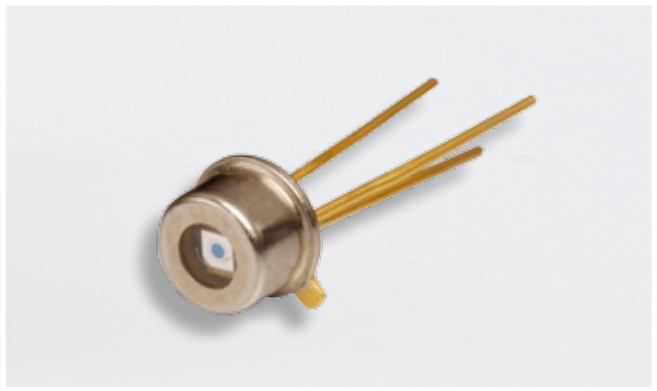
155Mbps/622Mbps/1.25Gbps/2.5Gbps

High Speed InGaAs Photodiodes

FCI-InGaAs-XXX series with active area sizes of, 75µm, 120µm, 300µm, 400µm and 500µm, exhibit the characteristics need for Datacom and Telecom applications. Low capacitance, low dark current and high responsivity from 1100nm to 1620nm make these devices ideal for high-bit rate receivers used in LAN, MAN, WAN, and other high speed communication systems. The photodiodes are packaged in 3 lead isolated TO-46 cans or with AR coated flat windows or micro lenses to enhance coupling efficiency. FCI-InGaAs-XXX series is also offered with FC, SC, ST and SMA receptacles.



APPLICATIONS

- High Speed Optical Communications
- Single/Multi-Mode Fiber Optic Receiver
- Gigabit Ethernet/Fibre Channel
- SONET/SDH, ATM
- Optical Taps

FEATURES

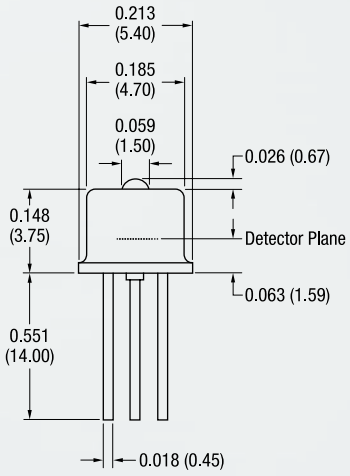
- High Speed
- High Responsivity
- Low Noise
- Spectral Range
  900nm to 1700nm

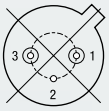
Absolute Maximum Ratings

PARAMETERS	SYMBOL	MIN	MAX	UNITS
Storage Temperature	T_{stg}	-55	+125	°C
Operating Temperature	T_{op}	-40	+75	°C
Soldering Temperature	T_{sld}	---	+260	°C

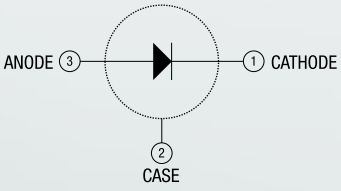
Electro-Optical Characteristics T_A=23°C

PARAMETERS	SYMBOL	CONDITIONS	FCI-InGaAs-75			FCI-InGaAs-120			FCI-InGaAs-300			FCI-InGaAs-400			FCI-InGaAs-500			UNITS
			MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX	
Active Area Diameter	AA_ϕ	---	---	75	---	---	120	---	---	300	---	---	400	---	---	500	---	µm
Responsivity (Flat Window Package)	R_λ	λ=1310nm	0.80	0.90	---	0.80	0.90	---	0.80	0.90	---	0.80	0.90	---	0.80	0.90	---	A/W
		λ=1550nm	0.90	0.95	---	0.90	0.95	---	0.90	0.95	---	0.90	0.95	---	0.90	0.95	---	
Capacitance	C_j	V_R = 5.0V	---	1.5	---	---	2.0	---	---	10.0	---	---	14.0	---	---	20.0	---	pF
Dark Current	I_d	V_R = 5.0V	---	0.03	2	---	0.05	2	---	0.30	5	---	0.40	5	---	0.50	20	nA
Rise Time/ Fall Time	t_r/t_f	V_R = 5.0V, R_L=50Ω 10% to 90%	---	---	0.20	---	---	0.30	---	---	1.5	---	---	3.0	---	---	10.0	ns
Max. Reverse Voltage	---	---	---	---	20	---	---	20	---	---	15	---	---	15	---	---	15	V
Max. Reverse Current	---	---	---	---	1	---	---	2	---	---	2	---	---	2	---	---	2	mA
Max. Forward Current	---	---	---	---	5	---	---	5	---	---	8	---	---	8	---	---	8	mA
NEP	---	---	---	3.44E-15	---	---	4.50E-15	---	---	6.28E-15	---	---	7.69E-15	---	---	8.42E-15	---	W/√Hz

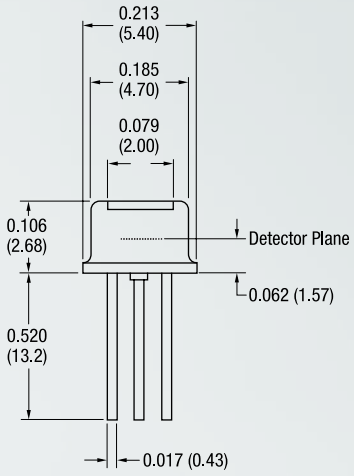


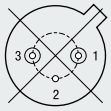


Bottom View

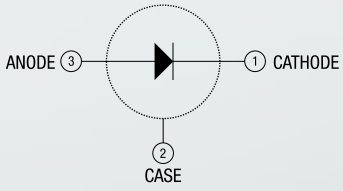


Pin Circle Diameter = 0.100 (2.54)





Bottom View



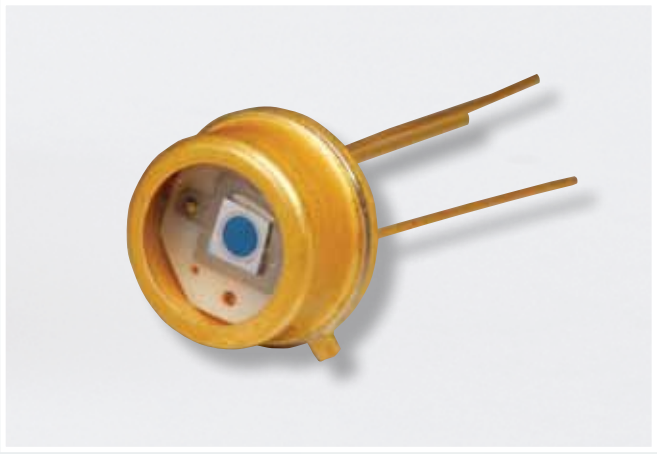
Pin Circle Diameter = 0.100 (2.54)

Notes:
- All units in inches (mm).
- All tolerances: 0.005 (0.125).
- Please specify when ordering the flat window or lens cap devices.
- The flat window devices have broadband AR coatings centered at 1310nm.
- The thickness of the flat window=0.008 (0.21).

FCI-InGaAs-XXX-X

Large Active Area InGaAs Photodiodes

FCI-InGaAs-XXX-X series with active area sizes of 1mm, 1.5mm and 3mm, are part of OSI Optoelectronics's large active area IR sensitive detectors which exhibit excellent responsivity from 1100nm to 1620nm, allowing high sensitivity to weak signals. These large active area devices are ideal for use in infrared instrumentation and monitoring applications. The photodiode chip are isolated in TO-46 or TO-5 packages with a broadband double sided AR coated flat window. FCI-InGaAs-3000-X come with different shunt resistance values of 5, 10, 20, and 40MΩ.



APPLICATIONS

- Optical Instrumentation
- Power Measurement
- IR Sensing
- Medical Devices

FEATURES

- High Responsivity
- Large Active Area Diameter
- Low Noise
- Spectral Range 900nm to 1700nm

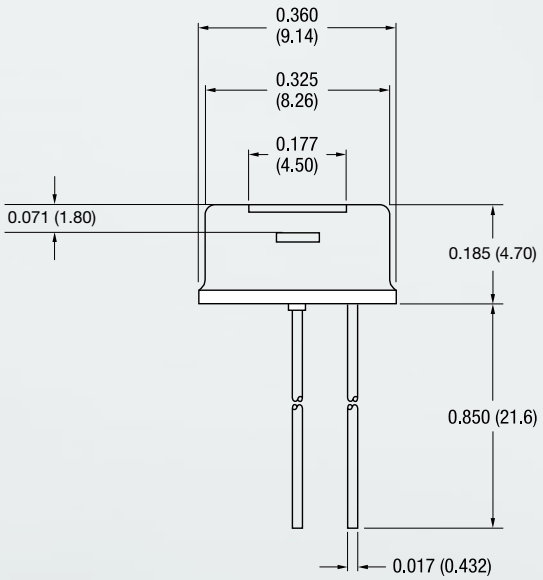
Absolute Maximum Ratings

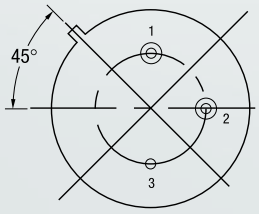
PARAMETERS	SYMBOL	MIN	MAX	UNITS
Storage Temperature	T_{stg}	-55	+125	°C
Operating Temperature	T_{op}	-40	+75	°C
Soldering Temperature	T_{sld}	---	+260	°C

Electro-Optical Characteristics T_A=23°C

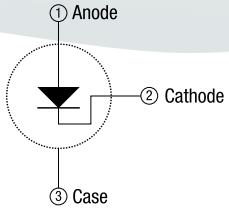
PARAMETERS	SYMBOL	CONDITIONS	FCI-InGaAs-1000			FCI-InGaAs-1500			FCI-InGaAs-3000-X			UNITS
			MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX	
Active Area Diameter	AA_ϕ	---	---	1.0	---	---	1.5	---	---	3.0	---	mm
Responsivity	R_λ	λ=1310nm	0.80	0.90	---	0.80	0.90	---	0.80	0.90	---	A/W
		λ=1550nm	0.90	0.95	---	0.90	0.95	---	0.90	0.95	---	
Capacitance	C_j	V_R=0V	---	80	200	---	200	450	---	750	1800	pF
Shunt Resistance	R_{SH}	V_R=10mV	30	---	---	---	20	---	---	20	---	MΩ
Max. Reverse Voltage	---	---	---	---	5	---	---	2	---	---	2	V
Max. Reverse Current	---	---	---	---	1	---	---	2	---	---	2	mA
Max. Forward Current	---	---	---	---	10	---	---	10	---	---	10	mA
NEP	---	---	---	2.45E-14	---	---	3.01E-14	---	---	4.25E-14	---	W/√Hz

