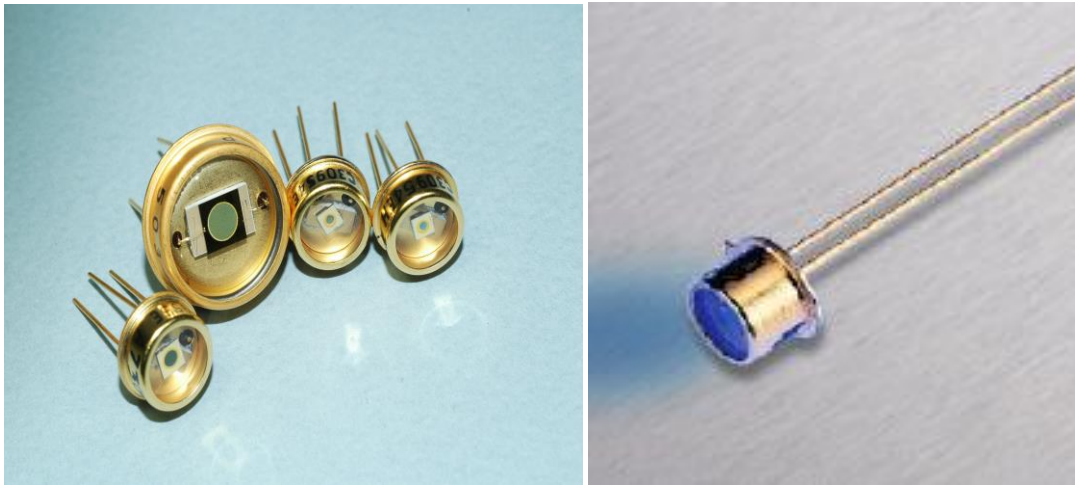


C30619, C30641, C30642, C30665 and C30723 Series **Large Area InGaAs PIN Photodiodes**



This family of large-area InGaAs PIN photodiodes provides high responsivity from 800nm to 1700nm for applications including optical power meters, fiber optic test equipment, near-IR spectroscopy and instrumentation.

All devices are planar passivated and feature low capacitance for extended bandwidth, and high shunt resistance for maximum sensitivity. Typical devices feature < 1% non-linearity to optical powers >+1 3dBm (20mW), and uniformity within 3~2% across the detector active area. Typical responsivity of 0.2A/W at 850nm for our large-area InGaAs devices allows use of a single detector in fiber optic test instrumentation designed to operate at 850, 1300 and 1550nm.

Devices are available with active areas from 0.5mm to 5.0mm in TO-type packages.

Recognizing that different applications have different performance requirements, Excelitas offers a wide range of customization of these photodiodes to meet your design challenges. Responsivity and noise screening, custom device testing, packaging with thermoelectric coolers for increased sensitivity, customized ceramic sub-mounts and other application specific solutions are available.

Key Features

- Available in various packages
- 0.5 to 5mm diameters
- High responsivity at 1300 and 1550 nm
- Low capacitance
- High linearity
- RoHS Compliant

Applications

- Optical power meter
- Fiber optic test equipments
- Near IR spectroscopy
- Laser profiling stations
- Instrumentation

C30619, C30641, C30642, C30665 and C30723 Series

Large Area InGaAs PIN Photodiodes

Table 1. Mechanical and Optical Characteristics

	C30619GH	C30641GH	C30642GH	C30665GH	C30723GH	Unit
Shape	Circular	Circular	Circular	Circular	Circular	
Useful Area	0.2	0.8	3.1	7	19.6	mm ²
Useful Diameter	0.5	1	2	3	5	mm
Package Type ¹	TO-18	TO-18	TO-5	TO-5	TO-8	
Window Type	Flat Glass	Flat Glass	Flat Glass	Flat Glass	Flat Glass	

1. C30619, C30641 and C30642 types are available with TE coolers in TO-66 packages on custom basis.

Table 2. Typical Electrical Characteristics at T_A = 22 °C, @ V_R=V_{op} typical (unless otherwise specified)

