

C-15/13-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 with optional FC/ST/SC/MU/LC/- connector
- Design for fiber optic networks
- RoHS Compliant available

Absolute Maximum Rating (Tc=25°C)

Parameter	Symbol	Value	Unit
Fiber Output Power L/M/H	P_f	0.6(L)/1(M)/2(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 SM 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	- - 1.6	0.5 1 -	mW	CW, $I_{th} + 25mA$, kink free
Peak Wavelength	λ	1530	1550	1570	nm	CW, $P_f = P_f(\text{Min})$
Spectrum Width (RMS)	$\Delta\lambda$	-	-	5	nm	CW, $P_f = P_f(\text{Min})$
Threshold Current	I_{th}	-	10	15	mA	CW
Forward Voltage	V_f	-	1.2	1.5	V	CW, $P_f = P_f(\text{Min})$
Rise/Fall Time	t_r / t_f	-	-	0.5	ns	$I_{bias} = I_{th}$, 10% ~ 90%
Monitor Diode						
Monitor Current	I_m	100	-	-	μA	CW, $P_f = P_f(\text{Min})$, $V_{RPD} = 2V$
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	< -45			dB	

Note:

1.Pin assignment can be customized.

2.Specifications subject to change without notice.

Detector $\lambda=1100-1360\text{nm}$ **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)

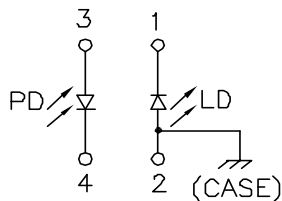
Parameter	Symbol	Min	Typical	Max	Unit	Test Condition
Detection Range		1100	1310	1360	nm	-
Gain @ 10 Mbps Differential	G	F02	52	-	70	Measure differentially, AC coupled, R _L =50 Ω
		F04	6	7	-	Measure differentially, AC coupled, R _L =50 Ω
		F06	1.92	2.5	3.4	Measure differentially with 30uAp-p signal
Bandwidth	BW	F02	120	140	-	MHz
		F04	404	470	-	
		F06	700	920	1100	
Saturation Power	P _{sat}	F02	-3	-0	-	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	-	-37	-35	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

