

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	0.2	0.35	0.5	mW	CW, I _{th} + 20mA , kink free
	M	0.5	0.75	1		
	H	1	1.6	-		
Peak Wavelength	λ	1290	1310	1330	nm	CW, P _f =P _f (Min)
Spectrum Width (RMS)	$\Delta\lambda$	-	-	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} =I _{th} , 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	$\Delta P_f/P_f$	-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 $\lambda=1480-1600\text{nm}$

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)

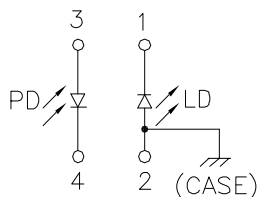
Parameter	Symbol		Min	Typical	Max	Unit	Test Condition
Detection Range			1480	1550	1600	nm	-
Gain @ 10 Mbps Differential	G	F02	52	-	70	V/mW	Measure differentially, AC coupled, R _L =50Ω
		F04	6	7	-		Measure differentially, AC coupled, R _L =50Ω
		F06	1.92	2.5	3.4		Measure differentially with 30uAp-p signal
Bandwidth	BW	F02	120	140	-	MHz	
		F04	404	470	-		
		F06	700	920	1100		
Saturation Power	P _{sat}	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	R _{out}	F02	-	50	-	ohm	
		F04	48	50	52		
		F06	48	50	62		

Pin Assignment

LD Pin Assignment

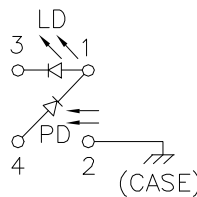
A Type

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

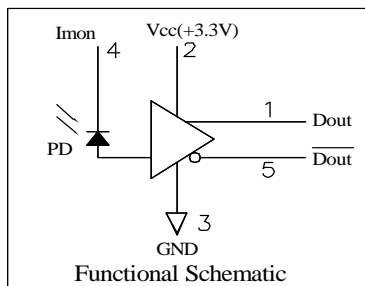


D Type

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



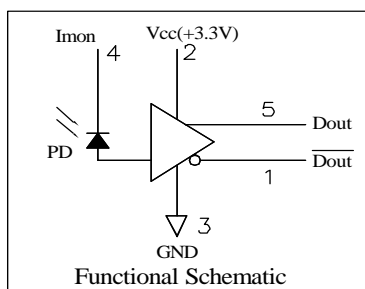
PIN-TIA Pin Assignment



F02

Pin Assignment

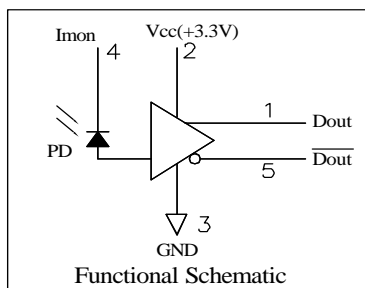
- 1~Dout
- 2~Vcc
- 3~GND(CASE)
- 4~Imon
- 5~ $\overline{\text{Dout}}$