FCI-InGaAs-3000-X



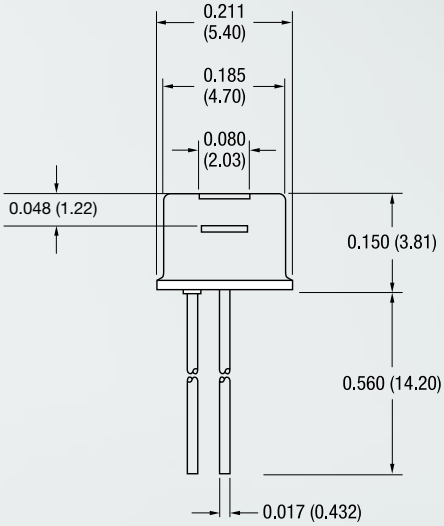


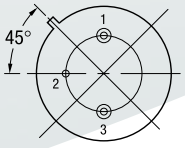
Bottom View



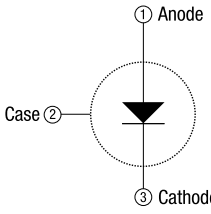
Pin Circle Diameter = 0.200 (5.08)

FCI-InGaAs-1000 & FCI-InGaAs-1500





Bottom View



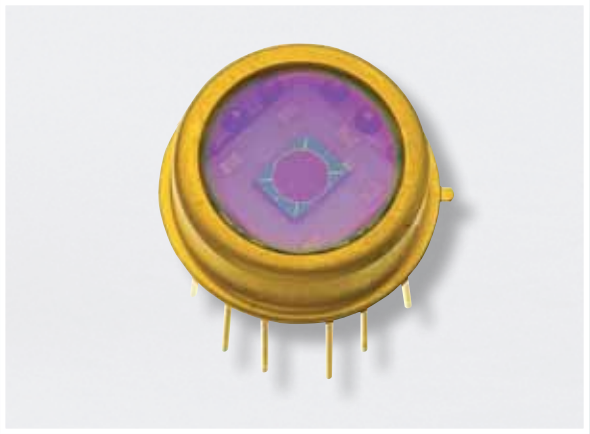
Pin Circle Diameter = 0.100 (2.54)

Notes:
- All units in inches (mm).
- All tolerances: 0.005 (0.125)
- The flat window devices have broadband AR coatings centered at 1310nm
- The thickness of the flat window=0.008 (0.21)

FCI-InGaAs-QXXX

Large Active Area InGaAs Quadrants

FCI-InGaAs-QXXX series are large active area InGaAs photodiodes segmented into four separate active areas. These photodiodes come in 1mm and 3mm active area diameter. The InGaAs Quad series with high response uniformity and the low cross talk between the elements are ideal for accurate nulling or centering applications as well as beam profiling applications. They exhibit excellent responsivity from 1100nm to 1620nm, and are stable over time and temperature, and fast response times necessary for high speed or pulse operation. The photodiodes are packaged in isolated TO-5 or TO-8 cans with a broadband double sided AR coated flat window, and also can be mounted on ceramic substrate per request.



APPLICATIONS

- Position Sensing
- Beam Alignment
- Beam Profiling

FEATURES

- High Responsivity
- Low Noise
- Spectral Range 900nm to 1700nm
- Low Crosstalk
- Wide Field of View

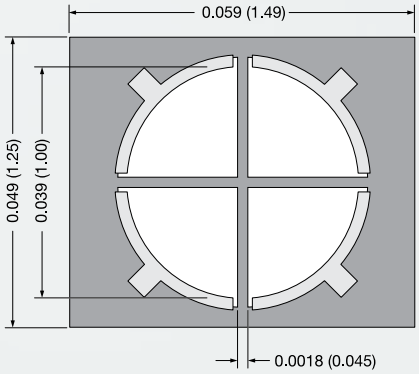
Absolute Maximum Ratings

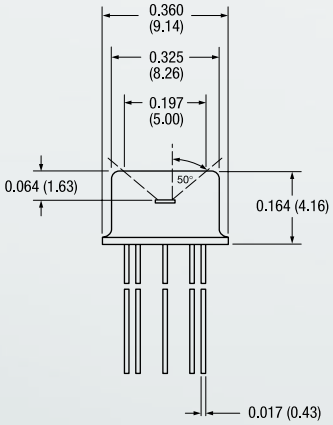
PARAMETERS	SYMBOL	MIN	MAX	UNITS
Storage Temperature	T_{stg}	-55	+125	°C
Operating Temperature	T_{op}	-40	+75	°C
Soldering Temperature	T_{sld}	---	+260	°C

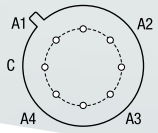
Electro-Optical Characteristics (per 1 element) T_A=23°C

PARAMETERS	SYMBOL	CONDITIONS	FCI-InGaAs-Q1000			FCI-InGaAs-Q3000			UNITS
			MIN	TYP	MAX	MIN	TYP	MAX	
Active Area Diameter	AA_ϕ	---	---	1000	---	---	3000	---	µm
Responsivity	R_λ	λ=1310nm	0.85	0.90	---	0.85	0.90	---	A/W
		λ=1550nm	0.90	0.95	---	0.90	0.95	---	
Element Gap	---	---	---	0.045	---	---	0.045	---	mm
Capacitance	C_j	V_R = 5.0V	---	---	25	---	---	225	pF
Dark Current	I_d	V_R = 5.0V	---	0.5	15	---	2.0	100	nA
Rise Time/ Fall Time	t_r/t_f	V_R = 5.0V, 50Ω 10% to 90%	---	3	---	---	24	---	ns
Crosstalk	---	λ=1550nm, V_R = 5.0V	---	---	1	---	---	1	%
Max. Reverse Voltage	---	---	---	---	15	---	---	10	V
NEP	---	λ=1550nm	---	1.20E-14	---	---	2.50E-14	---	W/√Hz

InGaAs-Q1000







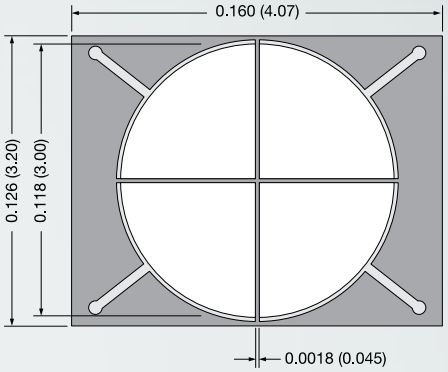
Pin Circle Dia.=0.230

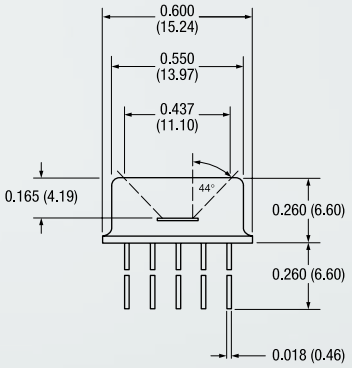
Bottom View

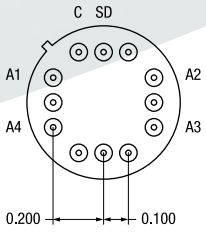
Pinout

PIN	Description
A1	ANODE QUADRANT 1
A2	ANODE QUADRANT 2
A3	ANODE QUADRANT 3
A4	ANODE QUADRANT 4
C	COMMON CATHODE

InGaAs-Q3000







Bottom View

Pinout

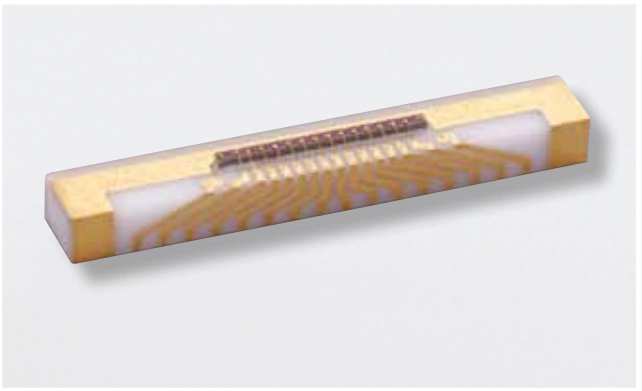
PIN	Description
A1	ANODE QUADRANT 1
A2	ANODE QUADRANT 2
A3	ANODE QUADRANT 3
A4	ANODE QUADRANT 4
C	COMMON CATHODE
SD	SUCTION DIODE

Notes:
- All units in inches (mm).

FCI-InGaAs-XXM

High Speed InGaAs Arrays

FCI-InGaAs-XXM series with 4, 8, 12 and 16 channels are parts of OSI Optoelectronics's high speed IR sensitive photodetector arrays. Each AR coated element is capable of 2.5Gbps data rates exhibiting high responsivity from 1100nm to 1620nm. FCI-InGaAs-XXM, which comes standard on a wraparound ceramic submount, is designed for multichannel fiber applications based on standard 250mm pitch fiber ribbon. Also, board level contacts of 500mm make it easy to connect to your circuit.