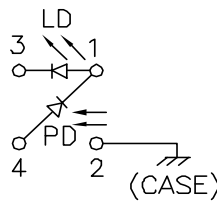
A Type

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

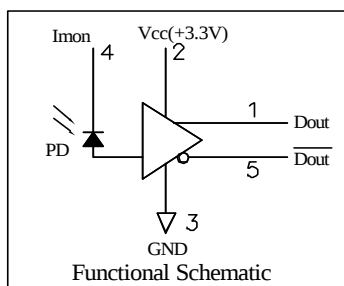


D Type

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



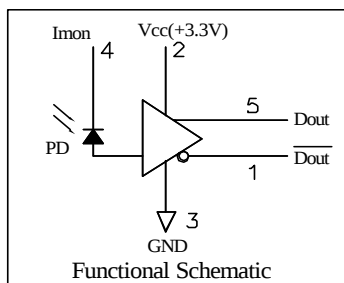
PIN-TIA Pin Assignment



F02

Pin Assignment

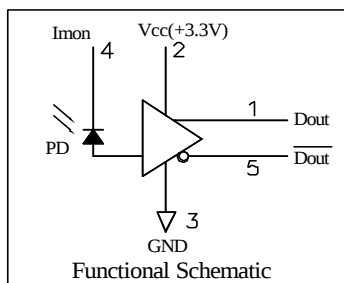
1~Dout
2~Vcc
3~GND(CASE)
4~Imon
5~Dout



F04

Pin Assignment

1~Dout
2~Vcc
3~GND(CASE)
4~Imon
5~Dout



F06

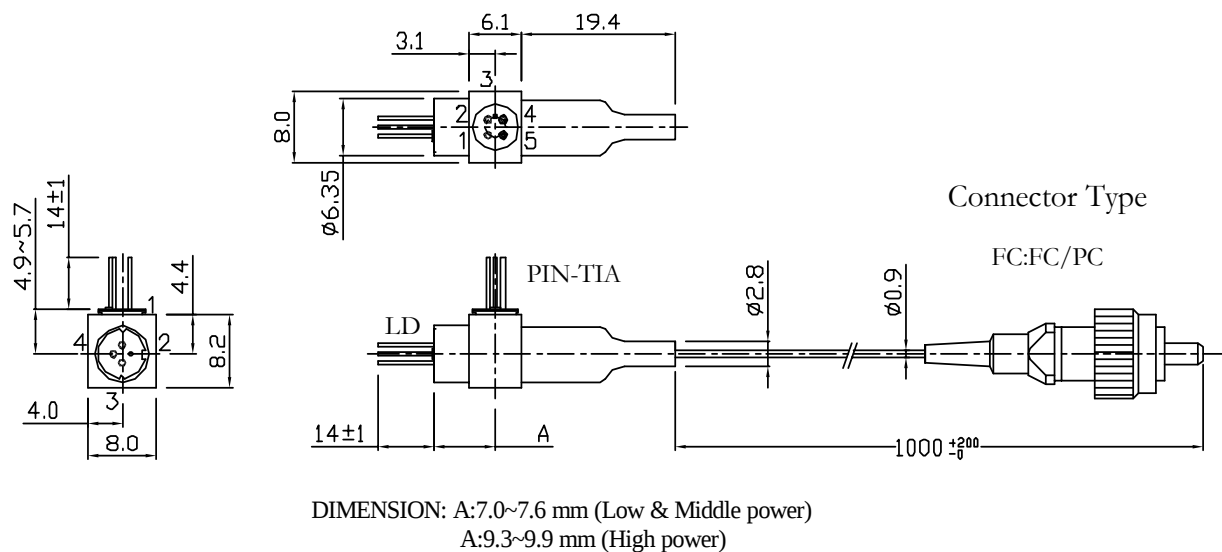
Pin Assignment

1~Dout
2~Vcc
3~GND(CASE)
4~Imon
5~Dout

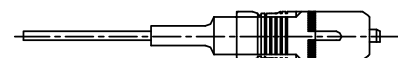
Outline Dimensions

Units in mm.

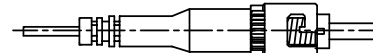
C-15/13-FXXM-PX-SXXX/XXX-XX



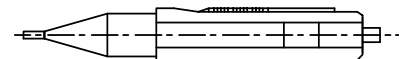
SC:SC/PC



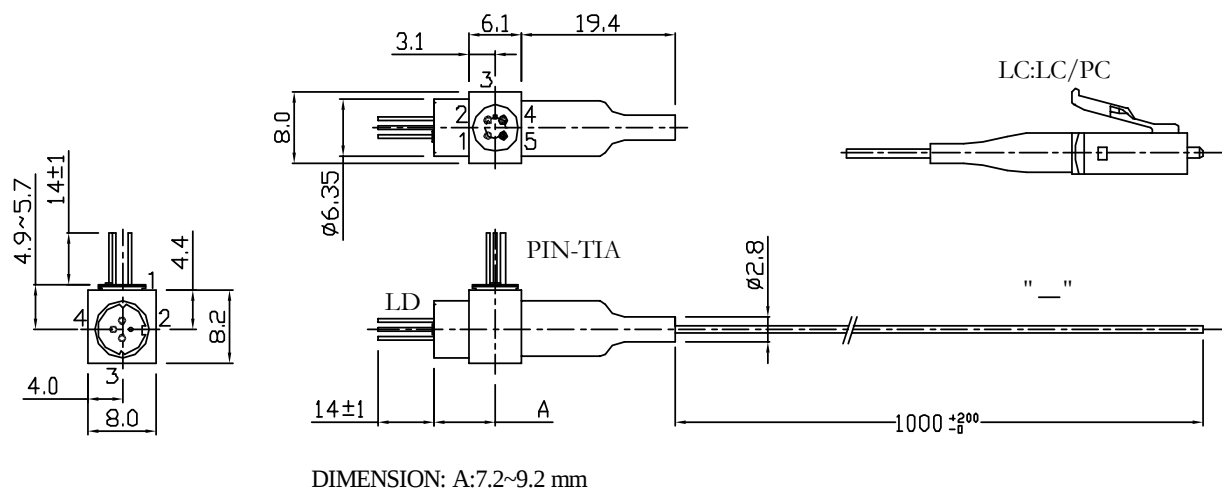
ST:ST/PC



MU:MU/PC



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



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

Ordering Information

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

1550nm Transmitter
1310nm 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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