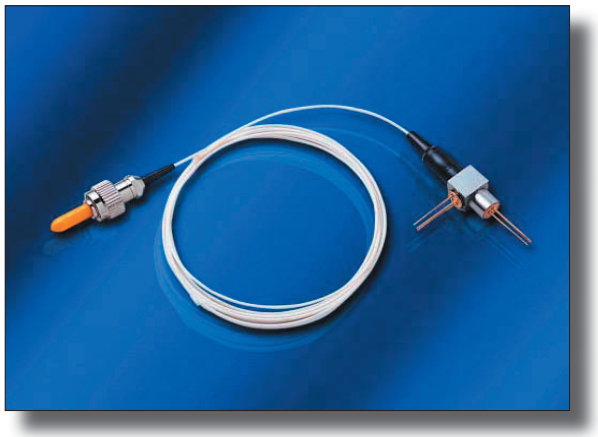
1310nm Emitting,1550nm Receiving(PIN-TIA,5pin-out,3.3V) Bi-directional Diplexer Optical Module

C-13/15-FXXM-PX-XXXX/XXX-XX



Features

- Single fiber bi-directional operation
- Laser diode with multi-quantum- well structure
- Low threshold current
- InGaAs/InP PIN Photodiode with trans-impedance amplifier
- High sensitivity with AGC*
- Differential ended output
- Single +3.3V Power Supply
- Integrated WDM coupler
- Un-cooled operation from -40°C to +85°C
- Hermetically sealed active component
- SM/MM fiber pigtailed packaging with optional FC/ST/SC/MU/LC/- connector
- Design for fiber optic networks application
- RoHS Compliant available

Absolute Maximum Rating (Tc=25°C)

Parameter	Symbol	Value	Unit
Fiber Output Power L/M/H	P_f	1(L)/1.5(M)/2.5(H)	mW
LD Reverse Voltage	V_{RLD}	2	V
PIN-TIA Voltage	V_{CC}	4.5	V
Operating Temperature	T_{opr}	-40 to +85	°C
Storage Temperature	T_{stg}	-40 to +85	°C

(All optical data refer to a coupled 9/125μm SM fiber & 50/125μm MM fiber)

Optical and Electrical Characteristics(Tc=25°C)

Parameter	Symbol	Min	Typical	Max	Unit	Test Condition
Laser Diode						
Optical Output Power	L M H	0.2 0.5 1	0.35 0.75 1.6	0.5 1 -	mW	CW, I_{th}+ 20mA , kink free
Peak Wavelength	λ	1290	1310	1330	nm	CW, P_f=P_f(Min)
Spectrum Width (RMS)	Δλ	-	-	5	nm	CW, P_f=P_f(Min)
Threshold Current	I_{th}	-	10	15	mA	CW
Forward Voltage	V_F	-	1.2	1.5	V	CW, P_f=P_f(Min)
Rise/Fall Time	t_r/ t_f	-	-	0.5	ns	$I_{bias=Ith}$,10% to 90%
Monitor Diode						
Monitor Current	I_m	100	-	-	μA	CW, P_f=P_f(Min),V_{RPD}=2V
Dark Current	I_{DARK}	-	-	0.1	μA	V_{RPD}=5V
Capacitance	C_t	-	6	15	pF	V_{RPD}=5V, f=1MHz
Module						
Tracking Error	ΔPf/Pf	-1.5	-	1.5	dB	APC, -40 to +85°C
Optical Crosstalk	CRT		< -40		dB	

Note:

1.Pin assignment can be customized.

2.Specifications subject to change without notice.

Detector λ=1480-1600nm

DC Electrical Characteristics(Tc=25°C)

Parameter	Symbol		Min	Typical	Max	Unit	Test Condition
Power Supply	V_{CC}		3.0	3.3	3.6	V	
Differential Output Voltage	V_d	F02	-	-	1000	mV	
		F04	-	260	450		
		F06	185	250	415		
Supply Current (no load)	I_{cc}	F02	-	-	35	mA	
		F04	-	21	30		
		F06	-	26	50		

AC/Optical and Electrical Characteristics(Tc=25°C)

