

C30665GH-4

Large Area InGaAs PIN Quadrant Photodiode



The C30665GH-4 high-performance InGaAs PIN photodiodes is well-suited for applications such laser spot tracking, beam profiling and other application.

This large-area InGaAs PIN photodiode provides high responsivity from 800nm to 1700nm for applications such as beam profiling, laser spot tracking, alignment, and positioning.

All devices are planar passivated and feature low capacitance for extended bandwidth, and high shunt resistance for maximum sensitivity. Typical devices feature better than 1 % non-linearity to optical powers of greater than +13dBm (20mW), and uniformity within 2% across the detector active area. High quantum efficiency at both 1064 and 1550 nm enable eye safe operations.

Recognizing that different applications have different performance requirements, Excelitas offers a wide range of customization of these photodiodes to meet your unique design challenges. Various active area, custom device testing/qualification and packaging options (hermetic metal can, high-shock resistance packaging, ceramic carrier, custom pin-out configuration, etc.) are among many of the application specific solutions available.

Key Features

- High quantum efficiency at 1064 and 1550 nm
- Wide spectral range
- Crosstalk <1% between elements
- No “dead zones” between quadrants
- Linearity over wide dynamic range
- Oxide passivated
- Planar diffused structure
- Operation temperature: -60 to 125°C
- Package style: Custom TO-5
- RoHS-compliant

Applications

- Laser spot tracking
- Laser guidance
- Laser alignment
- Optical Tweezers
- Beam Profiling

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Table 1 – Mechanical Characteristics

Parameter	Symbol	C30665GH-4	Unit
Shape		Circular	
Photosensitive Surface (all four quadrants):			
Useful overall area	A	7	mm ²
Useful diameter	d	3	mm
Useful quadrant area	A _{quad}	1.8	mm ²
Package Type		Custom TO-5	
Window Type		Flat Glass	

Table 2 – Electro-Optical Characteristics (Test conditions: Case temperature = 22°C)

Parameter	Symbol	C30665GH-4			Units
		Minimum	Typical	Maximum	
Operating voltage	V _{op}		2		V
Breakdown voltage (at 10 μA)	V _{br}	35	50		V
Responsivity at 1064nm	R	0.70	0.80		A/W
Responsivity at 1550nm		0.85	1.05		
Shunt Resistance		1	30		MΩ
Dark Current (per element)	I _d		2	70	nA
Noise Current (10 kHz, 1.0 Hz)	i _n		0.08	0.20	pA/√Hz
Noise equivalent power (NEP) measured at 1300 nm			1	12	pW/√Hz
Response linearity			<1%		
Crosstalk			<1%	2%	
Capacitance (per quadrant)	C _d	65	100	40	pF
at V _R =V _{op}					
at V _R =25 V					
Bandwidth (f _{-3dB} , R _L =50 Ω) at V _R =V _{OP}			50		MHz
Risetime (R _L =50 Ω)			14	5	ns
at V _R =V _{op}					
at V _R =25 V					
Maximum Forward Current	I _F			10	mA
Maximum Photocurrent	J _p			100	mA
Power Dissipation				100	mW
Field of View (See Figure 6)					degrees
Nominal field of view α		95			
Nominal field of view α'		140			
Storage Temperature	T _{stg}	-60		125	°C
Operating Temperature	T _o	-40		85	°C