APPLICATIONS

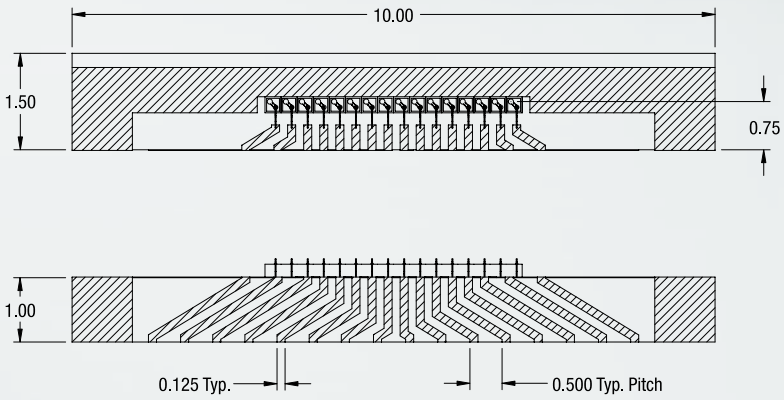
- High Speed Optical Communications
- Single/Multi-Mode Fiber Optic Receiver
- Gigabit Ethernet/Fibre Channel
- SONET/SDH, ATM
- Optical Taps

FEATURES

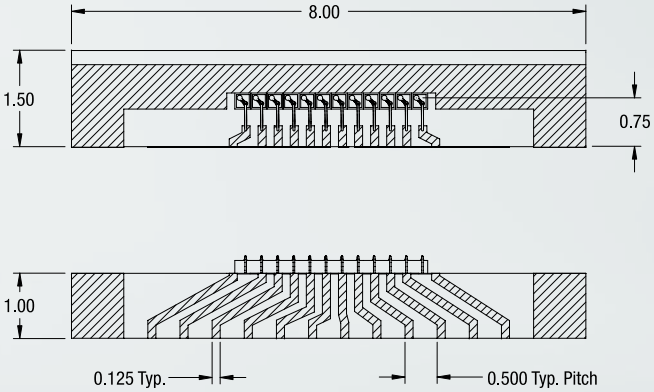
- High Speed
- High Responsivity
- Low Noise
- Spectral Range 900nm to 1700nm

Electro-Optical Characteristics				T_A=23°C, V_R=5V
PARAMETERS	**FCI-InGaAs-4M**	**FCI-InGaAs-8M**	**FCI-InGaAs-12M**	**FCI-InGaAs-16M**
Active Area Diameter	75μm, Pitch:250μm			
Responsivity	Typ. 0.95A/W @1550nm			
Capacitance	Typ. 0.65pF			
Dark Current	Typ. 0.03nA			
Max. Reverse Voltage	20V			
Max. Forward Current	5mA			
Bandwidth	Typ. 2.0GHz @ 1550nm			
Breakdown Voltage	Typ. 50V			
Storage Temperature Range	From –40 to 85°C			
Operating Temperature Range	From 0 to 70°C			

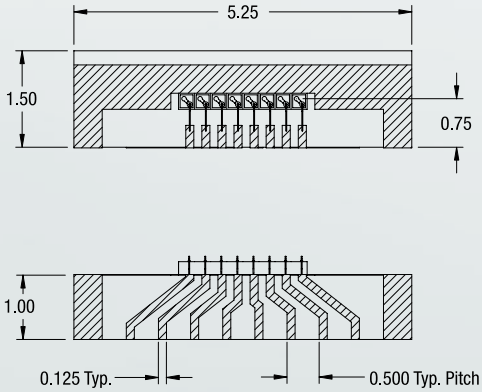
FCI-InGaAs-16M



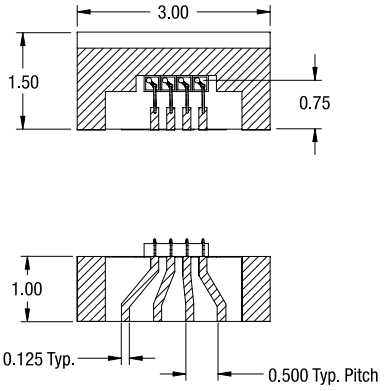
FCI-InGaAs-12M



FCI-InGaAs-8M



FCI-InGaAs-4M



Notes:

- All units in millimeters.
- All devices are mounted with low out gassing conductive epoxy with tolerance of ±25µm.

1.25Gbps / 2.50Gbps Hybrids

InGaAs Photodetectors / Transimpedance Amplifiers

FCI-H125/250G-InGaAs-XX series are compact and integrated high speed InGaAs photodetector with wide dynamic range transimpedance amplifier. Combining the detector with the TIA in a hermetically sealed 4 pin TO-46 package provides ideal conditions for high speed signal amplification. High speed and superior sensitivity make these devices ideal for high-bit rate receivers used in LAN, MAN, WAN, and other high speed communication systems. TO packages come standard with a lensed cap to enhance coupling efficiency, or with a broadband double sided AR coated flat window. The FCI-H125/250G-InGaAs-XX series are also offered with FC, SC, ST and SMA receptacles.

APPLICATIONS

- High Speed Optical Communications
- Gigabit Ethernet
- Fibre Channel
- ATM
- SONET OC-48 / SDH STM-16

FEATURES

- InGaAs Photodetector / Low Noise Transimpedance Amplifier
- High Bandwidth / Wide Dynamic Range
- Hermetically Sealed TO-46 Can
- Single +3.3 to +5V Power Supply
- Spectral Range 1100nm to 1650nm
- Differential Output

Absolute Maximum Ratings

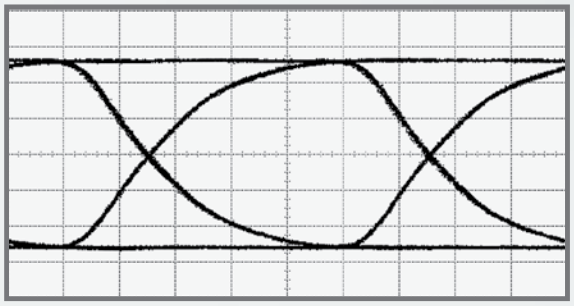
PARAMETERS	SYMBOL	MIN	MAX	UNITS
Storage Temperature	T_{stg}	-40	+125	°C
Operating Temperature	T_{op}	-40	+85	°C
Supply Voltage	V_{cc}	0	+5.5	V
Input Optical Power	P_{IN}	---	+3	dBm

Electro-Optical Characteristics T_A=23°C, Vcc=+3.3V, 1310nm, 100Ω Differential AC Load

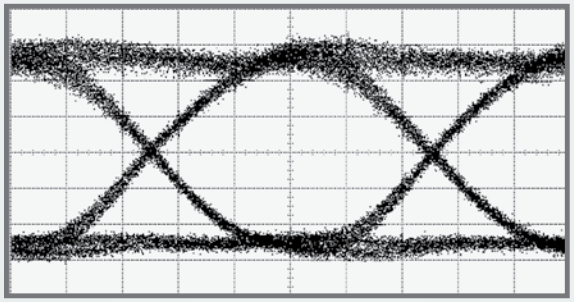
PARAMETERS	SYMBOL	CONDITIONS	FCI-H125G-InGaAs-75			FCI-H250G-InGaAs-75			UNITS
			MIN	TYP	MAX	MIN	TYP	MAX	
Supply Voltage	V_{CC}	---	+3	---	+5.5	+3	---	+5.5	V
Supply Current	I_{CC}	*T_A = 0 to 70°C	---	26	*55	---	35	*65	mA
Active Area Diameter	AA_ϕ	---	---	75	---	---	75	---	µm
Operating Wavelength	λ	---	1100	---	1650	1100	---	1650	nm
Responsivity	R_λ	-17dBm, Differential	1800	2500	---	1600	2500	---	V/W
Transimpedance	---	-17dBm, Differential	---	2800	---	---	2800	---	Ω
Sensitivity	S	BER 10^{-10}, PRBS2^7-1	-24	-28	---	-20	-24	---	dBm
Optical Overload	---	---	-3	---	---	0	---	---	dBm
Bandwidth	BW	-3dB, Small Signal	---	900	---	---	1750	---	MHz
Low Frequency Cutoff	---	-3dB	---	45	---	---	30	---	kHz
Differential Output Voltage	$V_{OUT, P-P}$	-3dBm	180	250	420	200	400	600	mV $_{P-P}$
Output Impedance	---	---	47	50	53	47	50	53	Ω
Transimpedance Linear Range	---	<5%	30	---	---	40	---	---	µW $_{P-P}$

Use AC coupling and differential 100Ω load for best high-speed performance. Devices are not intended to drive DC coupled, 50Ω grounded load.

FCI-H125G-InGaAs-75

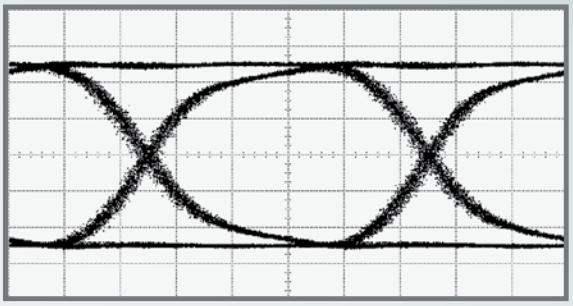


50mV / div, 160ps / div, -6dBm, 1310nm, PRBS2^7-1, Diff.

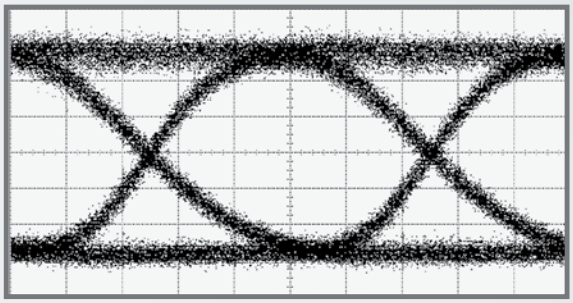


8mV / div, 160ps / div, -21dBm, 1310nm, PRBS2^7-1, Diff.

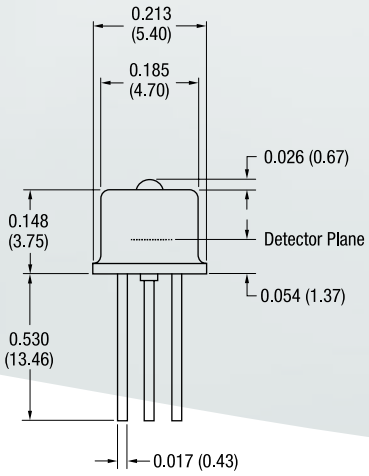
FCI-H250G-InGaAs-75

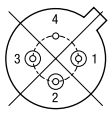


80mV / div, 80ps / div, -6dBm, 1310nm, PRBS2^7-1, Diff.



10mV / div, 80ps / div, -19dBm, 1310nm, PRBS2^7-1, Diff.