Parameter	C30619GH			C30641GH			Units
	Min	Typ	Max	Min	Typ	Max	
Operating voltage (Vop)	0	5	10	0	2	5	V
Breakdown voltage	20	80	-	20	80	-	V
Responsivity @							A/W
850nm	0.10	0.20	-	0.10	0.20	-	
1300nm	0.80	0.90	-	0.80	0.90	-	
1550nm	0.85	0.95	-	0.85	0.95	-	
Shunt Resistance (V _R =10mV) ²	10	250	-	5	50	-	MΩ
Dark Current	-	1	20	-	5	50	nA
Spectral Noise current (10KHz, 1.0 Hz)	-	0.02	0.10	-	0.04	0.15	pA/√Hz
Capacitance @							pF
V _R =0V	-	20	25	-	100	125	
V _R =V _{OP}	-	8	10	-	40	50	
Bandwidth (-3dB, R _L =50Ω)	-	350	-	-	75	-	MHz
Maximum Forward Current	-	-	10	-	-	10	mA
Maximum Photocurrent	-	-	100	-	-	100	mA
Power Dissipation	-	-	100	-	-	100	mW
Storage Temperature	-60		125	-60		125	°C
Operating Temperature	-40		85	-40		85	°C

2. Selected higher shunt resistance devices are available to special order.

3. Maximum optical power level for $\pm 0.04\text{dB}$ ($\pm 1\%$) responsivity variation under CW illumination, at V_R = V_{OP} (typical)

C30619, C30641, C30642, C30665 and C30723 Series

Large Area InGaAs PIN Photodiodes

**Table 2. Typical Electrical Characteristics at $T_A = 22\text{ }^\circ\text{C}$, @ $V_R=V_{op}$ typical
(unless otherwise specified)**

Parameter	C30642GH			C30665GH			Units
	Min	Typ	Max	Min	Typ	Max	
Operating voltage		0	5		0	5	V
Breakdown voltage	15	50	-	10	50	-	V
Responsivity @							A/W
850nm	0.10	0.20	-	0.10	0.20	-	
1300nm	0.80	0.90	-	0.80	0.90	-	
1550nm	0.85	0.95	-	0.85	0.95	-	
Shunt Resistance ($V_R=10\text{mV}$) ²	2	25	-	1	10	-	MΩ
Dark Current ⁴	-	10	-	-	25	-	nA
Spectral Noise current (10KHz, 1.0 Hz)	-	0.03	0.15	-	0.04	0.20	pA/√Hz
Capacitance @							pF
$V_R=0\text{V}$	-	300	500	-	1000	1250	
$V_R=V_{OP}$		150 ⁴	-		200 ⁴	-	
Bandwidth (-3dB, $R_L=50\Omega$)	-	350	-	-	75	-	MHz
Maximum Forward Current	-	-	10	-	-	10	mA
Maximum Photocurrent	-	-	100	-	-	100	mA
Power Dissipation	-	-	100	-	-	100	mW
Storage Temperature	-60		125	-60		125	°C
Operating Temperature	-40		85	-40		85	°C

4. at $V_R=2\text{V}$

C30619, C30641, C30642, C30665 and C30723 Series Large Area InGaAs PIN Photodiodes

**Table 2. Typical Electrical Characteristics at $T_A = 22\text{ }^\circ\text{C}$, @ $V_R = V_{op}$ typical
(unless otherwise specified)**

Parameter	C30723GH			Units
	Min	Typ	Max	
Operating voltage (Vop)	0	0	5	V
Breakdown voltage	10	50	-	V
Responsivity @ 850nm	0.10	0.20	-	A/W
1300nm	0.80	0.90	-	
1550nm	0.85	0.95	-	
Shunt Resistance ($V_R = 10\text{mV}$) ²	-	5	-	M Ω
Dark Current ⁴	-	140	-	nA
Capacitance @ $V_R = -2\text{V}$	-	950	-	pF
Bandwidth (-3dB, $R_L = 50\Omega$)	-		-	MHz
Maximum Forward Current	-	-	10	mA
Maximum Photocurrent	-	-	100	mA
Power Dissipation	-	-	250	mW
Storage Temperature	-60		125	$^\circ\text{C}$
Operating Temperature	-40		85	$^\circ\text{C}$