Figure 1 - Typical Quantum Efficiency as a function of Wavelength

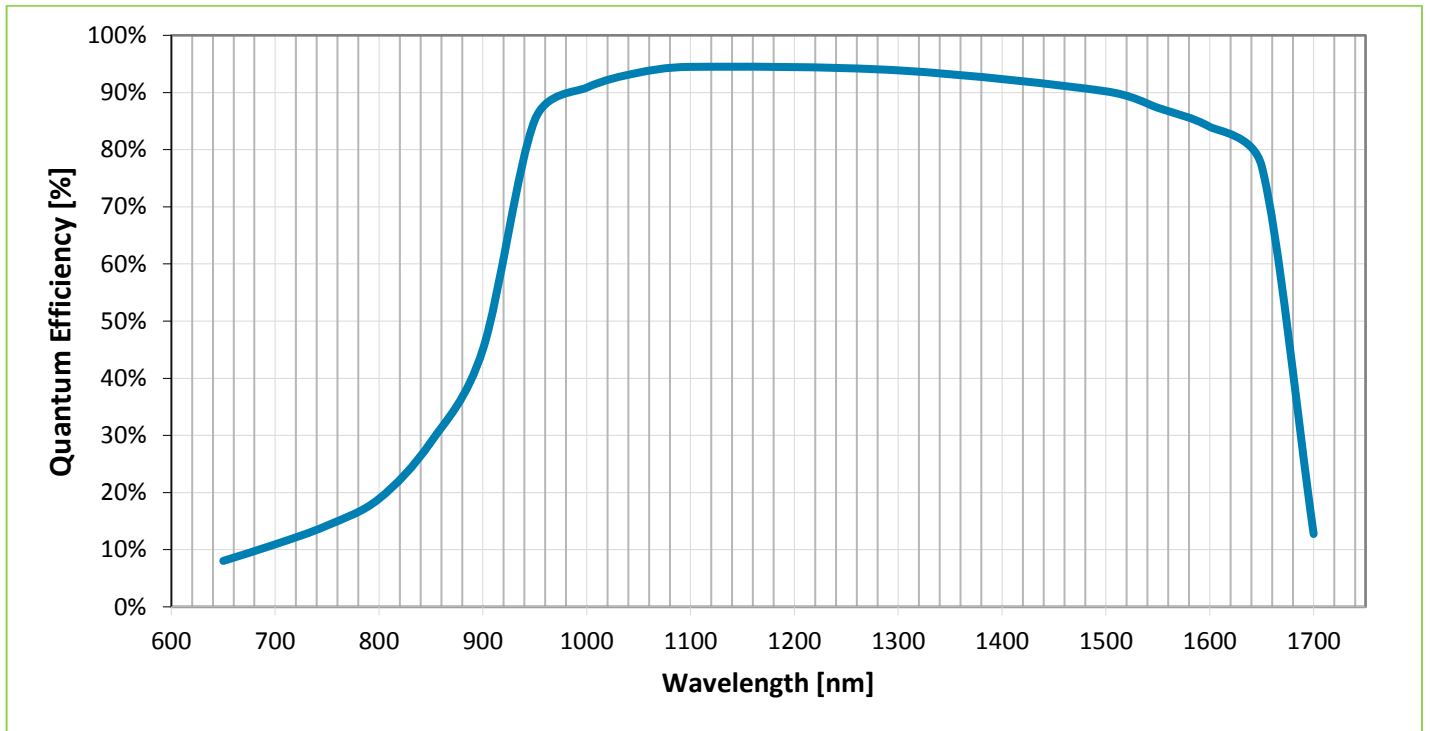


Figure 2 - Typical Responsivity as a function of Wavelength

