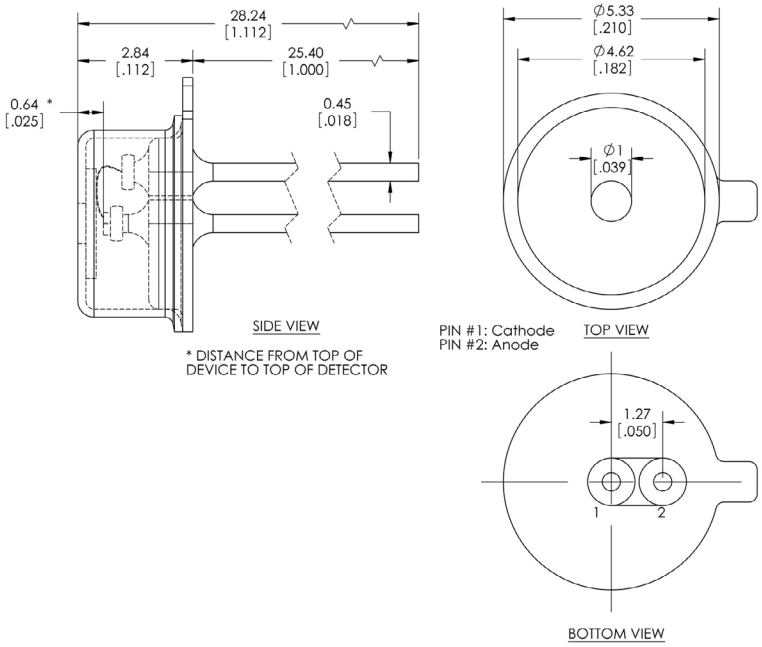
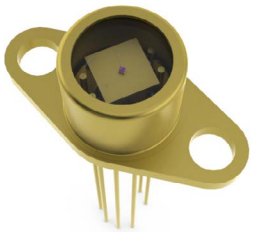
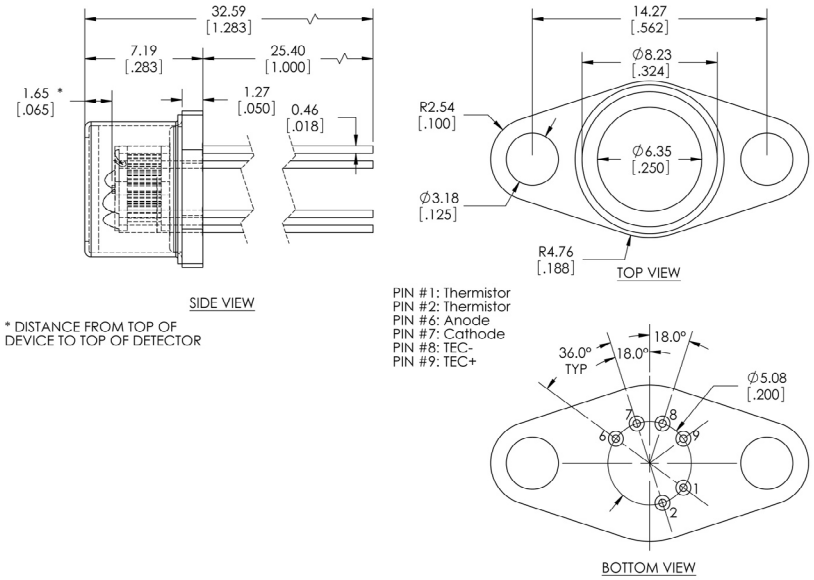
Package S7 TO-46 (low profile)





Package T6 TO-37 (with TEC)





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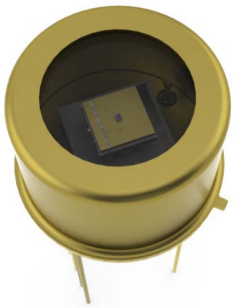
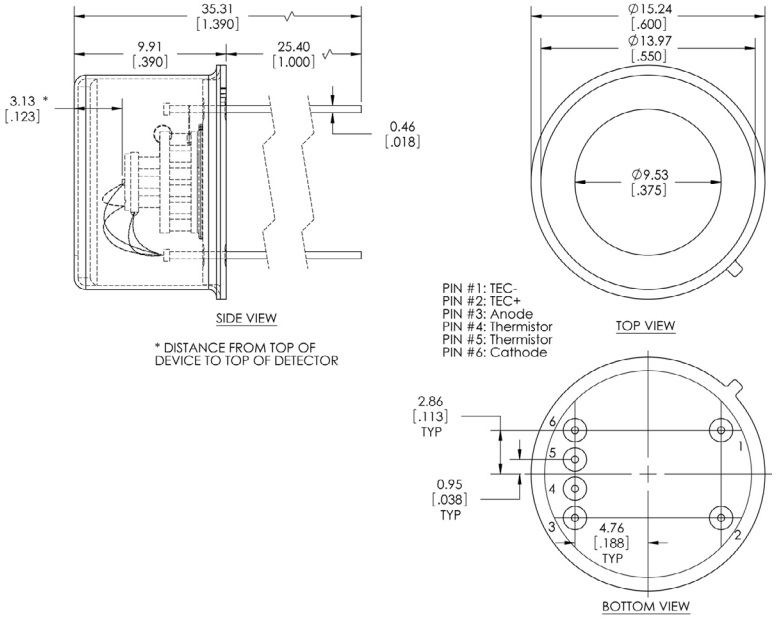
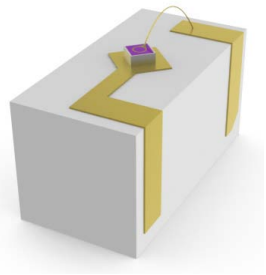
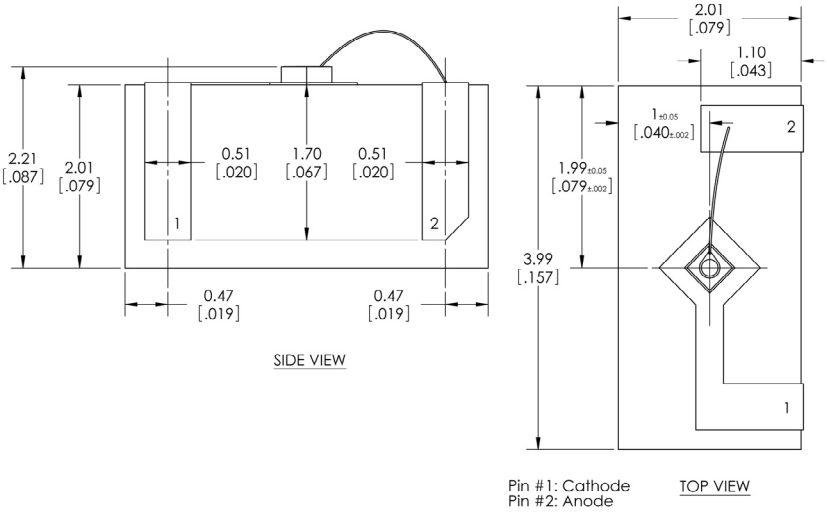
Package T8 TO-8 (with TEC)





Package Y1 Ceramic Submount





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