4. at $V_R = 2\text{V}$

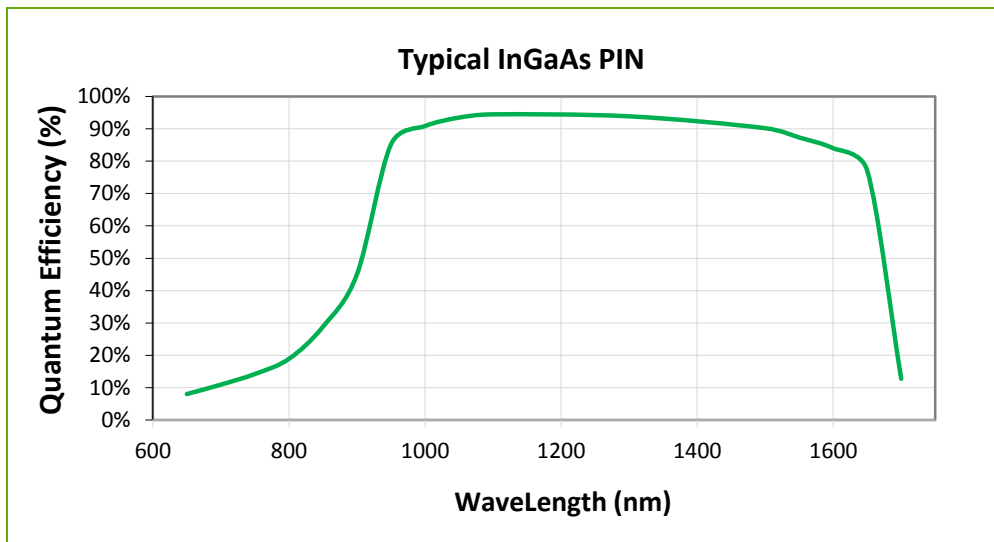


Figure 1
Typical Quantum Efficiency vs. Wavelength

C30619, C30641, C30642, C30665 and C30723 Series
Large Area InGaAs PIN Photodiodes

