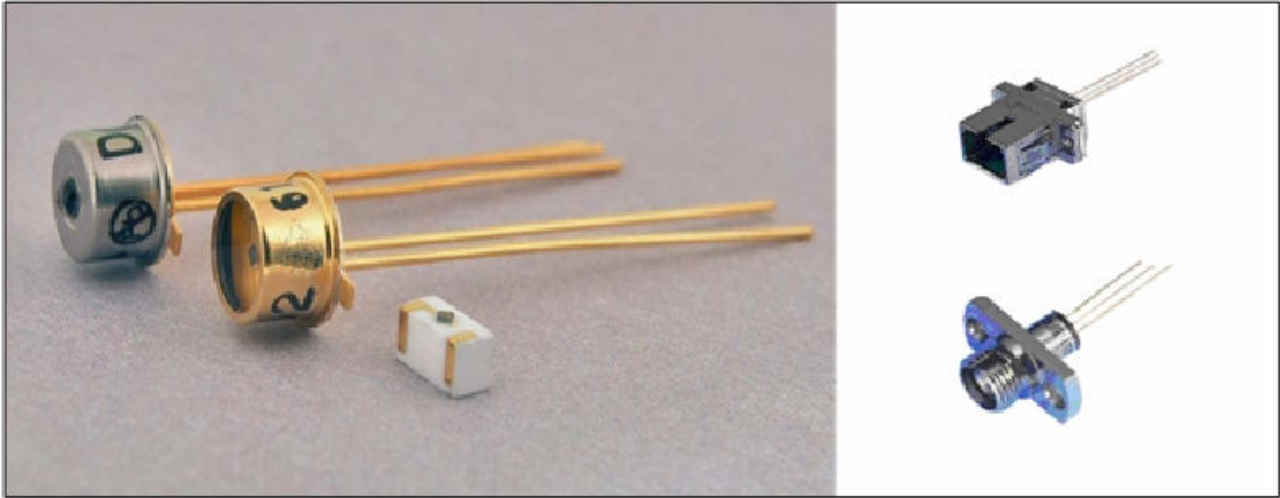


High Speed InGaAs PIN Photodiodes

C30616, C30637, C30617, C30618 Series



Overview

This series of high speed InGaAs photodiodes is designed for use in OEM fiber-optic communications systems and high-speed receiver applications including trunk line, LAN, fiber-in-the-loop and data communications. Ceramic sub-mount packages are available for easy integration into high speed SONET, FDDI, data link receiver modules, or as back facet power monitors in laser diode modules.

Available in hermetic TO-18 packages, or in connectorized receptacle packages with industry standard FC or SC connectors, these photodiodes are designed to function with either single or multimode fibers. Receptacle packages use a ball-lens TO-18 package to maximize coupling efficiency. All devices are planar passivated and feature

proven, high reliability mounting and contacting.

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 and packaging are among many of the application specific solutions available

Features and Benefits

- Available in various packages
- 50, 75, 100, 350 μm diameters
- High responsivity at 1300 and 1550 nm
- Low capacitance for high bandwidths (to 3.5 GHz)
- RoHS Compliant

Applications

- Telecommunications
- Instrumentation
- Data transmission
- High speed switching
- Data links and LANs

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Table 1. Mechanical and Optical Characteristics

	C30616	C30637	C30617	C30618	Unit
Shape	Circular	Circular	Circular	Circular	
Useful Area	0.002	0.004	0.008	0.096	mm ²
Useful Diameter	50	75	100	350	μm
Package Types ¹	Rectangular ceramic	Rectangular ceramic	TO-18 Ball Lens, Rectangular ceramic, FC, SC receptacle	TO-18, Rectangular ceramic, FC receptacle	
Window Type			Ball Lens Glass	Flat Glass	