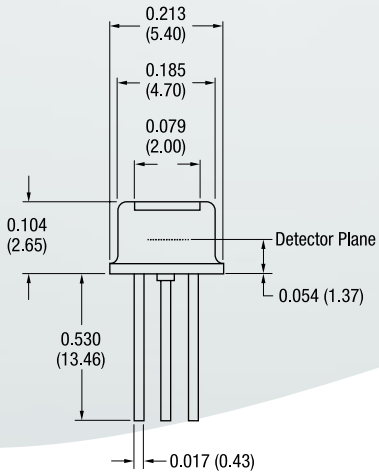


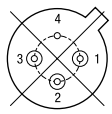
Bottom View

PINOUT

1	D_{out}
2	V_{CC}
3	$\overline{D_{out}}$
4	GND

Pin Circle Diameter = 0.100 (2.54)



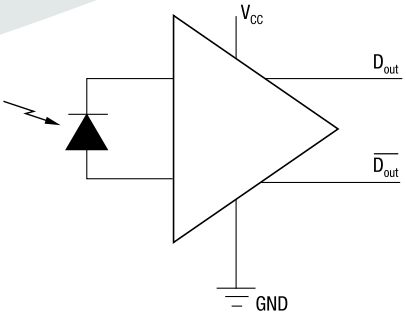


Bottom View

PINOUT

1	D_{out}
2	V_{CC}
3	$\overline{D_{out}}$
4	GND

Pin Circle Diameter = 0.100 (2.54)



Notes:
- All units in inches (mm).
- All tolerances: 0.005 (0.125).
- Please specify when ordering the flat window or lens cap devices.
- The flat window devices have broadband AR coatings centered at 1310nm.
- The thickness of the flat window=0.008 (0.21).

622 Mbps Hybrids

InGaAs Photodetectors / Transimpedance Amplifiers

FCI-H622M-InGaAs-75 series are high-speed 75µm InGaAs photodetector integrated with wide dynamic range transimpedance amplifier. Combining the detector with the TIA in a hermetically sealed 4 pin TO-46 package provides ideal conditions for high-speed signal detection and amplification. Low capacitance, low dark current and high responsivity of the detector, along with low noise characteristic of the integrated TIA, give rise to excellent sensitivity. In practice, these devices are ideal for datacom and telecom applications. Cost effective TO-46 packages come standard with a lensed cap for design simplification, or with a broadband double-sided AR coated flat window. The FCI-H622M-InGaAs-75 series are also offered with FC, SC, ST and SMA receptacles.

APPLICATIONS

- High Speed Optical Communications
- ATM
- SONET OC-3 / OC-12
- SDH STM-1 / STM-4
- Optical Receivers

FEATURES

- Low Noise Transimpedance Amplifier
- High Bandwidth / Wide Dynamic Range
- Single +3.3V Power Supply
- Spectral Range 1100nm to 1650nm
- Differential Output

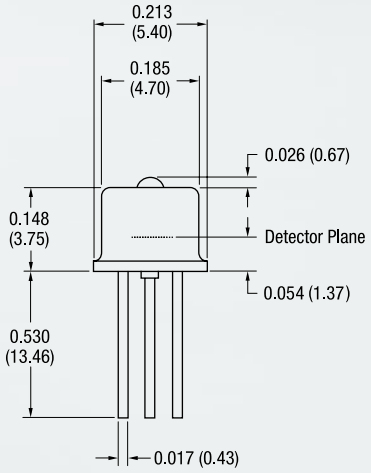
Absolute Maximum Ratings

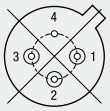
PARAMETERS	SYMBOL	MIN	MAX	UNITS
Storage Temperature	T_{stg}	-40	+125	°C
Operating Temperature	T_{op}	-40	+85	°C
Supply Voltage	V_{cc}	0	+5.5	V
Input Optical Power	P_{IN}	---	+3	dBm

Electro-Optical Characteristics — T=23°C, Vcc=+3.3V, 1310nm, 150Ω Differential AC at 622Mbps

PARAMETERS	SYMBOL	CONDITIONS	FCI-H622M-InGaAs-75			UNITS
			MIN	TYP	MAX	
Supply Voltage	V_{CC}	---	+3	---	+3.6	V
Supply Current	I_{CC}	*T_A = 0 to 70°C	---	22	27	mA
Active Area Diameter	AA_ϕ	---	---	75	---	µm
Operating Wavelength	λ	---	1100	---	1650	nm
Responsivity	R_λ	*-37dBm, ¨-28dBm Differential	---	¨16	---	V/mW
Transimpedance	---	*-37dBm, ¨-28dBm Differential	---	¨18	---	kΩ
Sensitivity	S	BER 10^{-9}, PRBS2^7-1 with noise filter	---	-32	---	dBm
Optical Overload	---	---	---	0	---	dBm
Bandwidth	BW	-3dB, Small Signal	---	520	---	MHz
Differential Output Voltage	$V_{OUT, P-P}$	0dBm	---	240	---	mV_{P-P}
Output Impedance	---	Single-ended	---	75	---	Ω

Use AC coupling and differential 150 Ω load for the best high-speed performance. Devices are not designed to drive DC coupled 150 Ω grounded load.



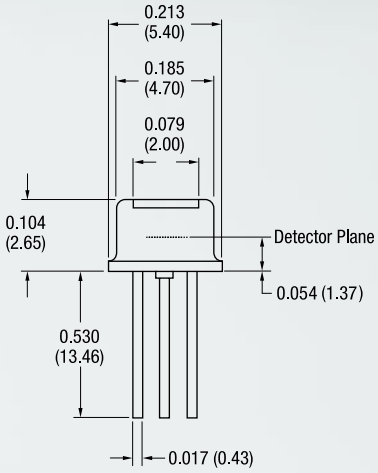


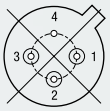
Bottom View

PINOUT

1	$\overline{D_{out}}$
2	V_{CC}
3	D_{out}
4	GND

Pin Circle Diameter = 0.100 (2.54)



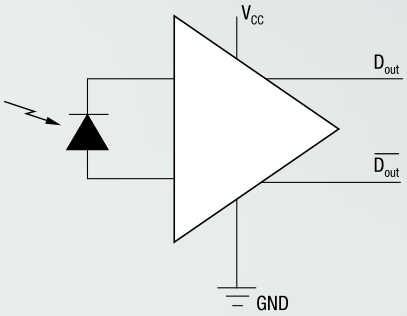


Bottom View

PINOUT

1	$\overline{D_{out}}$
2	V_{CC}
3	D_{out}
4	GND

Pin Circle Diameter = 0.100 (2.54)

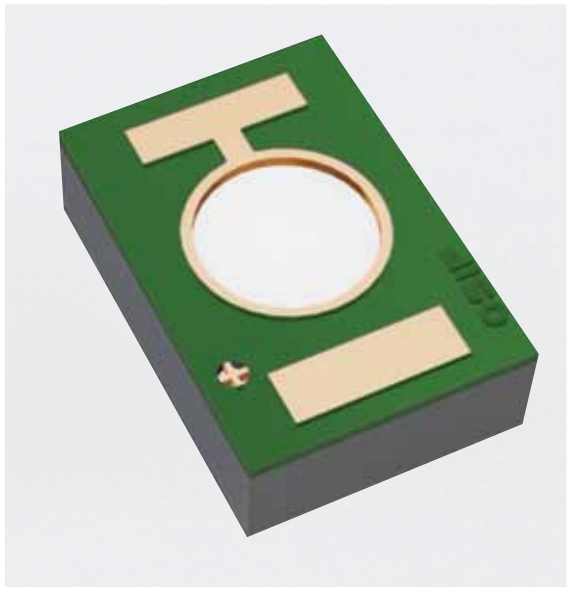


Notes:
- All units in inches (mm).
- All tolerances: 0.005 (0.125).
- Please specify when ordering the flat window or lens cap devices.
- The flat window devices have a double sided AR coated window at 1310nm.
- The thickness of the flat window=0.008 (0.21).

FCI-InGaAs-300B1XX

Back Illuminated InGaAs Photodiode / Arrays

FCI-InGaAs-300B1XX series are multifunctional backside illuminated photodiode/arrays. They come standard in a single element diode or 4- or 8- elements array with active area of 300um. These back illuminated InGaAs photodiode/arrays are designed to be flip chip mounted to an optical plane for front or back illumination. They can be traditionally mounted (active area facing up), or assembled face down minimizing the overall dimensions. These low inductance, low dark current, and low capacitance back illuminated photodiode/arrays come with or without ceramic substrates.



APPLICATIONS

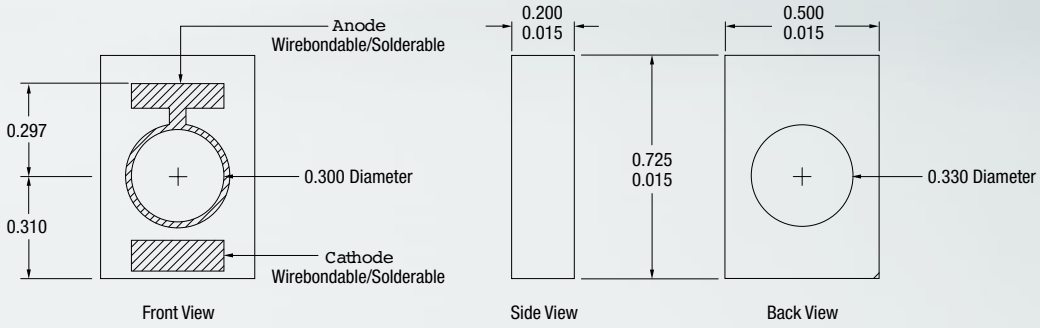
- High Speed Optical Communications
- Multichannel Fiber Optic Receiver
- Power Monitoring
- Single/Multi-Mode Fiber Optic Receiver
- Fast Ethernet, SONET/SDH OC-3/STM-1, ATM
- Instrumentation and Analog Receivers

