

C-13/15-FXX-XX-SXXX/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
- Single mode fiber pigtailed packaging with optional FC/ST/SC/MU connector
- LC/SC BOSA
- 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 single-mode 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, $P_f=P_f(\text{Min})$
Spectrum Width (RMS)	$\Delta\lambda$	-	-	3	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	-	-	0.3	ns	$I_{bias}=I_{th}$, 10% to 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 $\lambda=1480-1600\text{nm}$ **DC Electrical Characteristics($T_c=25^\circ\text{C}$)**

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($T_c=25^\circ\text{C}$)

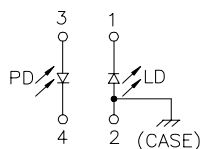
Parameter	Symbol		Min	Typical	Max	Unit	Test Condition
Detection Range			1480	1550	1600	nm	-
Gain @ 10 Mbps Differential	G	F02	52	-	70	V/mW	Measure differentially, AC coupled, $R_L=50\Omega$
		F04	6	7	-		Measure differentially, AC coupled, $R_L=50\Omega$
		F06	1.92	2.5	3.4		Measure differentially with 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, $E_r=10\text{dB}$
		F04	-7	-6	-		$BER<10^{-10}$ @622Mbps PRBS 2 ²³ -1, $E_r=10\text{dB}$
		F06	-3	-	-		$BER<10^{-12}$ @1.25Gbps PRBS 2 ⁷ -1, $E_r=10\text{dB}$
Sensitivity	Sens.	F02	-	-38	-35	dBm	$BER<10^{-10}$ @155Mbps PRBS 2 ²³ -1, $E_r=10\text{dB}$
		F04	-	-33	-30		$BER<10^{-10}$ @622Mbps PRBS 2 ²³ -1, $E_r=10\text{dB}$
		F06	-	-26	-23		$BER<10^{-12}$ @1.25Gbps PRBS 2 ⁷ -1, $E_r=10\text{dB}$
Output Resistance	R_{out}	F02	-	50	-	ohm	
		F04	48	50	52		
		F06	48	50	62		

Pin Assignment

LD Pin Assignment

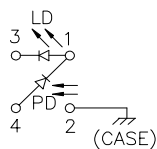
A Type

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

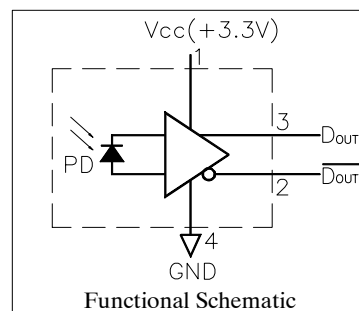


D Type

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

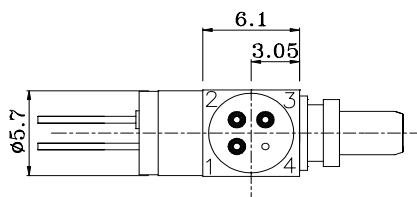


Outline Dimensions

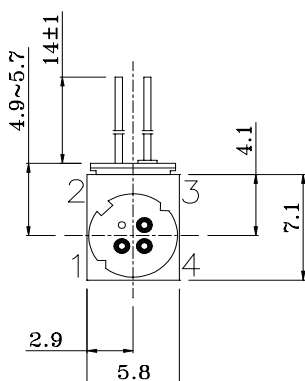
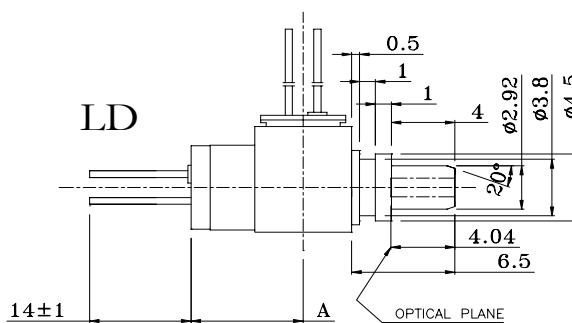
Units in mm.

Part Number: C-13/15-FXX-BX-SLCX-XX

Top view



PIN-TIA



Left side view

Front view

DIMENSION: A:6.7~7.3 mm (Low & Middle power)
A:9.0~9.6 mm (High power)

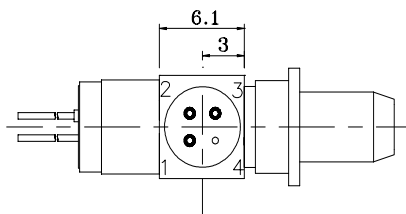
C-13/15-FXX-XX-SXXX/XXX-XX

Outline Dimensions

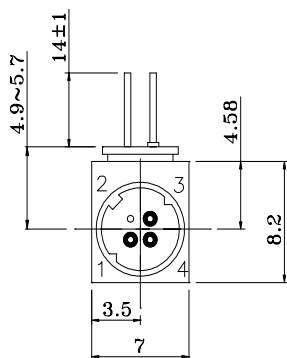
Units in mm.

Part Number: C-13/15-FXX-BX-SSCX-XX

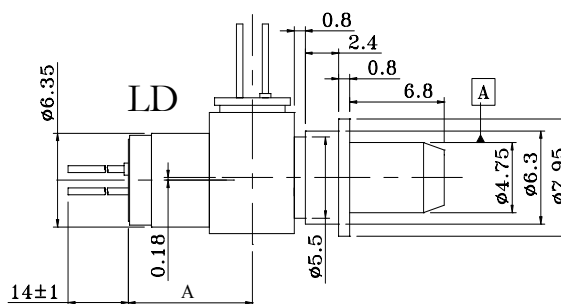
Top view



PIN-TIA



Left side view



Front view

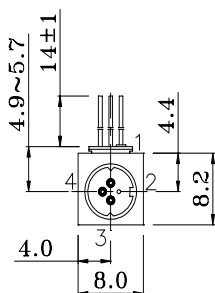
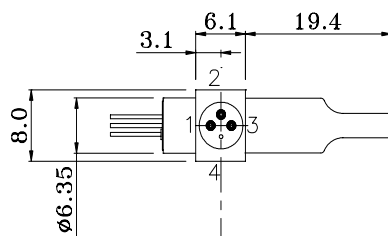
DIMENSION: A:7.2~7.8 mm (Low & Middle power)
A:9.3~9.9 mm (High power)

Outline Dimensions

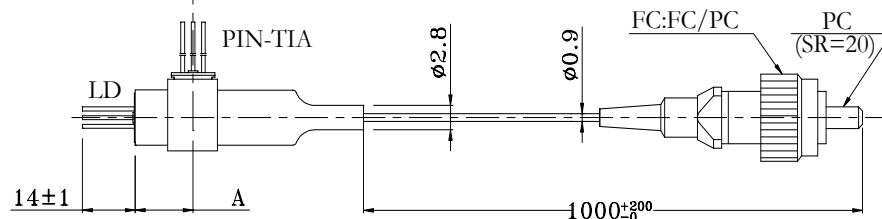
Units in mm.

Part Number: C-13/15-FXX-PX-SXXX/XXX-XX

Top view



Left side view



Front view

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

C-13/15-FXX-XX-SXXX/XXX-XX

Ordering Information

C-13/15-FXX-XX-SXXX/XXX-XX

1310nm Transmitter
1550nm Receiver

Package
P=Pigtail
B=BOSA

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

- : PC Fiber
APC : APC Fiber

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

Pin Assignment
"-="A Type
D =D Type

Fiber Output Power
L/M/H

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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