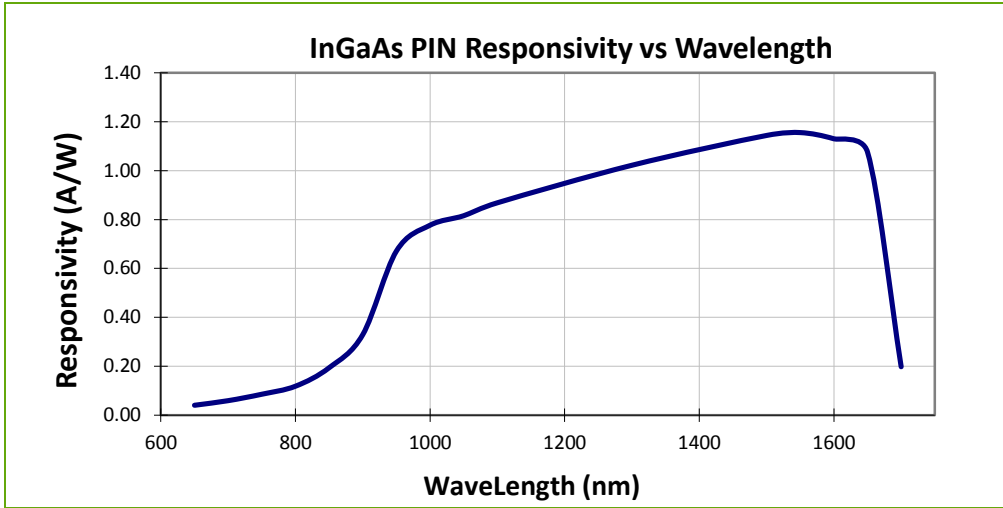


Figure 2
 Typical Responsivity vs. Wavelength

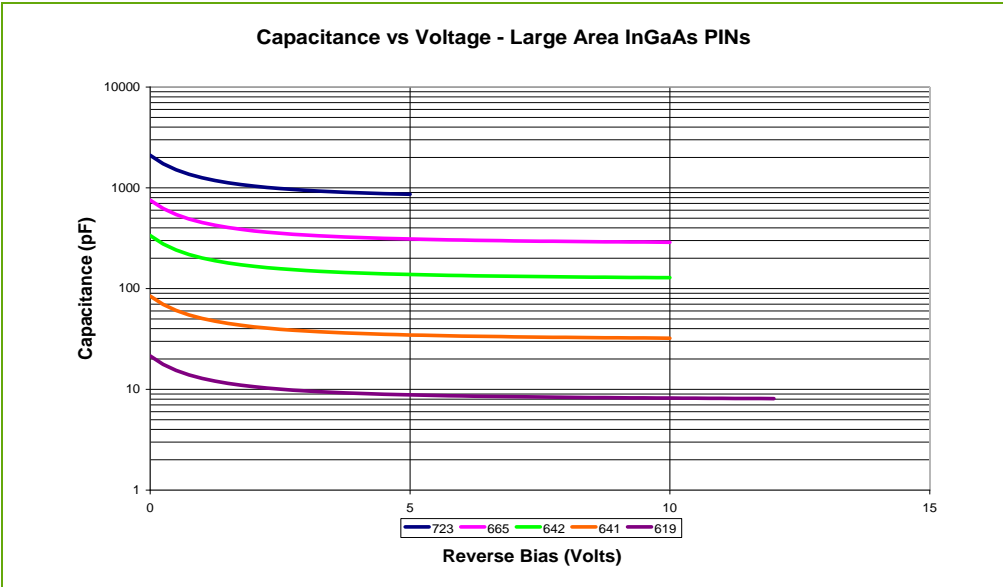


Figure 3
 Typical Capacitance vs. Operating Voltage

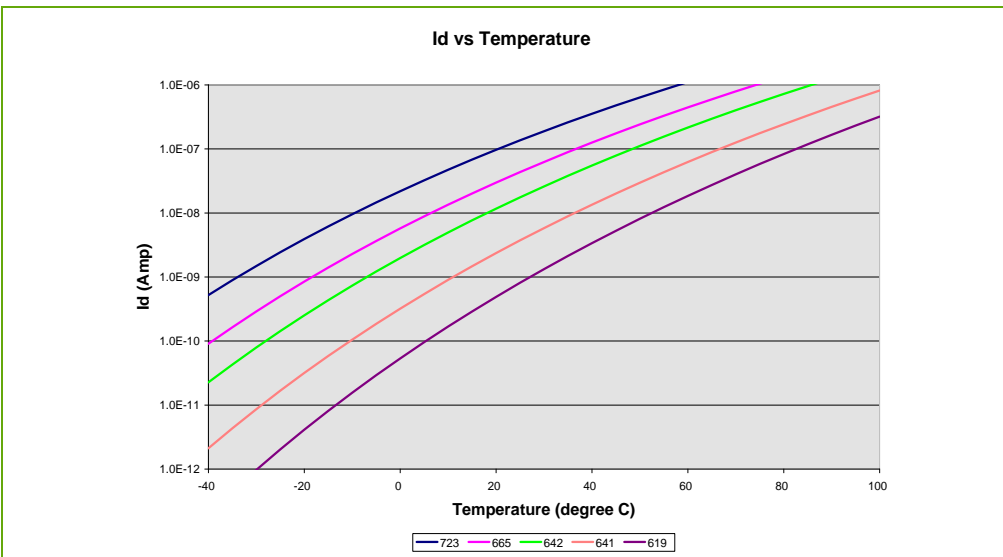


Figure 4
 Typical Dark Current vs. Temperature

C30619, C30641, C30642, C30665 and C30723 Series
Large Area InGaAs PIN Photodiodes