1. See Figures 5-10 for package dimension details.

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

Parameter	C30616			C30637			Units
	Min	Typ	Max	Min	Typ	Max	
Operating voltage (Vop)	1	5	10	1	5	10	V
Breakdown voltage	25	100	-	25	100	-	V
Responsivity @ 1300 nm TO-18, ceramic	0.80	0.90	-	0.80	0.90	-	A/W
FC/ST/SC receptacle	-	-	-	-	-	-	
Responsivity @ 1550 nm TO-18, ceramic	0.85	0.95	-	0.85	0.95	-	A/W
FC/ST/SC receptacle	-	-	-	-	-	-	
Dark Current	-	<1.0	2.0	-	<1.0	2.0	nA
Spectral Noise current (10KHz, 1.0 Hz)	-	<0.02	0.15	-	<0.02	0.15	pA/√Hz
Capacitance @ V _R =V _{OP} Ceramic	-	0.35	0.55	-	0.40	0.60	pF
TO-18	-	-	-	-	-	-	
Rise/Fall time (10%-90%)	-	0.07	0.5	-	0.07	0.5	ns
Bandwidth (-3dB, R _L =50Ω)	-	3.5	-	-	3.5	-	GHz
Maximum Forward Current	-	-	10	-	-	10	mA
Power Dissipation	-	-	100	-	-	100	mW
Storage Temperature	-60		125	-60		125	°C
Operating Temperature	-40		125	-40		125	°C

Parameter	C30617			C30618			Units
	Min	Typ	Max	Min	Typ	Max	
Operating voltage	1	5	10	1	5	10	V
Breakdown voltage	25	100	-	25	80	-	V
Responsivity @ 1300 nm							
TO-18, ceramic	0.80	0.90	-	0.80	0.90	-	A/W
FC/ST/SC receptacle ²	0.65	0.75	-	0.65	0.75	-	
Responsivity @ 1550nm							
TO-18, ceramic	0.85	0.95	-	0.85	0.95	-	A/W
FC/ST/SC receptacle ²	0.70	0.80	-	0.70	0.80	-	
Dark Current							
Ceramic package	-	<1.0	2.0	-	1.0	5.0	nA
TO-18 package		-	4.0		-	-	
Spectral Noise current (10 KHz, 1.0 Hz)	-	<0.02	0.15	-	0.02	0.20	pA/√Hz
Capacitance @ $V_R=V_{OP}$							
Ceramic		0.6	0.8		4.0	6.0	pF
TO-18	-	0.8	1.0	-	4.0	6.0	
Rise/Fall time (10%-90%)	-	0.07	0.5	-	0.5	1.0	ns
Bandwidth (-3dB, $R_L=50\Omega$)	-	3.5	-	-	0.75	-	GHz
Maximum Forward Current	-	-	10	-	-	10	mA
Power Dissipation	-	-	100	-	-	100	mW
Storage Temperature ³	-60		125	-60		125	°C
Operating Temperature ³	-40		125	-40		125	°C

2. Coupled from 62.5 μm , 0.28NA, graded index multi-mode fiber using 1300 nm SLED source.

3. Maximum storage and operating temperature of connectorized /receptacle devices is +85°C.

Table 3. Ordering Guide

Package Type	C30616	C30637	C30617	C30618
TO-18 ball glass lens	-	-	C30617BH	-
TO-18 flat glass lens	-	-	-	C30618GH
Rectangular ceramic	C30616ECERH	C30637ECERH	C30617ECERH	C30618ECERH
TO-18 ball lens with FC receptacle	-	-	C30617BFCH	C30618BFCH
TO-18 ball lens with SC receptacle	-	-	C30617BSCH	-

