

## 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

$T_A=23^{\circ}\text{C}$ ,  $V_{cc}=+3.3\text{V}$ , 1310nm, 100 $\Omega$  Differential AC Load

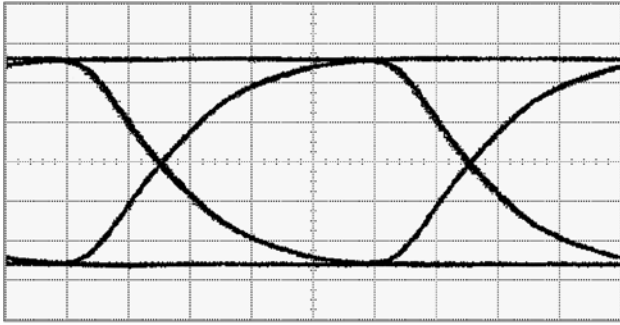
PARAMETERS	SYMBOL	CONDITIONS	FCI-H125G-InGaAs-70			FCI-H250G-InGaAs-70			UNITS
			MIN	TYP	MAX	MIN	TYP	MAX	
Supply Voltage	$V_{cc}$	---	+3	---	+5.5	+3	---	+5.5	V
Supply Current	$I_{cc}$	* $T_A = 0$ to $70^{\circ}\text{C}$	---	26	*55	---	35	*65	mA
Active Area Diameter	$AA_{\phi}$	---	---	70	---	---	70	---	$\mu\text{m}$
Operating Wavelength	$\lambda$	---	1100	---	1650	1100	---	1650	nm
Responsivity	$R_{\lambda}$	-17dBm, Differential	1800	2500	---	1600	2500	---	V/W
Transimpedance	---	-17dBm, Differential	---	2800	---	---	2800	---	$\Omega$
Sensitivity	S	BER $10^{-10}$ , PRBS $2^7-1$	-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 <sub>P-P</sub>
Output Impedance	---	---	47	50	53	47	50	53	$\Omega$
Transimpedance Linear Range	---	<5%	30	---	---	40	---	---	$\mu\text{W}_{P-P}$

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

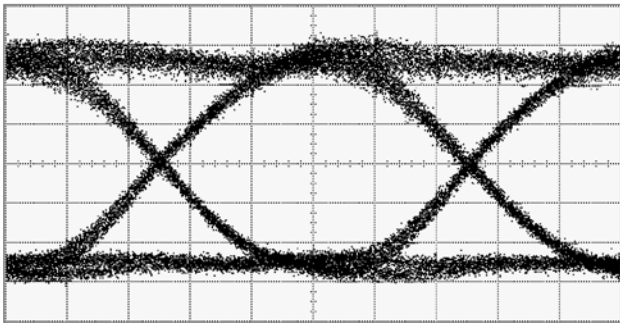
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## FCI-H125G-InGaAs-70

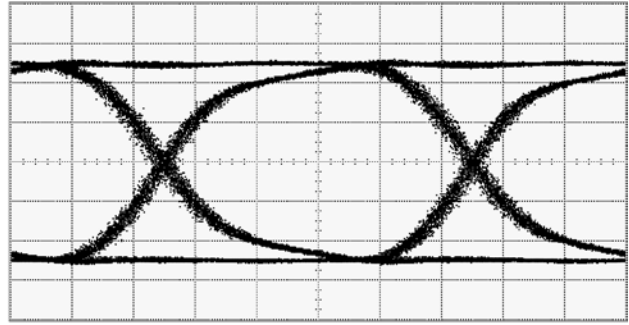


50mV / div, 160ps / div, -6dBm, 1310nm, PRBS<sub>2<sup>7</sup>-1</sub>, Diff.

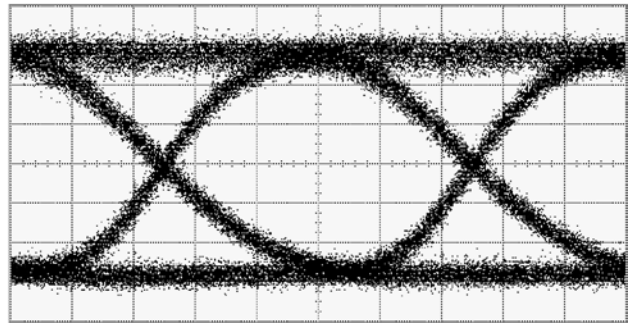


8mV / div, 160ps / div, -21dBm, 1310nm, PRBS<sub>2<sup>7</sup>-1</sub>, Diff.

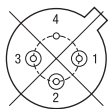
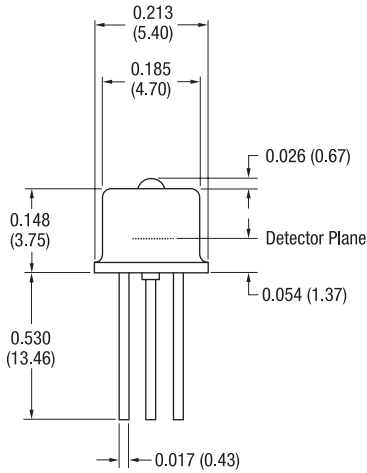
## FCI-H250G-InGaAs-70



80mV / div, 80ps / div, -6dBm, 1310nm, PRBS<sub>2<sup>7</sup>-1</sub>, Diff.



10mV / div, 80ps / div, -19dBm, 1310nm, PRBS<sub>2<sup>7</sup>-1</sub>, Diff.

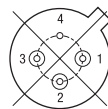
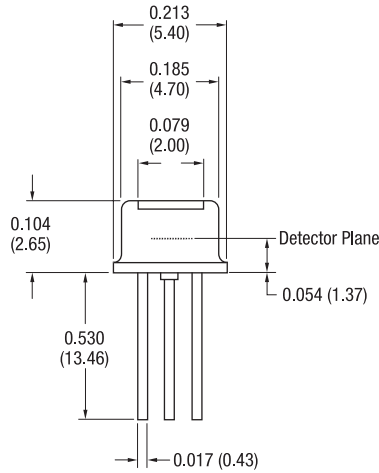


Bottom View

### PINOUT

1	D <sub>out</sub>
2	V <sub>CC</sub>
3	$\overline{D}_{out}$
4	GND

Pin Circle Diameter = 0.100 (2.54)

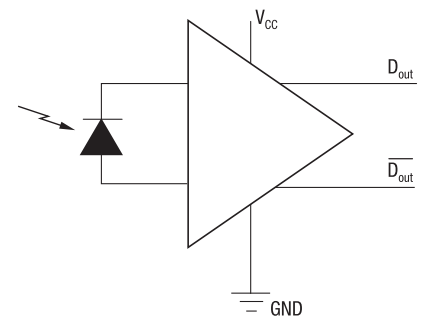


Bottom View

### PINOUT

1	D <sub>out</sub>
2	V <sub>CC</sub>
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).