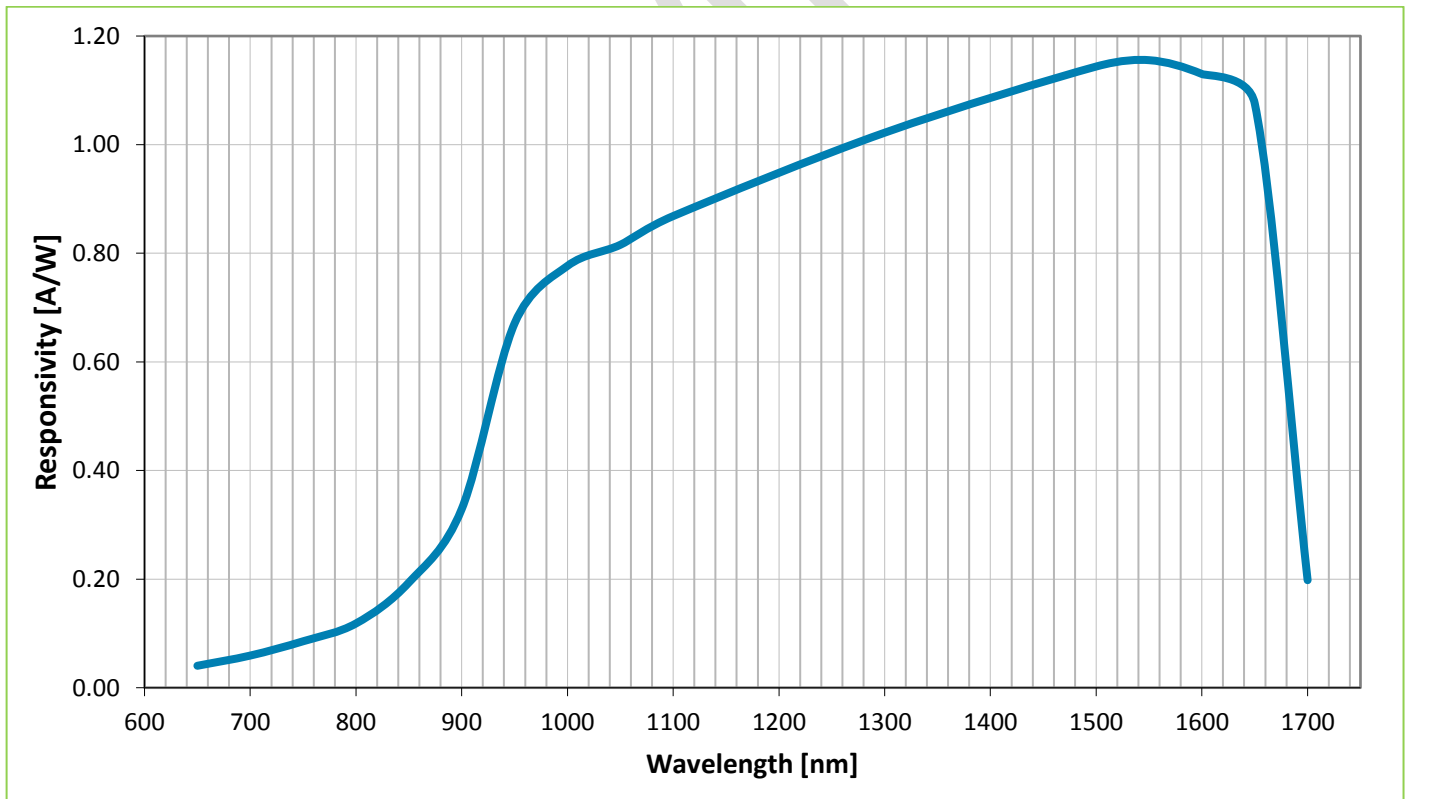


Figure 3 - Typical Capacitance (sum of all quadrant) as a function of Operating Voltage, V_{op}