F04

Pin Assignment

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



F06

Pin Assignment

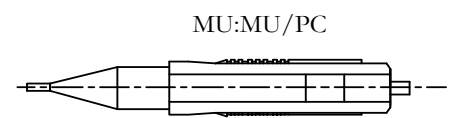
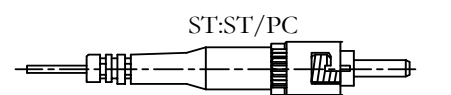
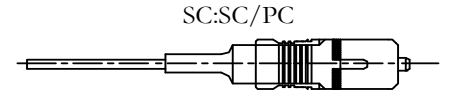
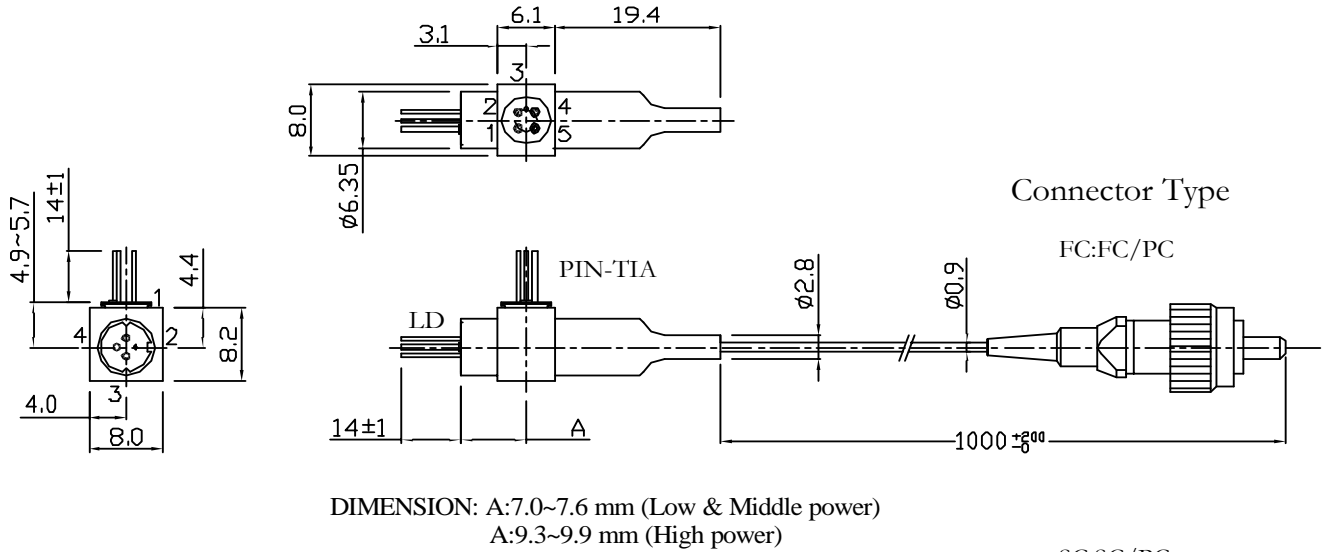
- 1~Dout
- 2~Vcc
- 3~GND(CASE)
- 4~Imon
- 5~ $\overline{\text{Dout}}$

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

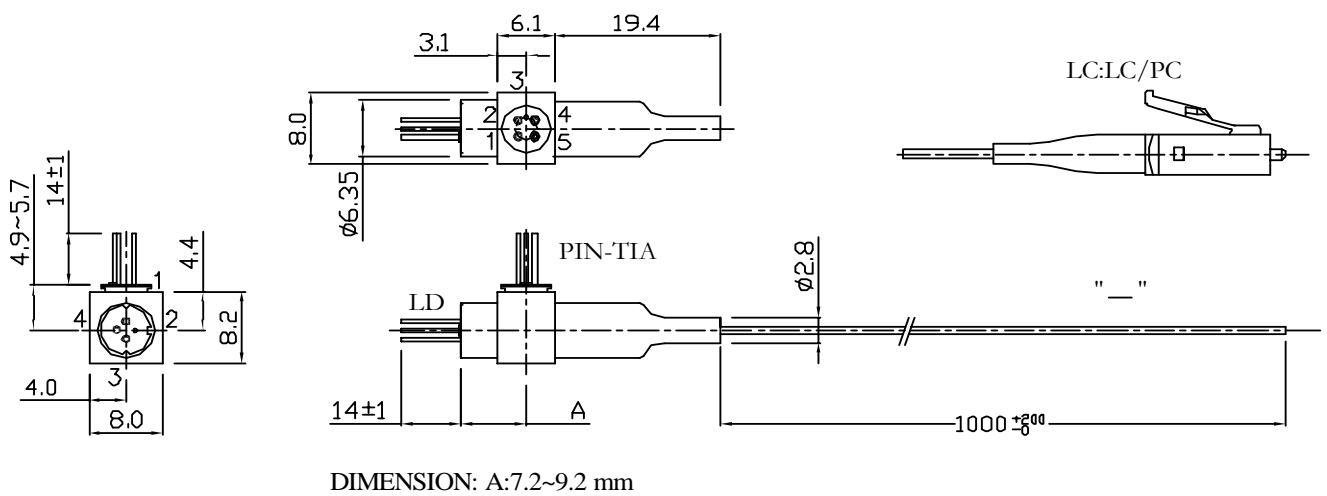
Outline Dimensions

Units in mm.

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



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



Ordering Information

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

1310nm Transmitter
1550nm Receiver

M = with 5 pinout

Pin Assignment
"." = A Type
D = D Type

Connector
FC/ST/SC/MU/LC/-

Fiber Output Power
L/M/H

" - " = PC Fiber
APC = APC Fiber
(for single mode)

02: 155 Mb/s PIN-TIA+3.3V
04: 622 Mb/s PIN-TIA+3.3V
06: 1250 Mb/s PIN-TIA+3.3V

Fiber Application
S=SM 9/125µm
M=MM 50/125µm

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.

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