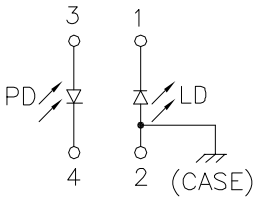
Parameter	Symbol		Min	Typical	Max	Unit	Test Condition
Detection Range			1480	1550	1600	nm	-
Gain @ 10 Mbps Differential	G	F02	52	-	70	V/mW	Measure differentially, AC coupled, RL=50Ω
		F04	6	7	-		Measure differentially, AC coupled, RL=50Ω
		F06	1.92	2.5	3.4		Measure differentially with 30uAp-p singnal
Bandwidth	BW	F02	120	140	-	MHz	
		F04	404	470	-		
		F06	700	920	1100		
Saturation Power	Psat	F02	-3	0	-	dBm	BER<10^{-10} @155Mbps PRBS 2^{23}-1,Er=10dB
		F04	-7	-6	-		BER<10^{-10} @622Mbps PRBS 2^{23}-1,Er=10dB
		F06	-3	-	-		BER<10^{-12} @1.25Gbps PRBS 2^{7}-1,Er=10dB
Sensitivity	Sens.	F02	-	-38	-35	dBm	BER<10^{-10} @155Mbps PRBS 2^{23}-1,Er=10dB
		F04	-	-33	-30		BER<10^{-10} @622Mbps PRBS 2^{23}-1,Er=10dB
		F06	-	-26	-23		BER<10^{-12} @1.25Gbps PRBS 2^{7}-1,Er=10dB
Output Resistance	Rout	F02	-	50	-	ohm	
		F04	48	50	52		
		F06	48	50	62		

Pin Assignment

LD Pin Assignment

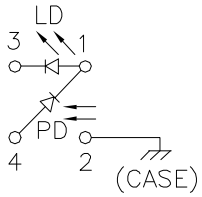
A Type

Pin 1 : Laser Cathode
Pin 2 : Laser Anode and Case Gnd
Pin 3 : Monitor Diode Anode
Pin 4 : Monitor Diode Cathode

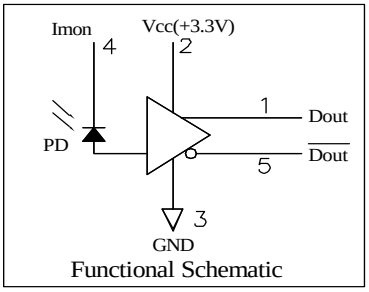


D Type

Pin 1 : Laser Anode and Monitor Diode Cathode
Pin 2 : Case Gnd
Pin 3 : Laser Cathode
Pin 4 : Monitor Diode Anode



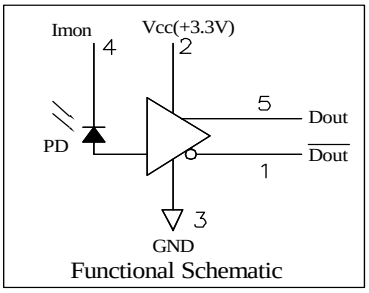
PIN-TIA Pin Assignment



Functional Schematic

F02

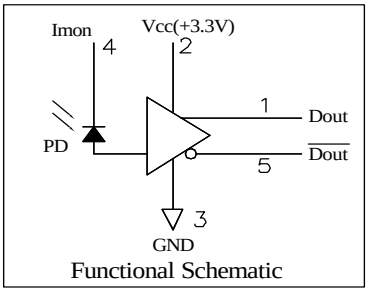
Pin Assignment
1~Dout
2~Vcc
3~GND(CASE)
4~Imon
5~$\overline{\text{Dout}}$