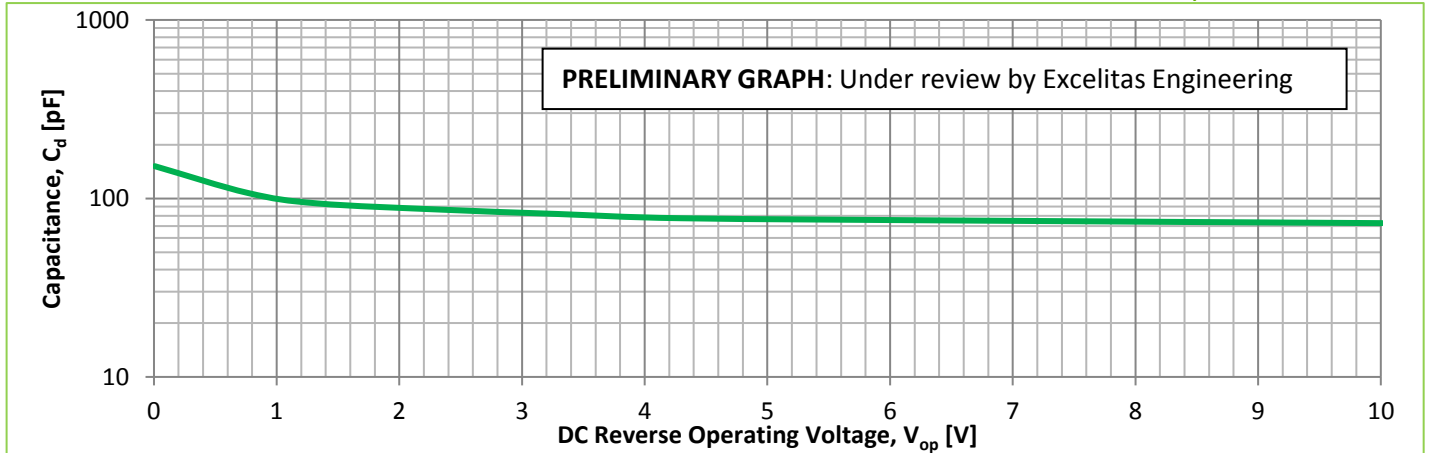


Figure 4 - Typical Dark Current as a function of Temperature

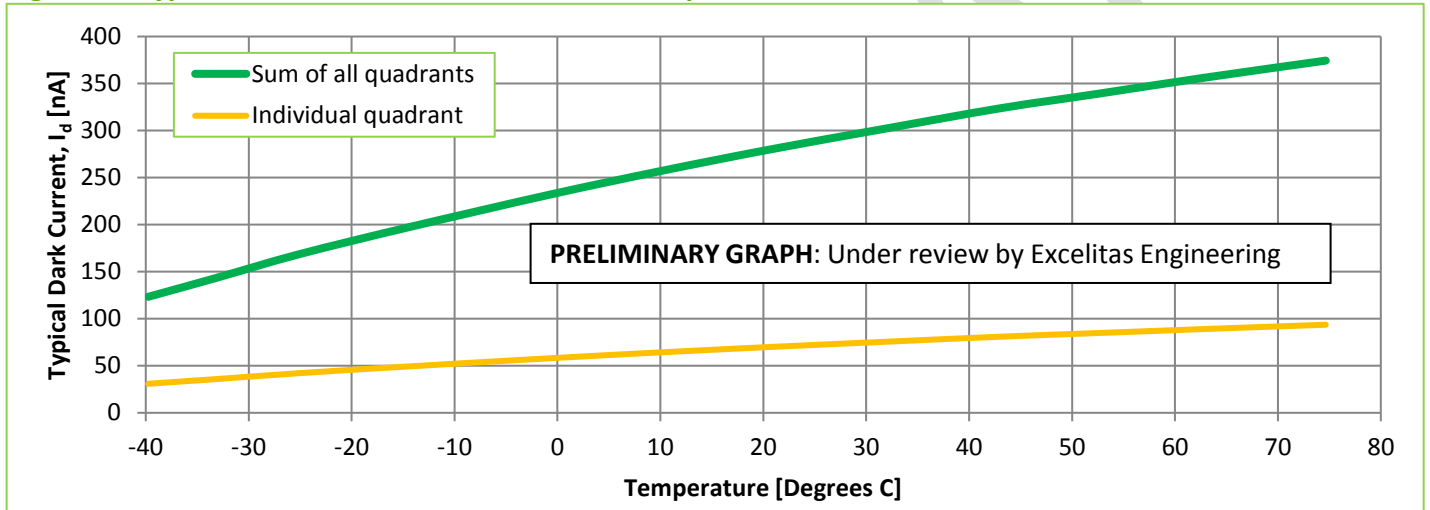
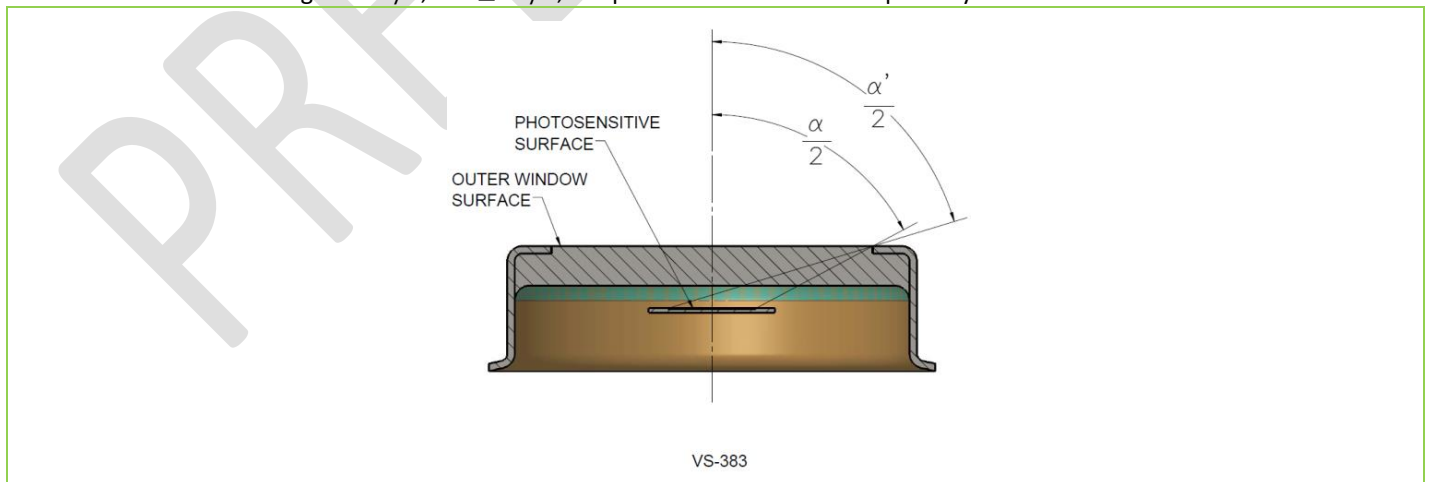