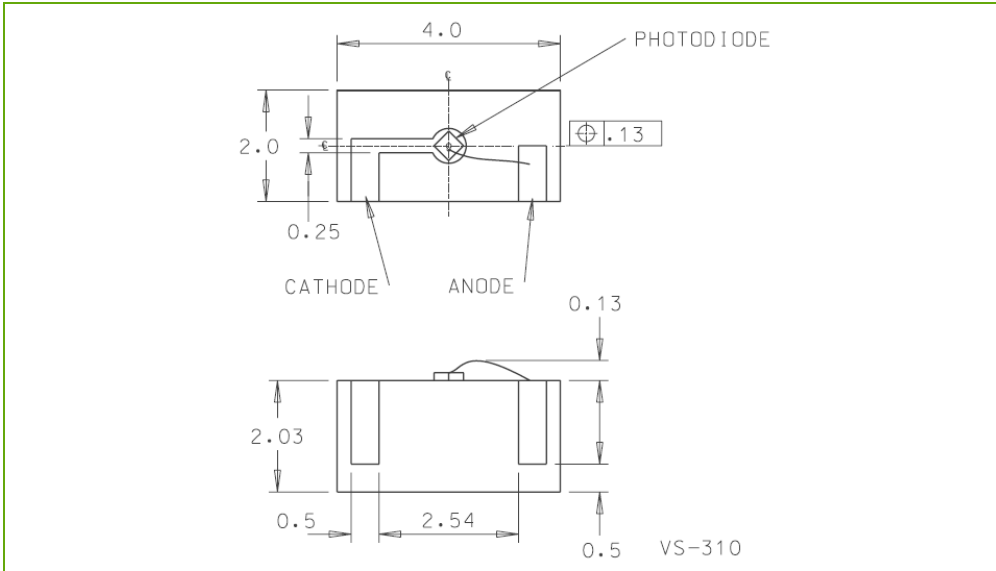


Figure 5
 Package dimension for rectangular ceramic ECERH types, in mm, for reference only