Functional Schematic

F04

Pin Assignment
1~$\overline{\text{Dout}}$
2~Vcc
3~GND(CASE)
4~Imon
5~Dout



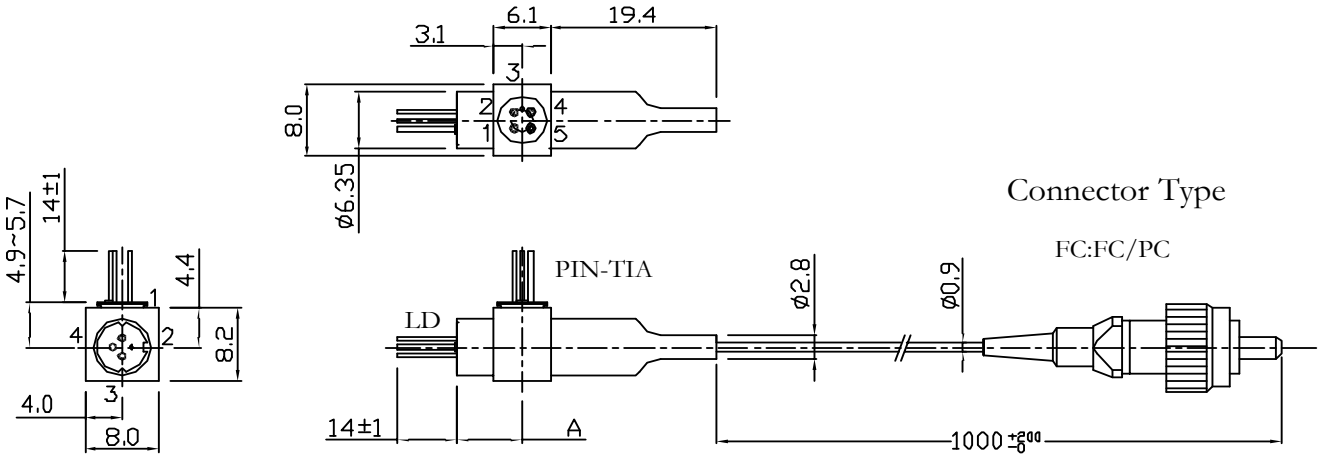
Functional Schematic

F06

Pin Assignment
1~Dout
2~Vcc
3~GND(CASE)
4~Imon
5~$\overline{\text{Dout}}$

Outline Dimensions Units in mm.

C-13/15-FXXM-PX-SXXX/XXX-XX

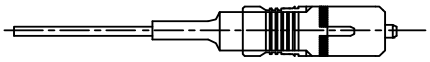


Connector Type

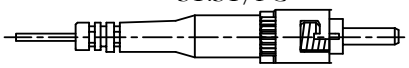
FC:FC/PC

DIMENSION: A:7.0~7.6 mm (Low & Middle power)
A:9.3~9.9 mm (High power)

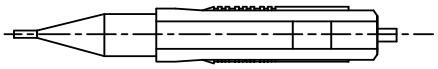
SC:SC/PC



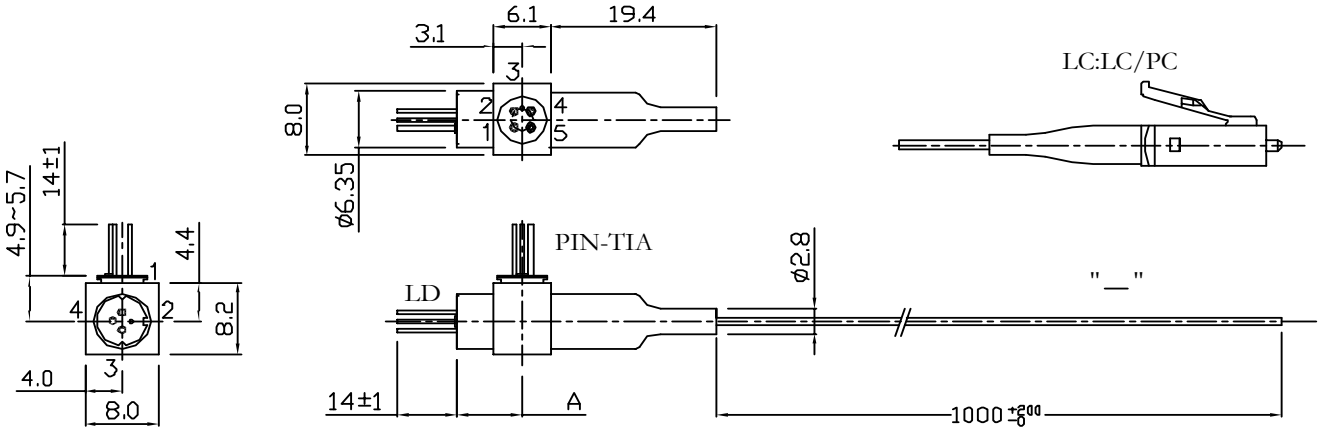
ST:ST/PC



MU:MU/PC



C-13/15-FXXM-PX-MXXX/XXX-XX



LC:LC/PC

DIMENSION: A:7.2~9.2 mm

Ordering Information

C-13/15-FXXM-PX-XXXX/XXX-XX

- 1310nm Transmitter / 1550nm Receiver
- 02: 155 Mb/s PIN-TIA+3.3V
- 04: 622 Mb/s PIN-TIA+3.3V
- 06:1250 Mb/s PIN-TIA+3.3V
- M = with 5 pinout
- Pin Assignment: "-"=A Type; D =D Type
- Fiber Application: S=SM 9/125μm; M=MM 50/125μm
- Connector: FC/ST/SC/MU/LC/-
- Fiber Output Power: L/M/H
- "-" = PC Fiber; APC = APC Fiber (for single mode)
- RoHS Compliant: -/G5/GR
  - Blank = RoHS non-compliant product
  - G5 = RoHS 5/6-compliant product (lead exemption)
  - GR = Full RoHS compliant product (no exemption)

Warnings

Handling Precautions: This device is susceptible to damage as a result of electrostatic discharge (ESD). A static free environment is highly recommended. Follow guidelines according to proper ESD procedures.
Laser Safety: Radiation emitted by laser devices can be dangerous to human eyes. Avoid eye exposure to direct or indirect radiation.

Legal Notice