

# 1.25Gbps / 2.50Gbps Hybrids

## GaAs Photodetectors / Transimpedance Amplifiers

**FCI-H125/250G-GaAs-100** series with active area sizes of 100µm is a compact integration of our high speed GaAs photodetector with a wide dynamic range transimpedance amplifier. Combining the detector with the TIA in a hermetically sealed 4 pin TO-46 or TO-52 package provides ideal conditions for high speed signal amplification. Low capacitance, low dark current and high responsivity from 650nm to 860nm make these devices ideal for high-bit rate receivers used in LAN, MAN, 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-GaAs-100 series is 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

- GaAs photodetector / Low Noise Transimpedance Amplifier
- High Bandwidth / Wide Dynamic Range
- Hermetically Sealed TO-46 Can
- Single +3.3V to +5V Power Supply
- Spectral Range 650nm to 850nm
- Differential Output

### Absolute Maximum Ratings

PARAMETERS	SYMBOL	MIN	MAX	UNITS
Storage Temperature	T <sub>stg</sub>	-40	+125	°C
Operating Temperature	T <sub>op</sub>	0	+75	°C
Supply Voltage	V <sub>cc</sub>	0	+6	V
Input Optical Power	P <sub>IN</sub>	---	+5	dBm

### Electro-Optical Characteristics

T<sub>A</sub>=23°C, V<sub>cc</sub>=+3.3V, 850nm, 100Ω Differential AC Load

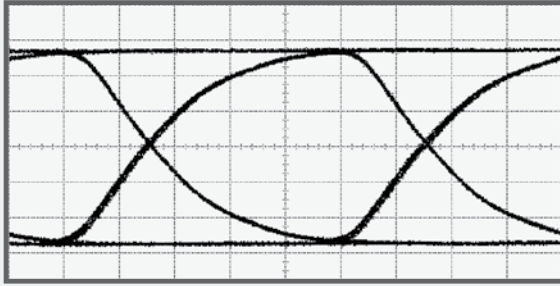
PARAMETERS	SYMBOL	CONDITIONS	FCI-H125G-GaAs-100			FCI-H250G-GaAs-100			UNITS
			MIN	TYP	MAX	MIN	TYP	MAX	
Supply Voltage	V <sub>CC</sub>	---	+3	---	+5.5	+3	---	+5.5	V
Supply Current	I <sub>CC</sub>	*T <sub>A</sub> = 0 to 70°C	---	26	*55	---	35	*65	mA
Active Area Diameter	AA <sub>φ</sub>	---	---	100	---	---	100	---	µm
Operating Wavelength	λ	---	650	---	860	650	---	860	nm
Responsivity	R <sub>λ</sub>	-17dBm, Differential	1000	1700	---	1000	1650	---	V/W
Transimpedance	---	-17dBm, Differential	---	2800	---	---	2800	---	Ω
Sensitivity	S	BER 10 <sup>-10</sup> , PRBS2 <sup>7</sup> -1	-22	-26	---	-19	-22	---	dBm
Optical Overload	---	---	0	---	---	0	---	---	dBm
Bandwidth	BW	-3dB, Small Signal	---	900	---	---	1700	---	MHz
Low Frequency Cutoff	---	-3dB	---	45	---	---	30	---	kHz
Differential Output Voltage	V <sub>OUT, P-P</sub>	-3dBm	180	250	420	200	400	600	mV <sub>P-P</sub>
Output Impedance	---	---	47	50	53	47	50	53	Ω
Transimpedance Linear Range	---	<5%	50	---	---	65	---	---	µW <sub>P-P</sub>

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

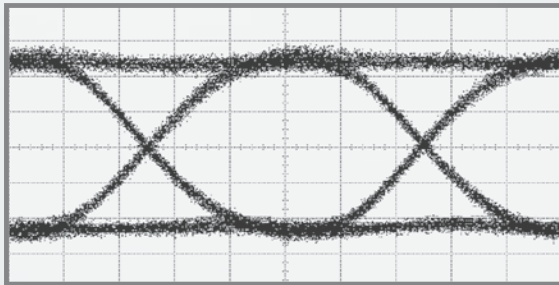
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### FCI-H125G-GaAs-100