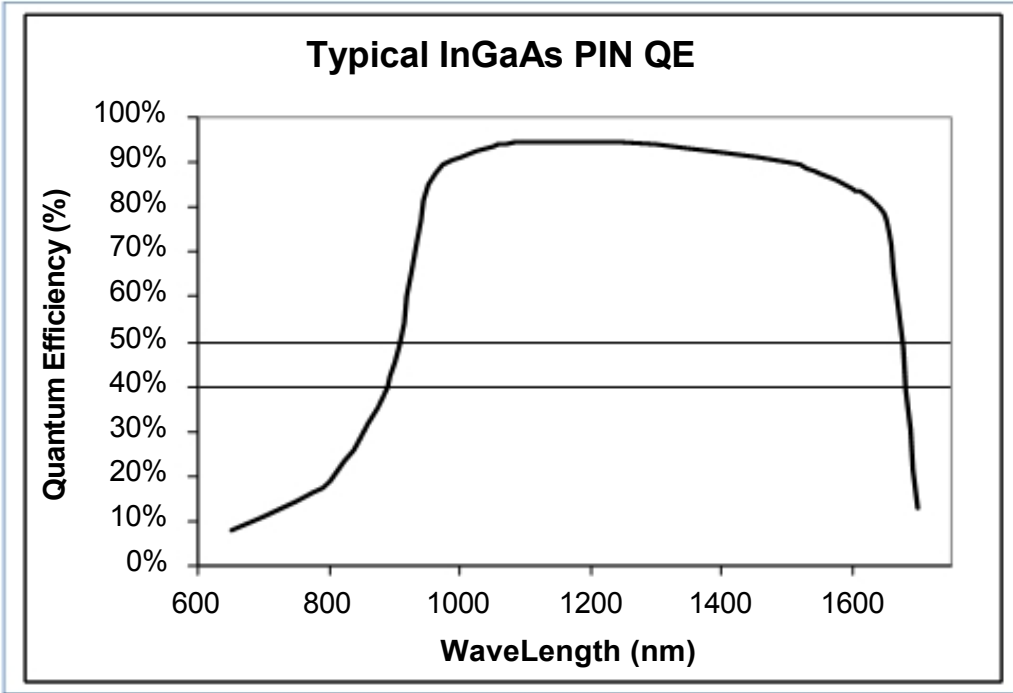


Figure 1
Typical Quantum Efficiency vs. Wavelength

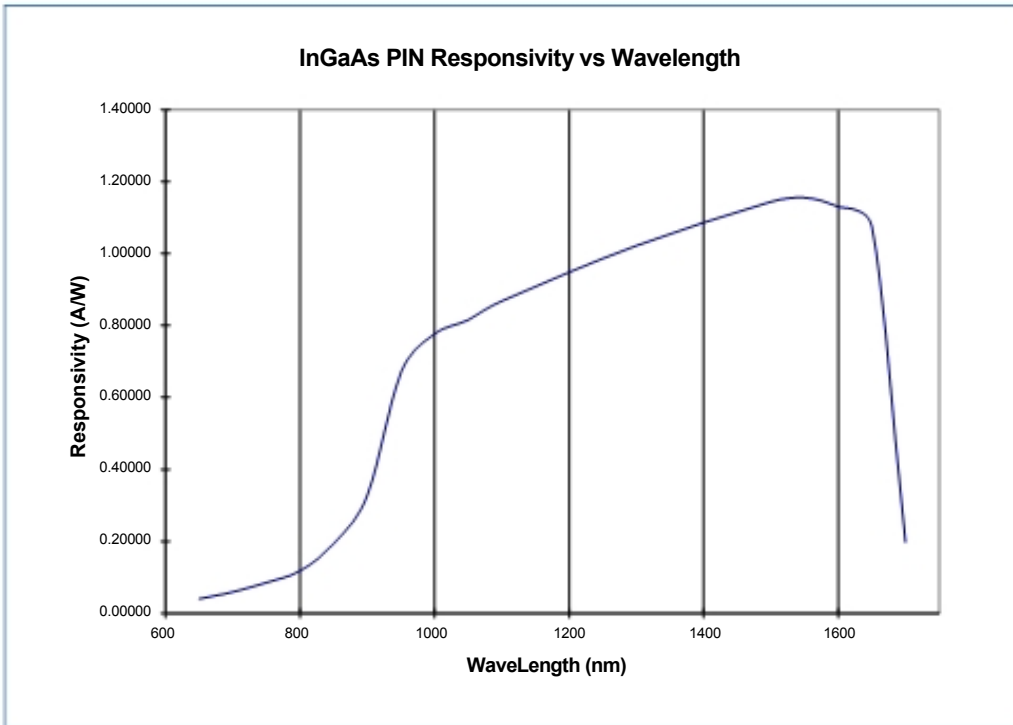


Figure 2
Typical Responsivity vs. Wavelength

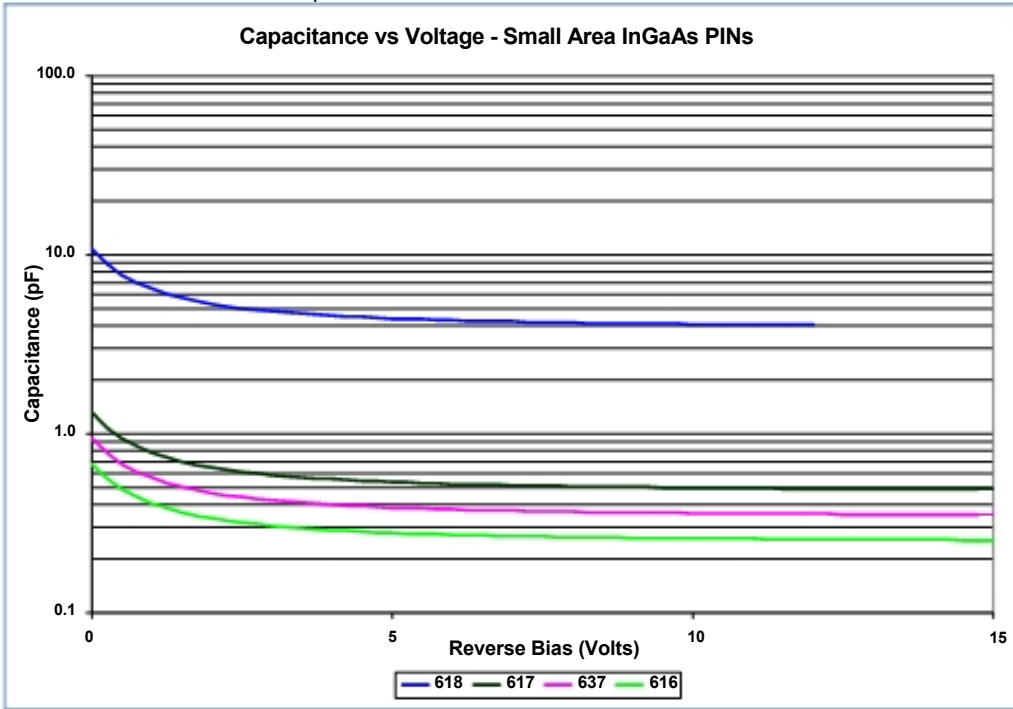


Figure 3
Typical Capacitance vs. Operating Voltage

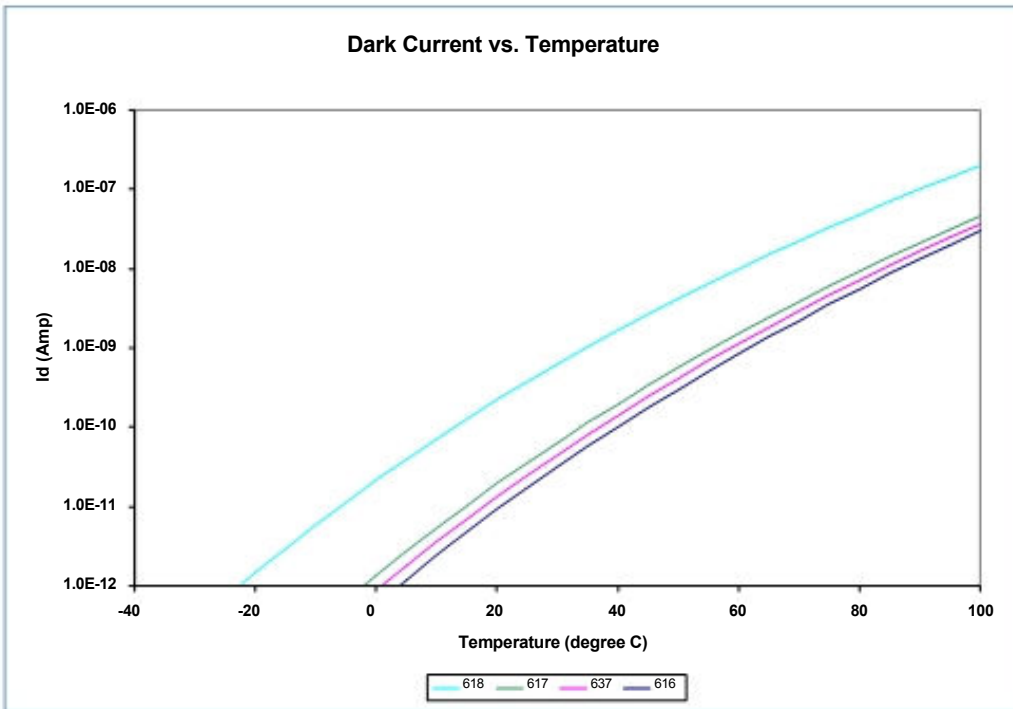


