

FCI-H125G-010

1.25Gbps Silicon Photodetector / Transimpedance Amplifier

FCI-H125G-010 is a low noise, high bandwidth photodetector plus transimpedance amplifier designed for short wavelength (850nm) high speed fiber optic data communications. The hybrid incorporates a 250µm diameter large sensing area, high sensitivity silicon photodetector. It also includes a high gain transimpedance amplifier producing a differential output voltage for latching to post amplifiers used in electro-optical receivers and transceivers for Gigabit Ethernet and Fibre Channel applications up to 1.25Gbps over multi-mode fiber. The photodetector converts the light into an electrical signal while the output voltage increases with light input. This is achieved by a single +3.3V to +5V positive power supply. These devices are available in 4 pin TO-46 metal packages with either a double sided AR coated window cap or an integrated lens cap. The 250µm diameter sensing area eases fiber alignment for connectorization or receptacle attachment. Furthermore, the proximity of the transimpedance amplifier to the photodetector lowers the capacitance associated with long traces, therefore allowing higher bandwidth and sensitivity.



APPLICATIONS

- High Speed Optical Communications
- Gigabit Ethernet
- Fibre Channel

FEATURES

- Silicon Photodetector / Low Noise Transimpedance Amplifier
- Low Cost
- Large Active Area of 250µm
- High Bandwidth / Wide Dynamic Range
- Automatic Gain Control (AGC)
- Hermetically Sealed TO-46 Can
- Single +3.3V to +5V Power Supply
- Differential Output

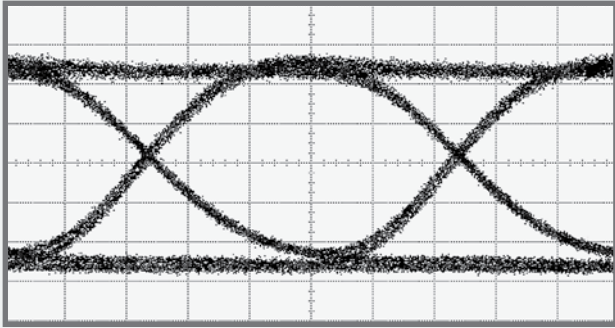
Absolute Maximum Ratings

PARAMETERS	SYMBOL	MIN	MAX	UNITS
Storage Temperature	T _{stg}	-55	+125	°C
Operating Temperature	T _{op}	-40	+75	°C
Supply Voltage	V _{cc}	0	+6	V
Input Optical Power	P _{IN}	---	+5	dBm

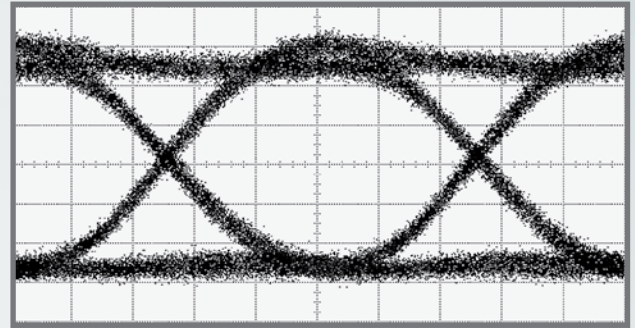
Electro-Optical Characteristics T_A=23°C, V_{cc}=+5.0V, 850nm, 100Ω Differential AC Load

PARAMETERS	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNITS
Supply Voltage	V _{CC}	---	+3	---	+5.5	V
Supply Current	I _{CC}	---	---	38	50	mA
Active Area Diameter	AA _φ	---	---	250	---	µm
Operating Wavelength	λ	---	---	850	---	nm
Responsivity	R _λ	-19dBm, Differential	---	3000	---	V/W
Transimpedance	---	-19dBm, Differential	---	8300	---	Ω
Sensitivity	S	BER 10 ⁻¹⁰ , PRBS2 ⁷ -1	-20	-23	---	dBm
Optical Overload	---	---	-3	0	---	dBm
Bandwidth	BW	-3dB, Small Signal	800	1000	---	MHz
Differential Output Voltage	V _{OUT, P-P}	---	---	200	---	mV _{P-P}
Output Impedance	---	---	40	50	62	Ω

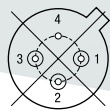
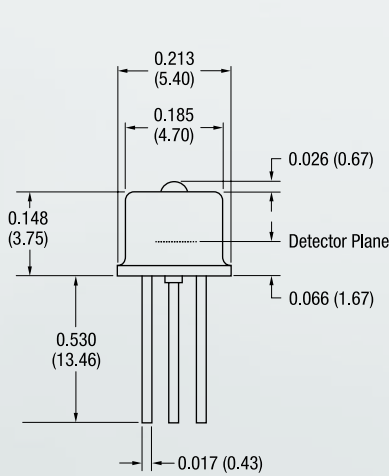
Use AC coupling and differential 100Ω load for the best high-speed performance. Devices are not intended to drive DC coupled, 50Ω grounded load.



40mV / div, 160ps / div, -12dBm, 850nm, PRBS2⁷-1, Diff.



20mV / div, 160ps / div, -17dBm, 850nm, PRBS2⁷-1, Diff.

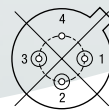
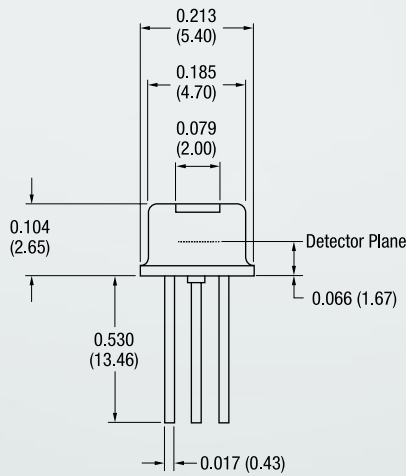


Bottom View

PINOUT

1	D _{out}
2	V _{CC}
3	\overline{D}_{out}
4	GND

Pin Circle Diameter = 0.100 (2.54)

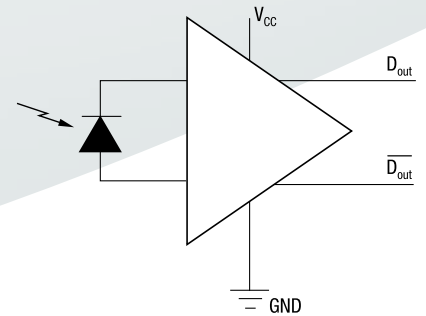


Bottom View

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 850nm.
- The thickness of the flat window=0.008 (0.21).