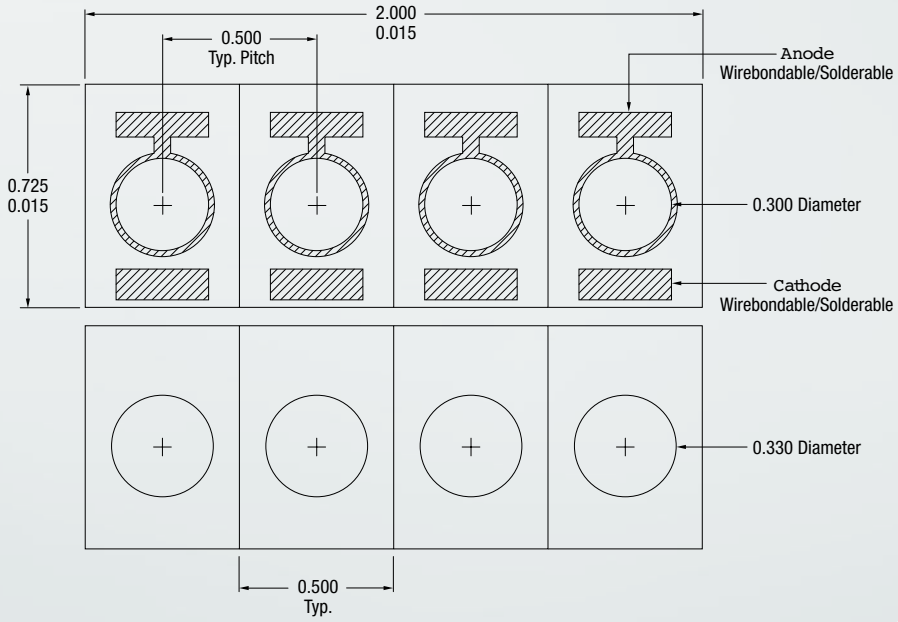
FEATURES

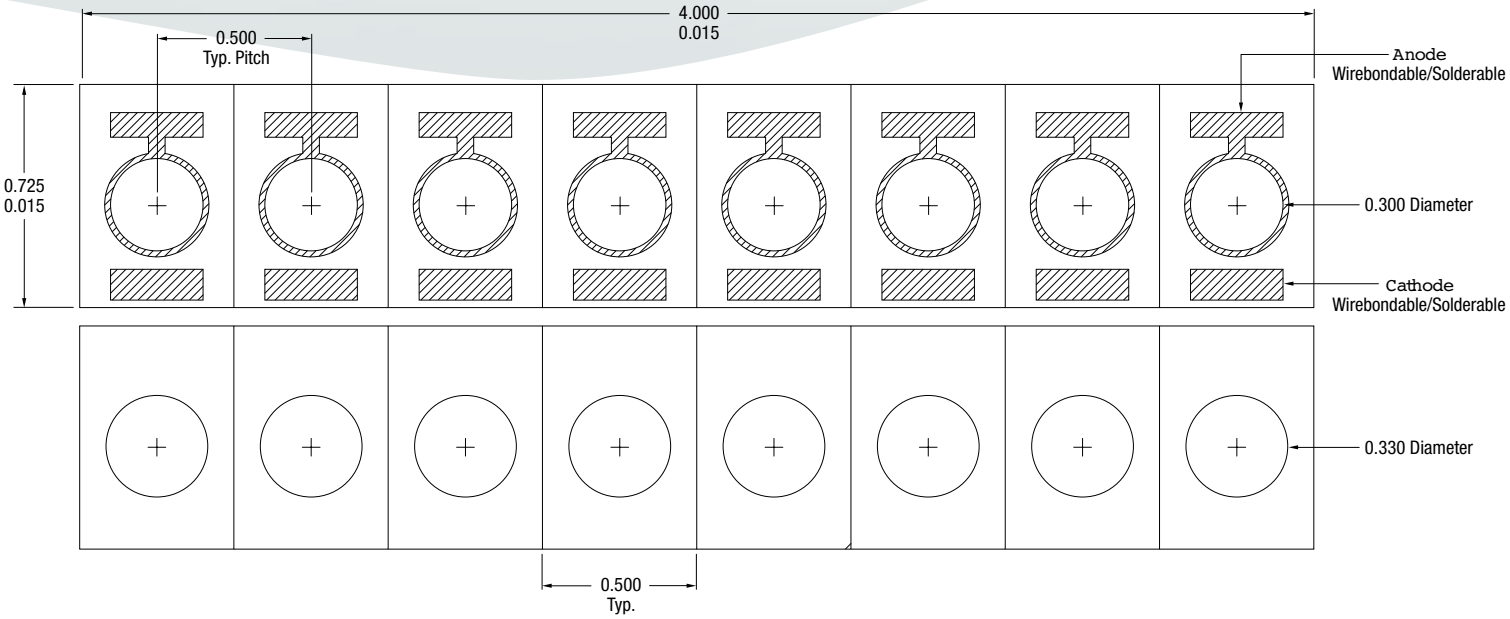
- Back Illumination
- High Responsivity on Both Front and Back
- Low Noise
- Spectral Range 900nm to 1700nm

Electro-Optical Characteristics T_A=23°C, V_R=5V

PARAMETERS	FCI-InGaAs-300B1	FCI-InGaAs-300B1X4	FCI-InGaAs-300B1X8
Active Area Diameter	300μm	300μm, Pitch:500μm	300μm, Pitch:500μm
Responsivity	Min. 0.85A/W @ 1550nm for both front and back Min. 0.80A/W @ 1310nm for both front and back		
Capacitance	Typ. 8pF, Max. 10pF @ V_R=-5V		
Dark Current	Typ. 0.05nA, Max. 5.0nA @ V_R=-5V		
Max. Reverse Voltage	15V		
Max. Reverse Current	5mA		
Max. Forward Current	25mA		
Bandwidth	Min. 100MHz		
Breakdown Voltage	Min. 10V @ 1uA		
Storage Temperature Range	From –40 to 85°C		
Operating Temperature Range	From 0 to 70°C		


Anode
Wirebondable/Solderable
0.297
0.310
0.300 Diameter
Cathode
Wirebondable/Solderable
Front View
0.200
0.015
0.725
0.015
Side View
0.500
0.015
0.330 Diameter
Back View

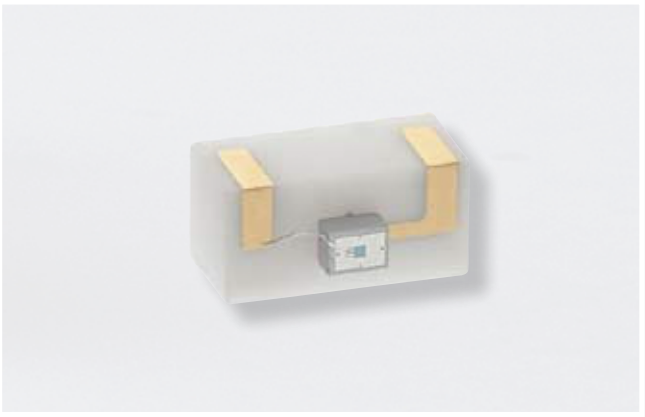

2.000
0.015
0.500
Typ. Pitch
Anode
Wirebondable/Solderable
0.725
0.015
0.300 Diameter
Cathode
Wirebondable/Solderable
0.330 Diameter
0.500
Typ.


4.000
0.015
0.500
Typ. Pitch
Anode
Wirebondable/Solderable
0.725
0.015
0.300 Diameter
Cathode
Wirebondable/Solderable
0.330 Diameter
0.500
Typ.

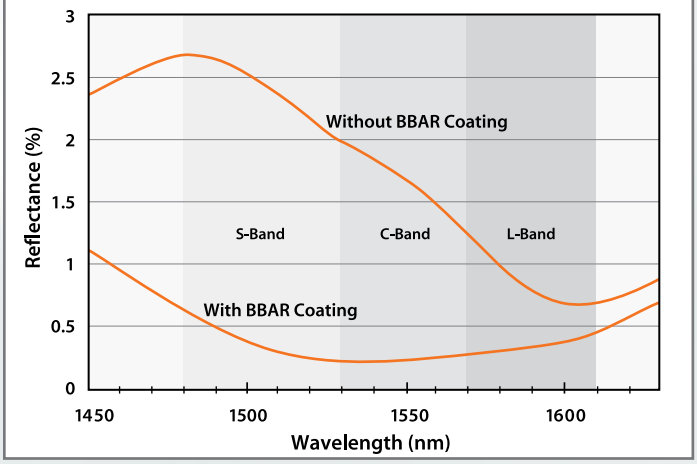
FCI-InGaAs-WCER-LR

Broadband Anti-Reflection Coated InGaAs Photodiodes

OSI Optoelectronics's latest product line includes a very low reflectance photodiode. Designed for telecommunication applications, the InGaAs/InP photodiode has a typical optical reflectance of less than .6% from 1520nm to 1620nm. This ultra low reflectance over the wide wavelength range was achieved by depositing a proprietary multi-layered Anti-Reflection coating directly onto the surface of the InGaAs/InP photodiode.



Reflectance Curve



APPLICATIONS

- Wavelength Locker / Wavelength Monitoring
- Lasers Back Facet Monitoring
- DWDM
- Instrumentation

FEATURES

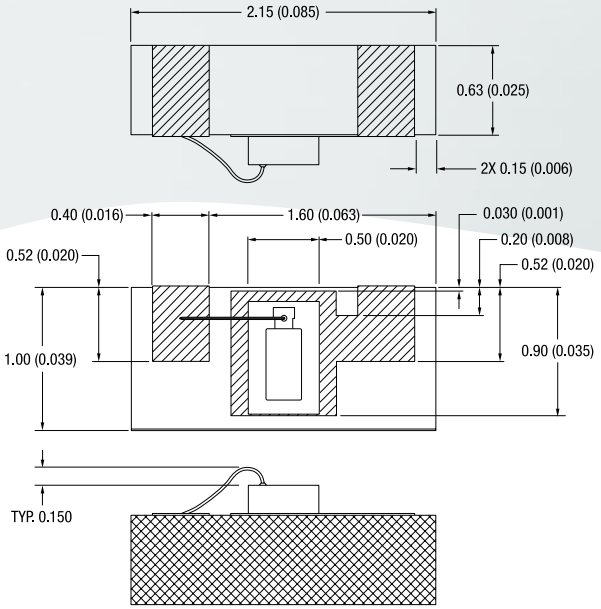
- Reflectance Less than 0.6%
- Low Noise
- High Responsivity
- High Speed
- Spectral Range 900nm to 1700nm

Absolute Maximum Ratings

PARAMETERS	SYMBOL	MIN	MAX	UNITS
Storage Temperature	T_{stg}	-40	+85	°C
Operating Temperature	T_{op}	0	+70	°C
Soldering Temperature	T_{sld}	---	+260	°C

Electro-Optical Characteristics T_A=23°C

PARAMETERS	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNITS
Active Area	AA	---	---	250X500	---	µm X µm
Responsivity	R_λ	λ = 1310nm	0.85	0.90	---	A/W
		λ = 1550nm	0.90	0.95	---	
Capacitance	C_j	V_R=5.0V	---	15	---	pF
Dark Current	I_d	V_R=5.0V	---	---	1	nA
Max. Reverse Voltage	---	---	---	---	20	V
Max. Reverse Current	---	---	---	---	2	mA
Max. Forward Current	---	---	---	---	5	mA
Reflectance	---	1520nm≤ λ ≤1620nm	---	0.5	0.6	%



Notes:

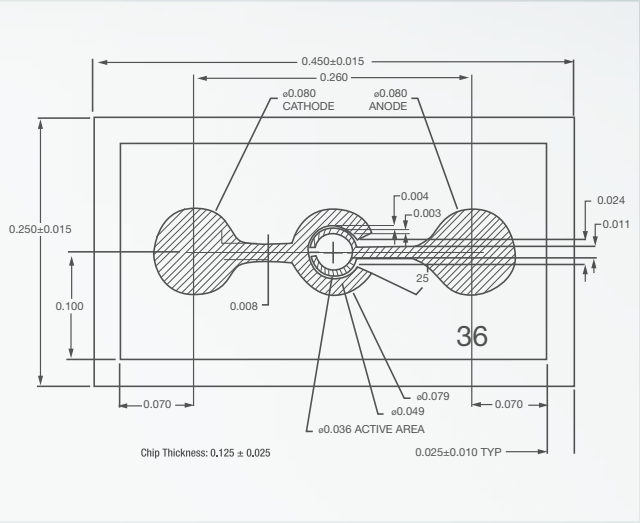
- All units in millimeters.
- All devices are mounted with low out gassing conductive epoxy with tolerance of ±25µm. Eutectic mounting is also available upon request.