Figure 4
Typical Dark Current vs. Temperature

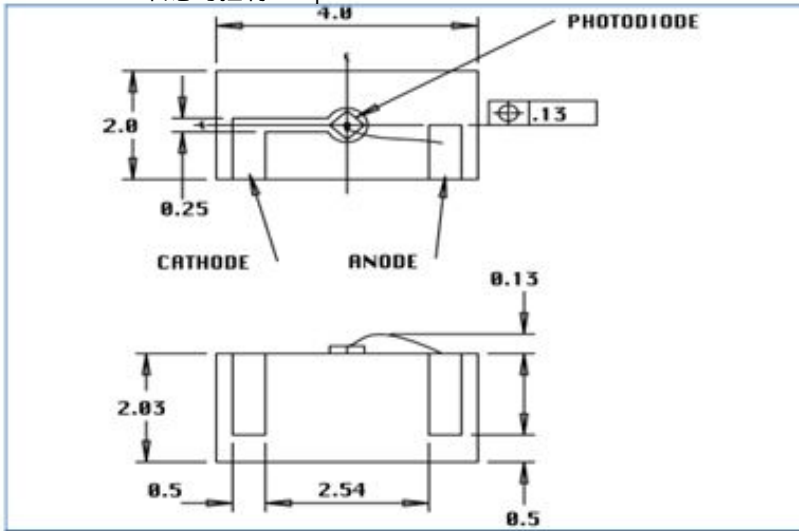


Figure 5

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

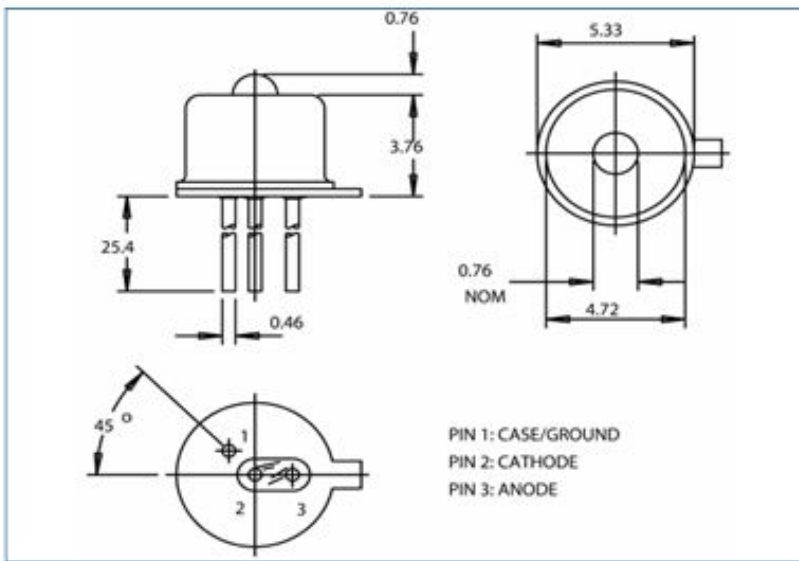


Figure 6

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

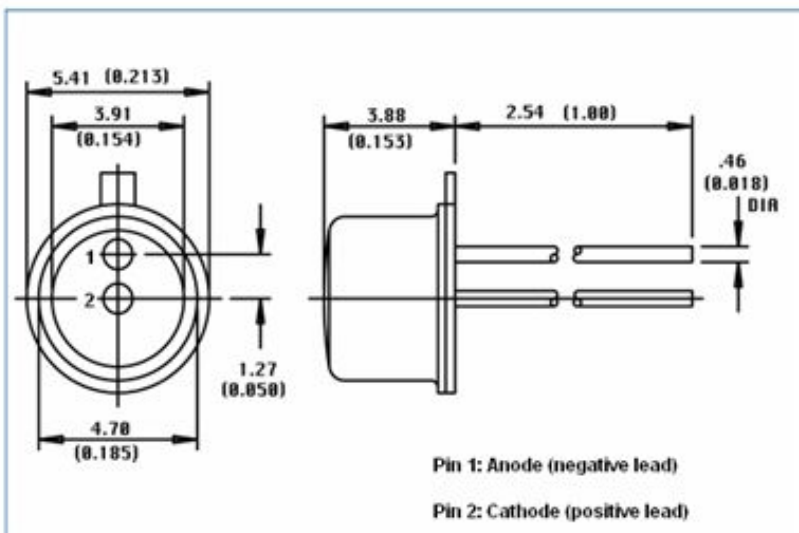