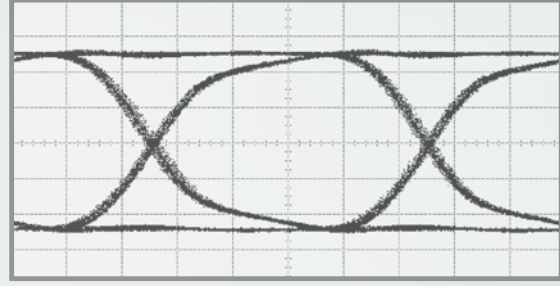


50mV / div, 160ps / div, -6dBm, 850nm, PRBS2<sup>7</sup>-1, Diff.

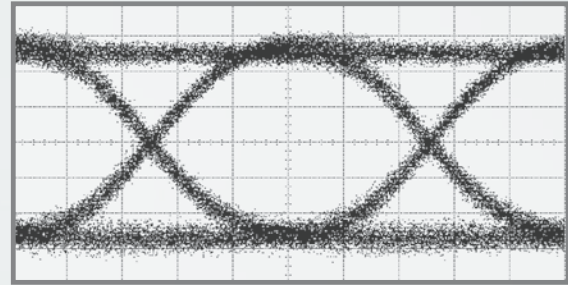


10mV / div, 160ps / div, -17dBm, 850nm, PRBS2<sup>7</sup>-1, Diff.

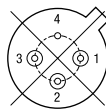
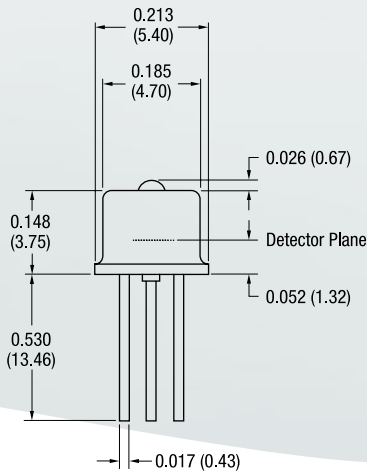
### FCI-H250G-GaAs-100



80mV / div, 80ps / div, -6dBm, 850nm, PRBS2<sup>7</sup>-1, Diff.



10mV / div, 80ps / div, -17dBm, 850nm, PRBS2<sup>7</sup>-1, Diff.

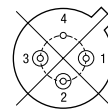
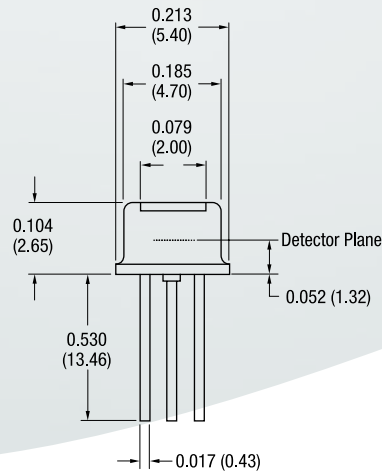


Bottom View

#### PINOUT

1	D <sub>out</sub>
2	V <sub>CC</sub>
3	D <sub>out</sub>
4	GND

Pin Circle Diameter = 0.100 (2.54)

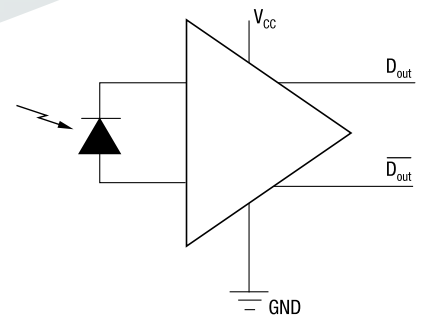


Bottom View

#### PINOUT

1	D <sub>out</sub>
2	V <sub>CC</sub>
3	D <sub>out</sub>
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 850nm.