FCI-InGaAs-36C

10Gbps InGaAs Photodiode

OSI Optoelectronics's FCI-InGaAs-36C is an OC-192 (SONET/SDH) capable photosensitive device, exhibiting low dark current and good performance stability.

Both Anode and Cathode contacts appear on the chip's top facet. And it makes ideal component in high-speed optical data transport applications at 10Gbps, responding to a spectral envelop that spans from 910nm to 1650nm.



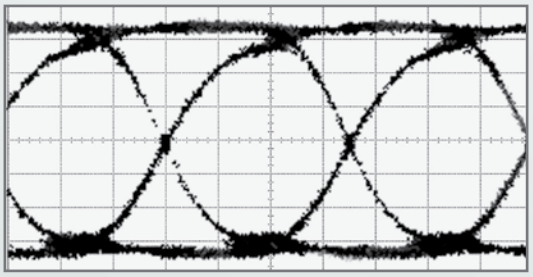
APPLICATIONS

- High Speed Optical Communications
- OC-192
- Optical Networking
- Optical Measurement

FEATURES

- High Speed, 10 Gbps Data Rates
- low Dark Current
- Front Illuminated
- High Responsivity, Typ. 0.8 A/W @1550nm
- Diameter of Light Sensitive area 36µm
- Low Capacitance

Typical Eye Diagram (10Gbps)(1)



Scale: Vertical 100mV/div
Horizontal 20.0 ps/div

Electro-Optical Characteristics T_A=23°C

PARAMETERS	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNITS
Sensing Area Diameter	AA_ϕ	---	---	36	---	µm
Chip Size	---	---	---	450 x 250	---	µm x µm
Responsivity	R_λ	λ=1310nm	0.8	0.85	---	A/W
		λ=1550nm	0.75	0.8	---	
Capacitance	C_j	V_R=5V	---	0.16	0.2	pF
Dark Current	I_d	V_R=5V	---	0.5	2	nA
Breakdown Voltage	V_b	I_R=1µA	20	---	---	V
Bandwidth	---	---	---	9	---	GHz

(1) Measured with a TIA. Currently FCI-InGaAs-36C is offered in die form only.

FCI-InGaAs-XX-XX-XX

High Speed InGaAs Photodiodes w/Pigtail Packages

The FCI-InGaAs-XX-XX-XX with active area of 75um and 120um are part of OSI Optoelectronics's family of high speed IR sensitive detectors with fiber pigtail package. The single/multi-mode fiber is optically aligned to either the hermetically sealed InGaAs diode in TO-46 lens cap package enhancing the coupling efficiency and stability or directly to the InGaAs diode mounted on a ceramic substrate. High responsivity and low capacitance make these devices ideal for very high-bit rate receivers used in LAN, MAN, WAN and other high speed communication and monitoring/instrumentation systems. Angle polished connectors and custom packages are also available.

For a solution involving FC connector and TO-46 attachment, user(s) may consider either FCI-InGaAs-75-SM-FC or FCI-InGaAs-120-SM-FC in single-mode operation.

Similarily, the multi-mode variant is available in FCI-InGaAs-120-MM-FC using 62.5/125 fiber. The back-reflection of -30dB typical is to be experienced in multi-mode based solution.

APPLICATIONS

- High Speed Optical Communications
- Gigabit Ethernet/Fibre Channel
- SONET/SDH, ATM
- Optical Power Monitoring / Instrumentation

FEATURES

- High Speed
- High Responsivity
- Spectral Range 900nm to 1700nm
- Low Back Reflection

Absolute Maximum Ratings

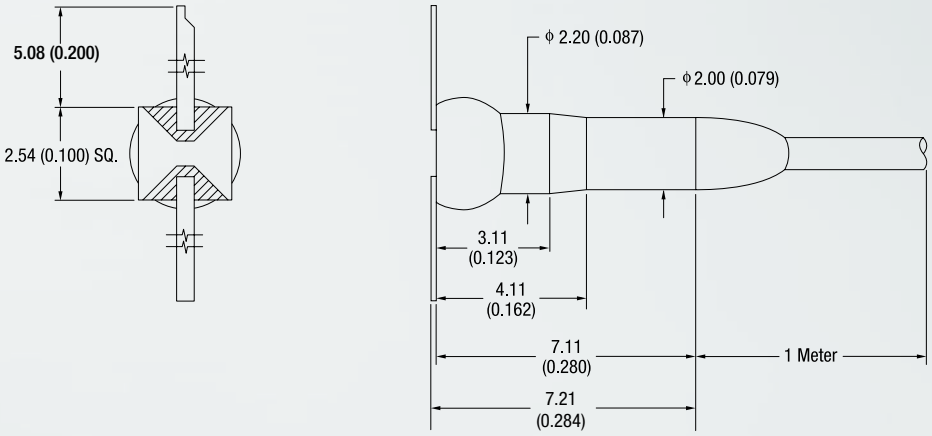
PARAMETERS	SYMBOL	MIN	MAX	UNITS
Storage Temperature	T_{stg}	-20	+90	°C
Operating Temperature	T_{op}	0	+75	°C

Electro-Optical Characteristics T_A=23°C

PARAMETERS	SYMBOL	CONDITIONS	FCI-InGaAs-75-XX-XX			FCI-InGaAs-120-XX-XX			FCI-InGaAs-75C-XX-XX			FCI-InGaAs-120C-XX-XX			UNITS
			MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX	
Active Area Diameter	AA_ϕ	---	---	75	---	---	120	---	---	75	---	---	120	---	µm
Responsivity	R_λ	λ=1310nm	0.75	0.85	---	0.80	0.90	---	0.75	0.85	---	0.80	0.90	---	A/W
		λ=1550nm	0.80	0.90	---	0.85	0.95	---	0.80	0.90	---	0.85	0.95	---	
Back-Reflection*	R_L	---	---	-40	-35	---	-40	-35	---	-40	-35	---	-40	-35	dB
Capacitance	C_j	V_R = 5.0V	---	0.65	---	---	1.0	---	---	0.65	---	---	1.0	---	pF
Dark Current	I_d	V_R = 5.0V	---	0.03	2	---	0.05	2	---	0.03	2	---	0.05	2	nA
Rise Time/ Fall Time	t_r/t_f	V_R = 5.0V, R_L=50Ω 10% to 90%	---	---	0.2	---	---	0.3	---	---	0.2	---	---	0.3	ns
Max. Reverse Voltage	---	---	---	---	20	---	---	20	---	---	20	---	---	20	V
Max. Reverse Current	---	---	---	---	1	---	---	2	---	---	1	---	---	2	mA
Max. Forward Current	---	---	---	---	5	---	---	5	---	---	5	---	---	5	mA
NEP	---	---	---	3.44E-15	---	---	4.50E-15	---	---	3.44E-15	---	---	4.50E-15	---	W/√Hz

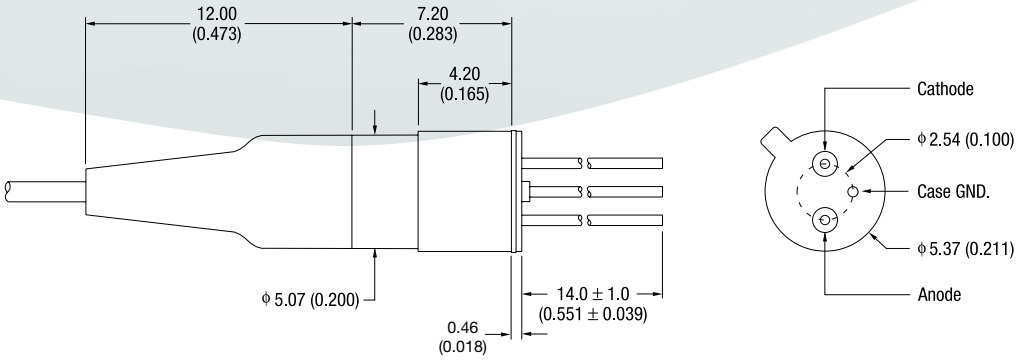
*Single Mode Fiber (SMF) only

FCI-InGaAs-75C-XX-XX and FCI-InGaAs-120C-XX-XX



All pigtail packages are available in: SM-(FC, SC or ST)
MM-(FC, SC or ST)

FCI-InGaAs-75-XX-XX and FCI-InGaAs-120-XX-XX



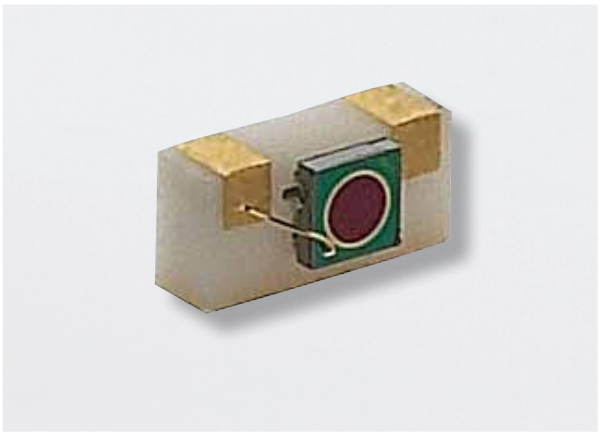
All pigtail packages are available in: SM-(FC, SC or ST)
MM-(FC, SC or ST)

Notes:
- All units in millimeters (inches).
- All tolerances are 0.125 (0.005)

FCI-InGaAs-XXX-WCER

High Speed InGaAs Photodiodes Mounted on Wraparound Ceramic

FCI-InGaAs-XXX-WCER with active area sizes of 75µm, 120µm, 300µm, 400µm and 500µm are part of a line of monitor photodiodes mounted on metallized ceramic substrates. These compact assemblies are designed for ease of integration. The chips can be epoxy or eutectic mounted onto the ceramic substrate.