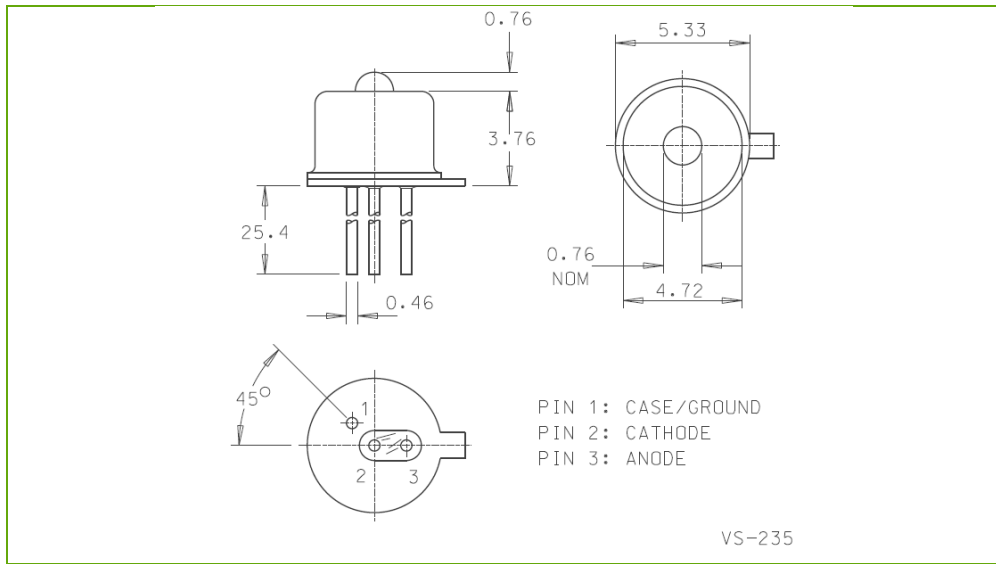
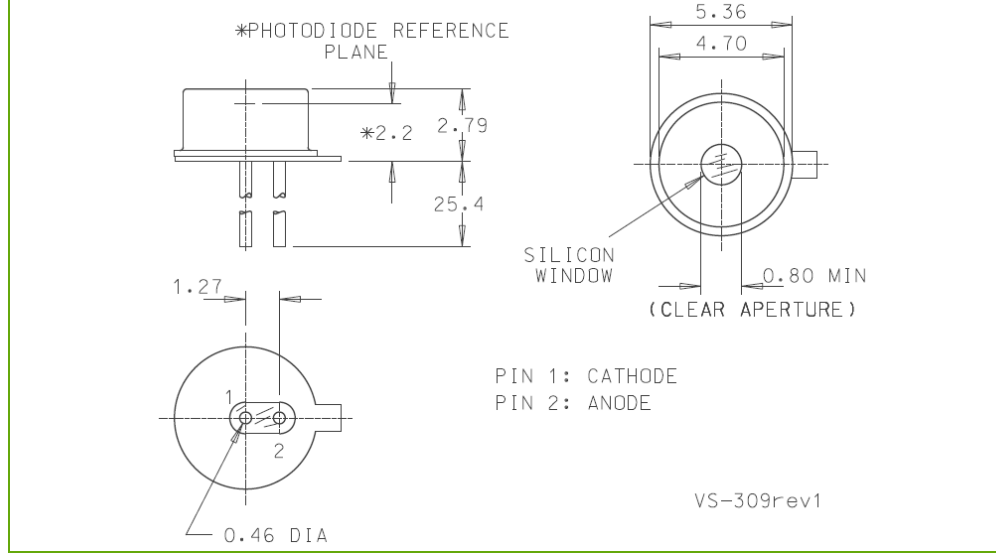


Figure 6
 Package dimension for TO-18 ball lens BH types, in mm, for reference only



C30619, C30641, C30642, C30665 and C30723 Series
Large Area InGaAs PIN Photodiodes

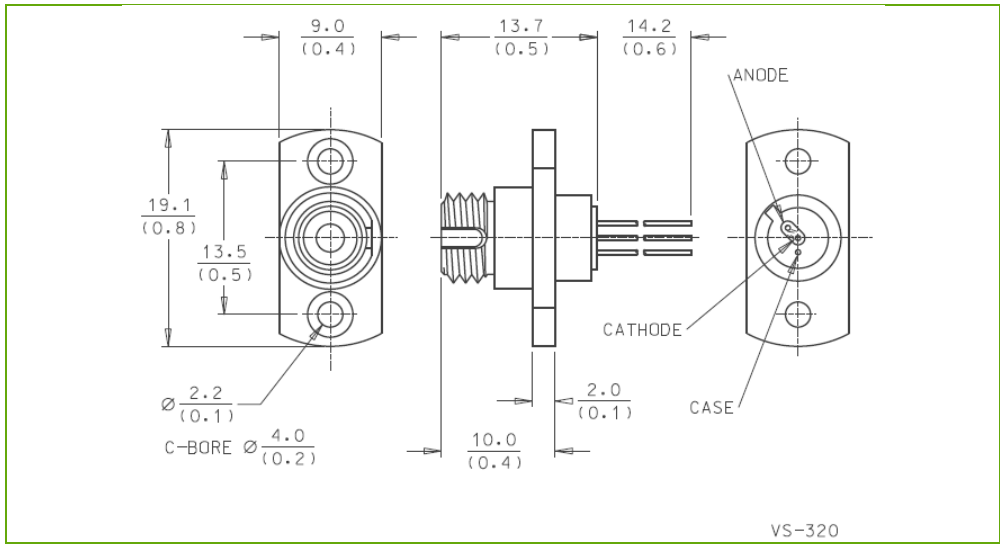


Figure 8
 Package dimension for FC receptacle BFC types, in mm (inches), for reference only