Figure 7

Package dimension for TO-18 flat glass lens GH types, in mm, for reference only

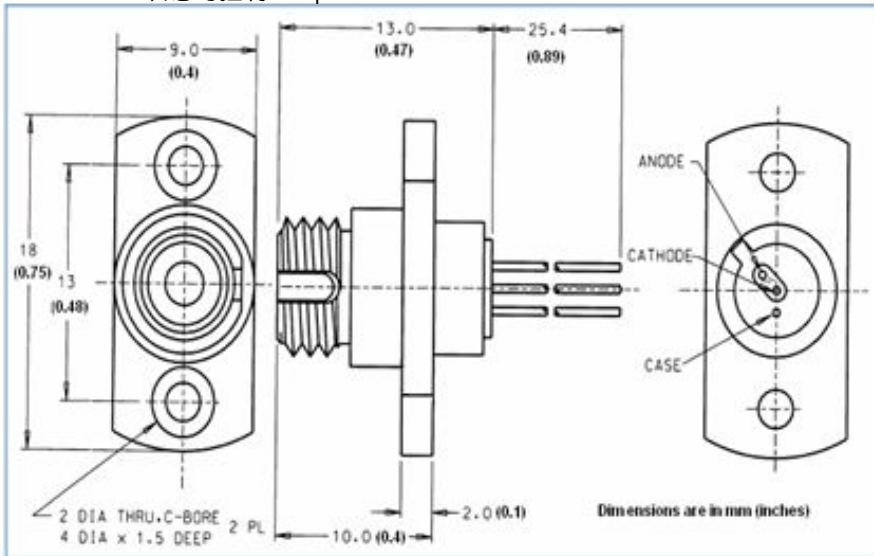


Figure 8
Package dimension for TO-18 ball lens FC receptacle BFC types, in mm (inches), for reference only

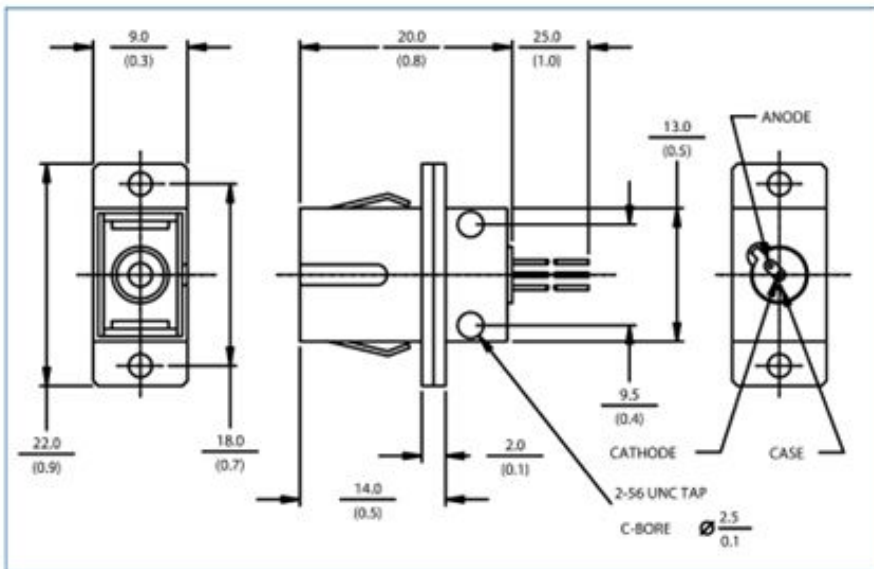


Figure 9
Package dimension for TO-18 ball lens SC receptacle BSC types, in mm (inches), for reference only

RoHS Compliance

This series of photodiodes is 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

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

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