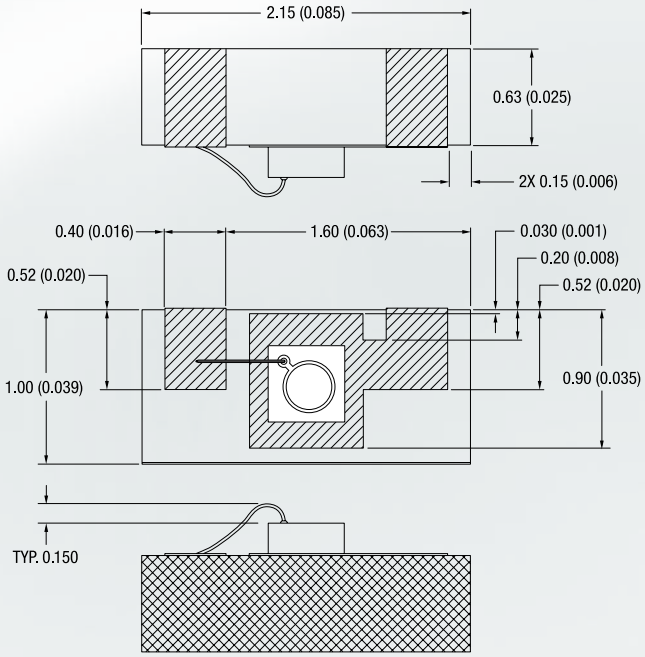


APPLICATIONS

- High Speed Optical Communications
- Gigabit Ethernet/Fibre Channel
- SONET / SDH, ATM
- Diode Laser Monitor
- Instrumentation

FEATURES

- Low Noise
- High Responsivity
- High Speed
- Spectral Range
  900nm to 1700nm



Notes:
- All units in millimeters (inches).
- All devices are eutectic mounted with tolerance of ±50µm.

Absolute Maximum Ratings

PARAMETERS	SYMBOL	MIN	MAX	UNITS
Storage Temperature	T_{stg}	-40	+85	°C
Operating Temperature	T_{op}	0	+70	°C
Soldering Temperature	T_{sld}	---	+260	°C

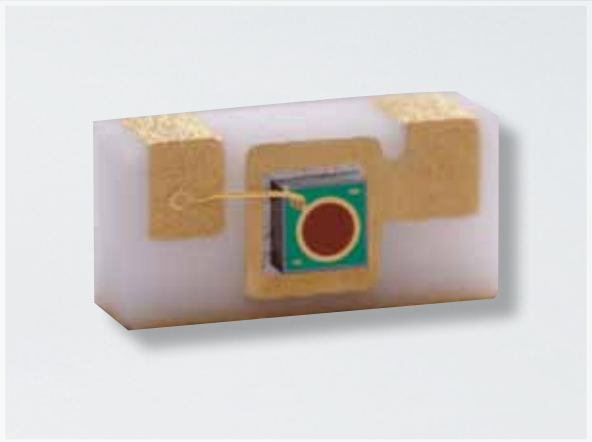
Electro-Optical Characteristics T_A=23°C

PARAMETERS	SYMBOL	CONDITIONS	FCI-InGaAs-75WCER			FCI-InGaAs-120WCER			FCI-InGaAs-300WCER			FCI-InGaAs-400WCER			FCI-InGaAs-500WCER			UNITS
			MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX	
Active Area Diameter	AA_ϕ	---	---	75	---	---	120	---	---	300	---	---	400	---	---	500	---	µm
Responsivity	R_λ	λ=1310nm	0.80	0.90	---	0.80	0.90	---	0.80	0.90	---	0.80	0.90	---	0.80	0.90	---	A/W
		λ=1550nm	0.90	0.95	---	0.90	0.95	---	0.90	0.95	---	0.90	0.95	---	0.90	0.95	---	
Capacitance	C_j	V_R = 5.0V	---	0.65	---	---	1.0	---	---	10.0	---	---	14.0	---	---	20.0	---	pF
Dark Current	I_d	V_R = 5.0V	---	0.03	2	---	0.05	2	---	0.30	5	---	0.40	5	---	0.50	20	nA
Rise Time/ Fall Time	t_r/t_f	V_R = 5.0V, R_L=50Ω 10% to 90%	---	---	0.20	---	---	0.30	---	---	1.5	---	---	3.0	---	---	10.0	ns
Max. Reverse Voltage	---	---	---	---	20	---	---	20	---	---	15	---	---	15	---	---	15	V
Max. Reverse Current	---	---	---	---	1	---	---	2	---	---	2	---	---	2	---	---	2	mA
Max. Forward Current	---	---	---	---	5	---	---	5	---	---	8	---	---	8	---	---	8	mA
NEP	---	---	---	3.44E-15	---	---	4.50E-15	---	---	6.28E-15	---	---	7.69E-15	---	---	8.42E-15	---	W/√Hz

FCI-InGaAs-XXX-ACER

High Speed InGaAs Photodiodes Mounted on Wedge Ceramic Packages

FCI-InGaAs-XXX-ACER with active area sizes of 75µm, 120µm, 300µm, 400µm and 500µm is part of OSI Optoelectronics's high speed IR sensitive photodiodes mounted on angled ceramic substrates. The ceramic substrate with an angled surface by 5° greatly reduces the back reflection. The chips can be epoxy/eutectic mounted onto the angled ceramic substrate.

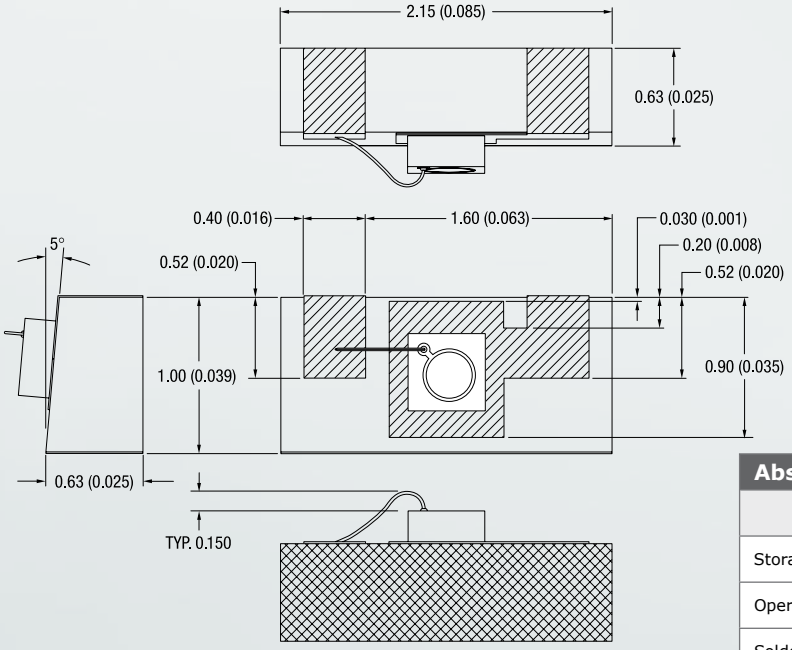


APPLICATIONS

- High Speed Optical Communications
- Gigabit Ethernet/Fibre Channel
- SONET / SDH, ATM
- Diode Laser Monitor
- Instrumentation

FEATURES

- 5° Angle Ceramic
- Low Noise
- High Responsivity
- High Speed
- Spectral Range 900nm to 1700nm



Notes:

- All units in millimeters (inches).
- All devices are eutectic mounted with tolerance of ±50µm.

Absolute Maximum Ratings

PARAMETERS	SYMBOL	MIN	MAX	UNITS
Storage Temperature	T_{stg}	-40	+85	°C
Operating Temperature	T_{op}	0	+70	°C
Soldering Temperature	T_{sld}	---	+260	°C

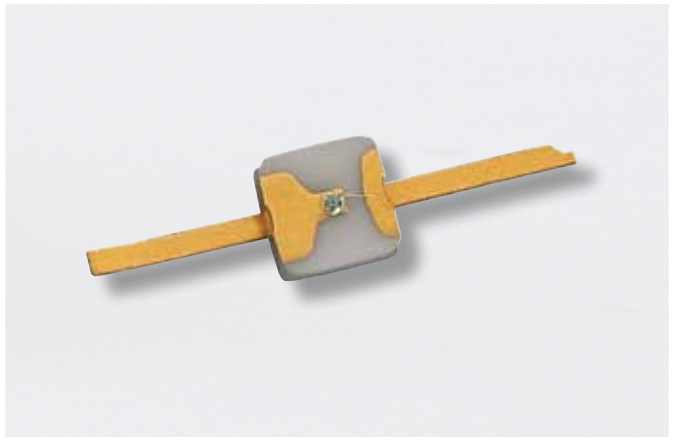
Electro-Optical Characteristics T_A=23°C

PARAMETERS	SYMBOL	CONDITIONS	FCI-InGaAs-75ACER			FCI-InGaAs-120ACER			FCI-InGaAs-300ACER			FCI-InGaAs-400ACER			FCI-InGaAs-500ACER			UNITS
			MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX	
Active Area Diameter	AA_ϕ	---	---	75	---	---	120	---	---	300	---	---	400	---	---	500	---	µm
Responsivity	R_λ	λ=1310nm	0.80	0.90	---	0.80	0.90	---	0.80	0.90	---	0.80	0.90	---	0.80	0.90	---	µm
		λ=1550nm	0.90	0.95	---	0.90	0.95	---	0.90	0.95	---	0.90	0.95	---	0.90	0.95	---	A/W
Capacitance	C_j	V_R = 5.0V	---	0.65	---	---	1.0	---	---	10.0	---	---	14.0	---	---	20.0	---	pF
Dark Current	I_d	V_R = 5.0V	---	0.03	2	---	0.05	2	---	0.30	5	---	0.40	5	---	0.50	20	nA
Rise Time/ Fall Time	t_r/t_f	V_R = 5.0V, R_L=50Ω 10% to 90%	---	---	0.20	---	---	0.30	---	---	1.5	---	---	3.0	---	---	10.0	ns
Max. Reverse Voltage	---	---	---	---	20	---	---	20	---	---	15	---	---	15	---	---	15	V
Max. Reverse Current	---	---	---	---	1	---	---	2	---	---	2	---	---	2	---	---	2	mA
Max. Forward Current	---	---	---	---	5	---	---	5	---	---	8	---	---	8	---	---	8	mA
NEP	---	---	---	3.44E-15	---	---	4.50E-15	---	---	6.28E-15	---	---	7.69E-15	---	---	8.42E-15	---	W/√Hz

FCI-InGaAs-XXX-LCER

High Speed InGaAs Photodiodes Mounted on Ceramic Packages w/Leads

FCI-InGaAs-XXX-LCER with active area sizes of 75µm, 120µm, 300µm, 400µm and 500µm are part of OSI Optoelectronics's high speed IR sensitive photodiodes mounted on gull wing ceramic substrates. The chips can be epoxy/eutectic mounted onto the ceramic substrate.