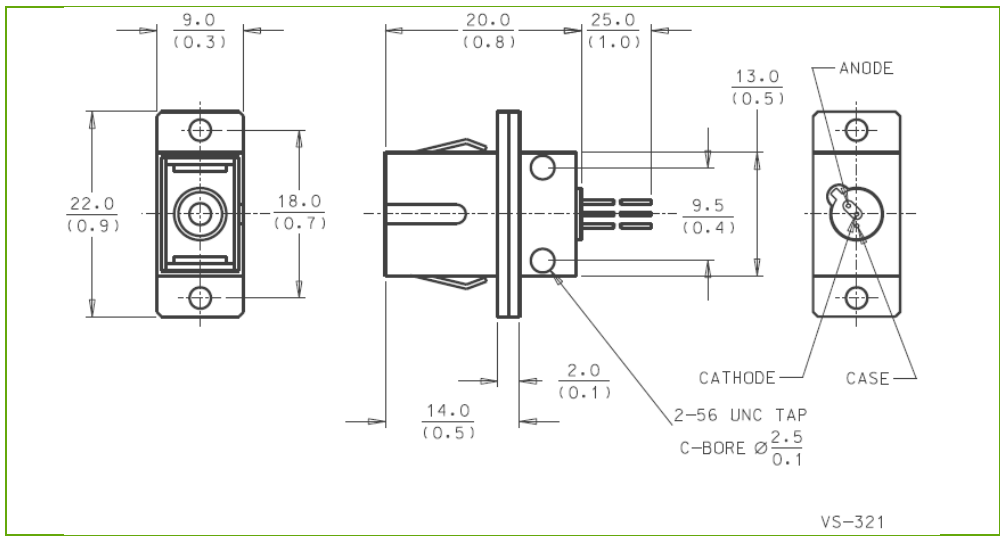


Figure 9
 Package dimension for SC receptacle BSC types, in mm (inches), for reference only

ESD warning

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

RoHS Compliance

This series of InGaAs PINs are designed and built to be fully compliant with the European Union Directive 2002/95/EEC – Restriction of the use of certain Hazardous Substances in Electrical and Electronic equipment.



Warranty

C30619, C30641, C30642, C30665 and C30723 Series

Large Area InGaAs PIN Photodiodes

A standard 12-month warranty following shipment applies for all hermetically sealed devices. 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.

From analytical instrumentation to clinical diagnostics, medical, industrial, safety and security, and aerospace and defense applications, Excelitas Technologies is committed to enabling our customers' success in their specialty end-markets. Excelitas Technologies has approximately 3,000 employees in North America, Europe and Asia, serving customers across the world.

Excelitas Technologies
22001 Dumberry Road
Vaudreuil-Dorion, Quebec
Canada J7V 8P7
Telephone: (+1) 450.424.3300
Toll-free: (+1) 800.775.6786
Fax: (+1) 450.424.3345
detection@excelitas.com

**European Headquarters
Excelitas Technologies
GmbH & Co. KG**
Wenzel-Jaksch-Str. 31
D-65199 Wiesbaden
Germany
Telephone: (+49) 611 492 430
Fax: (+49) 611 492 165
detection.europe@excelitas.com

**Asia Headquarters
Excelitas Technologies**
47 Ayer Rajah Crescent #06-12
Singapore 139947
Telephone: (+65) 6775-2022
Fax: (+65) 6775-1008



For a complete listing of our global offices, visit www.excelitas.com/ContactUs

© 2011 Excelitas Technologies Corp. All rights reserved. The Excelitas logo and design are registered trademarks of Excelitas Technologies Corp. All other trademarks not owned by Excelitas Technologies or its subsidiaries that are depicted herein are the property of their respective owners. Excelitas reserves the right to change this document at any time without notice and disclaims liability for editorial, pictorial or typographical errors.