Figure 5 – Approximate field of view

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

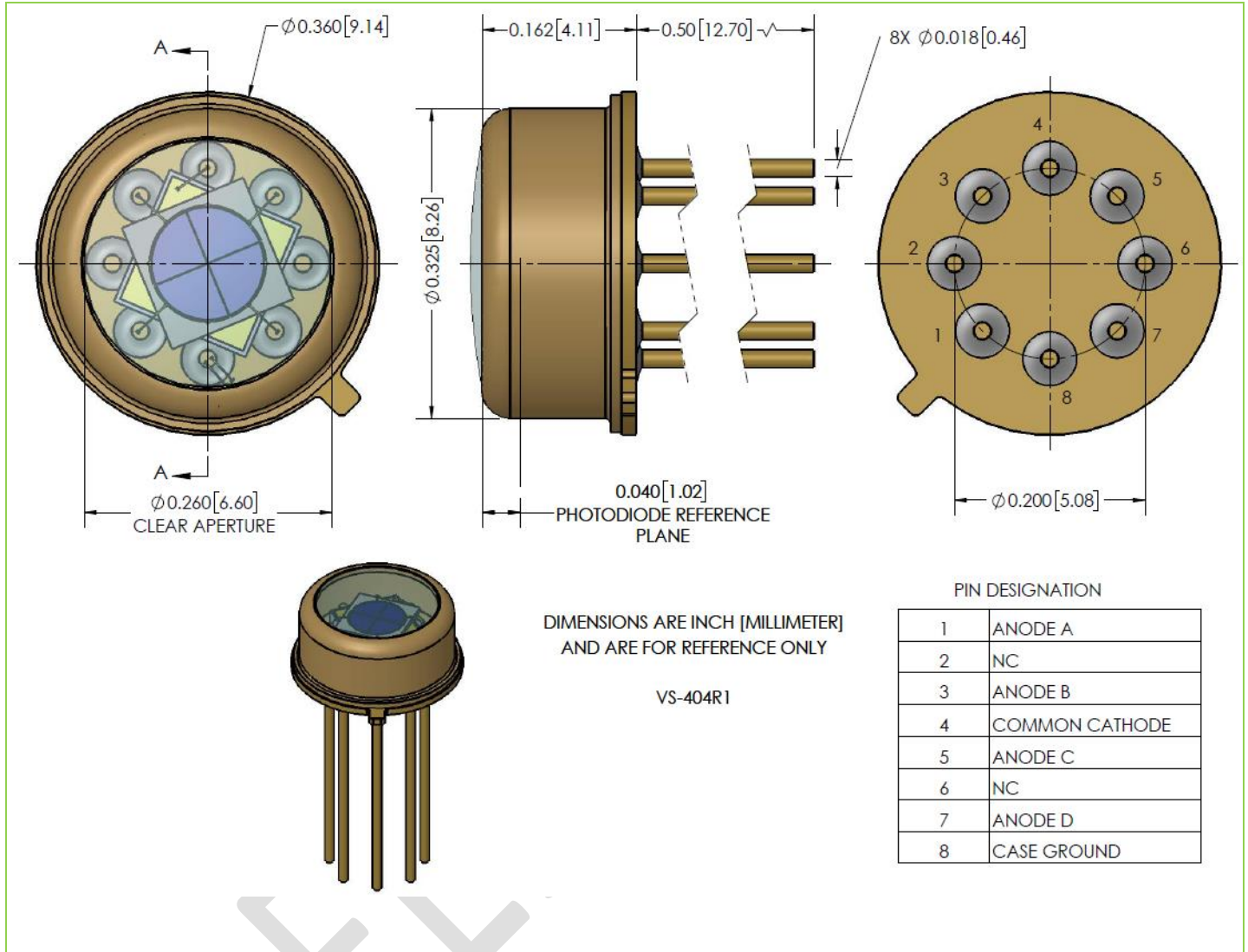


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Figure 6 – Package Dimensions and Pin Assignment

Reference only and subject to change without notice



Electrostatic discharge (ESD) warning

InGaAs PINs should only be handled at an ESD-safe work station.

RoHS Compliance

The C30665GH-4 detector is designed and built to be fully compliant with the European Union Directive 2011/65/EU – Restriction of the use of certain Hazardous Substances (RoHS) in Electrical and Electronic equipment.



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Warranty

A standard 12-month warranty following shipment applies. Any warranty is null and void if the photodiode window has been opened.

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 5,000 employees in North America, Europe and Asia, serving customers across the world.

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