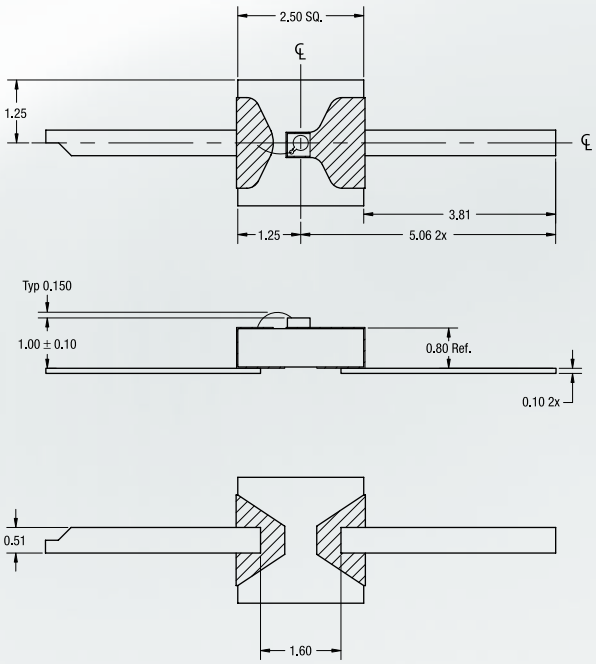


APPLICATIONS

- High Speed Optical Communications
- Gigabit Ethernet/Fibre Channel
- SONET / SDH, ATM
- Diode Laser Monitoring
- Instrumentation

FEATURES

- Low Noise
- High Responsivity
- High Speed
- Spectral Range 900nm to 1700nm



Notes:

- All units in millimeters.
- All devices are mounted with low out gassing conductive epoxy with tolerance of ±25µm. Eutectic mounting is also available upon request.

Absolute Maximum Ratings

PARAMETERS	SYMBOL	MIN	MAX	UNITS
Storage Temperature	T_{stg}	-40	+85	°C
Operating Temperature	T_{op}	0	+70	°C
Soldering Temperature	T_{sld}	---	+260	°C

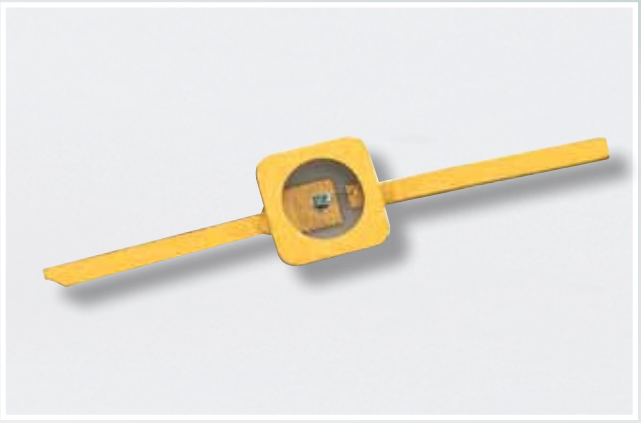
Electro-Optical Characteristics T_A=23°C

PARAMETERS	SYMBOL	CONDITIONS	FCI-InGaAs-75LCER			FCI-InGaAs-120LCER			FCI-InGaAs-300LCER			FCI-InGaAs-400LCER			FCI-InGaAs-500LCER			UNITS
			MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX	
Active Area Diameter	AA_ϕ	---	---	75	---	---	120	---	---	300	---	---	400	---	---	500	---	µm
Responsivity	R_λ	λ=1310nm	0.80	0.90	---	0.80	0.90	---	0.80	0.90	---	0.80	0.90	---	0.80	0.90	---	A/W
		λ=1550nm	0.90	0.95	---	0.90	0.95	---	0.90	0.95	---	0.90	0.95	---	0.90	0.95	---	
Capacitance	C_j	V_R = 5.0V	---	0.65	---	---	1.0	---	---	10.0	---	---	14.0	---	---	20.0	---	pF
Dark Current	I_d	V_R = 5.0V	---	0.03	2	---	0.05	2	---	0.30	5	---	0.40	5	---	0.50	20	nA
Rise Time/ Fall Time	t_r/t_f	V_R = 5.0V, R_L=50Ω 10% to 90%	---	---	0.20	---	---	0.30	---	---	1.5	---	---	3.0	---	---	10.0	ns
Max. Reverse Voltage	---	---	---	---	20	---	---	20	---	---	15	---	---	15	---	---	15	V
Max. Reverse Current	---	---	---	---	1	---	---	2	---	---	2	---	---	2	---	---	2	mA
Max. Forward Current	---	---	---	---	5	---	---	5	---	---	8	---	---	8	---	---	8	mA
NEP	---	---	---	3.44E-15	---	---	4.50E-15	---	---	6.28E-15	---	---	7.69E-15	---	---	8.42E-15	---	W/√Hz

FCI-InGaAs-XXX-CCER

High Speed InGaAs Photodiodes Mounted on Cavity Ceramic Packages

FCI-InGaAs-XXX-CCER with active area sizes of 75µm, 120µm, 300µm, 400µm and 500µm are part of OSI Optoelectronics's high speed IR sensitive photodiodes mounted on gull wing ceramic substrates with glass windows. These devices have a glass window attached to the ceramic where fibers can be directly epoxy mounted onto. The chips can be epoxy or eutectic mounted onto the ceramic substrate. These devices can be provided with custom AR coated windows.

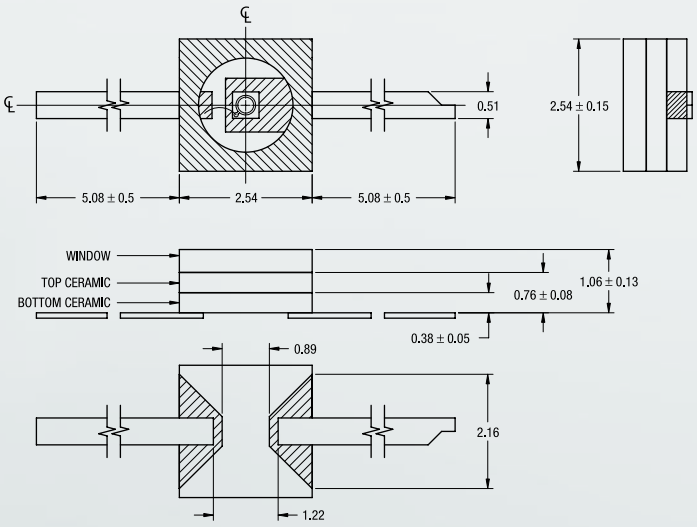


APPLICATIONS

- High Speed Optical Communications
- Gigabit Ethernet/Fibre Channel
- SONET / SDH, ATM
- Diode Laser Monitoring
- Instrumentation

FEATURES

- Low Noise
- High Responsivity
- High Speed
- Spectral Range
  900nm to 1700nm



SphereOptics
Phone +49 (0) 8152 983 789-0
Fax +49 (0) 8152 983 789-1
E-Mail info@sphereoptics.de
www.sphereoptics.de

Notes:

- All units in millimeters.
- All devices are mounted with low out gassing conductive epoxy with tolerance of ±25µm. Eutectic mounting is also available upon request.

Absolute Maximum Ratings

PARAMETERS	SYMBOL	MIN	MAX	UNITS
Storage Temperature	T_{stg}	-40	+85	°C
Operating Temperature	T_{op}	0	+70	°C
Soldering Temperature	T_{sld}	---	+260	°C

Electro-Optical Characteristics T_A=23°C

PARAMETERS	SYMBOL	CONDITIONS	FCI-InGaAs-75CCER			FCI-InGaAs-120CCER			FCI-InGaAs-300CCER			FCI-InGaAs-400CCER			FCI-InGaAs-500CCER			UNITS
			MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX	
Active Area Diameter	AA_ϕ	---	---	75	---	---	120	---	---	300	---	---	400	---	---	500	---	µm
Responsivity	R_λ	λ=1310nm	0.80	0.90	---	0.80	0.90	---	0.80	0.90	---	0.80	0.90	---	0.80	0.90	---	A/W
		λ=1550nm	0.90	0.95	---	0.90	0.95	---	0.90	0.95	---	0.90	0.95	---	0.90	0.95	---	
Capacitance	C_j	V_R = 5.0V	---	0.65	---	---	1.0	---	---	10.0	---	---	14.0	---	---	20.0	---	pF
Dark Current	I_d	V_R = 5.0V	---	0.03	2	---	0.05	2	---	0.30	5	---	0.40	5	---	0.50	20	nA
Rise Time/ Fall Time	t_r/t_f	V_R = 5.0V, R_L=50Ω 10% to 90%	---	---	0.20	---	---	0.30	---	---	1.5	---	---	3.0	---	---	10.0	ns
Max. Reverse Voltage	---	---	---	---	20	---	---	20	---	---	15	---	---	15	---	---	15	V
Max. Reverse Current	---	---	---	---	1	---	---	2	---	---	2	---	---	2	---	---	2	mA
Max. Forward Current	---	---	---	---	5	---	---	5	---	---	8	---	---	8	---	---	8	mA
NEP	---	---	---	3.44E-15	---	---	4.50E-15	---	---	6.28E-15	---	---	7.69E-15	---	---	8.42E-15	---	W/√Hz