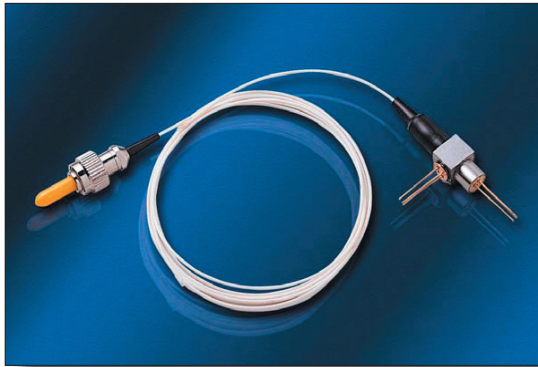




Features

- 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 with optical 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	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)

Optical and Electrical Characteristics(Tc=25°C)

Parameter	Symbol	Min	Typical	Max	Unit	Test Condition
Laser Diode						
Optical Output Power	L M H	Pf	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 $\lambda=1480-1500\text{nm}$

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	-	1500	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		

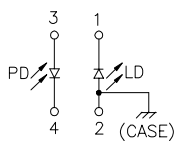
Pin Assignment

Pin Assignment

LD Pin Assignment

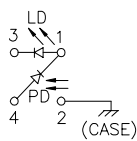
A Type

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

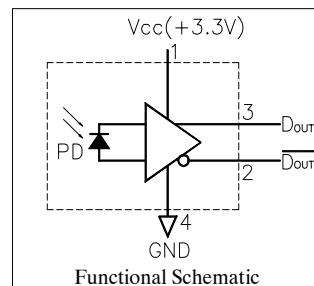


D Type

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



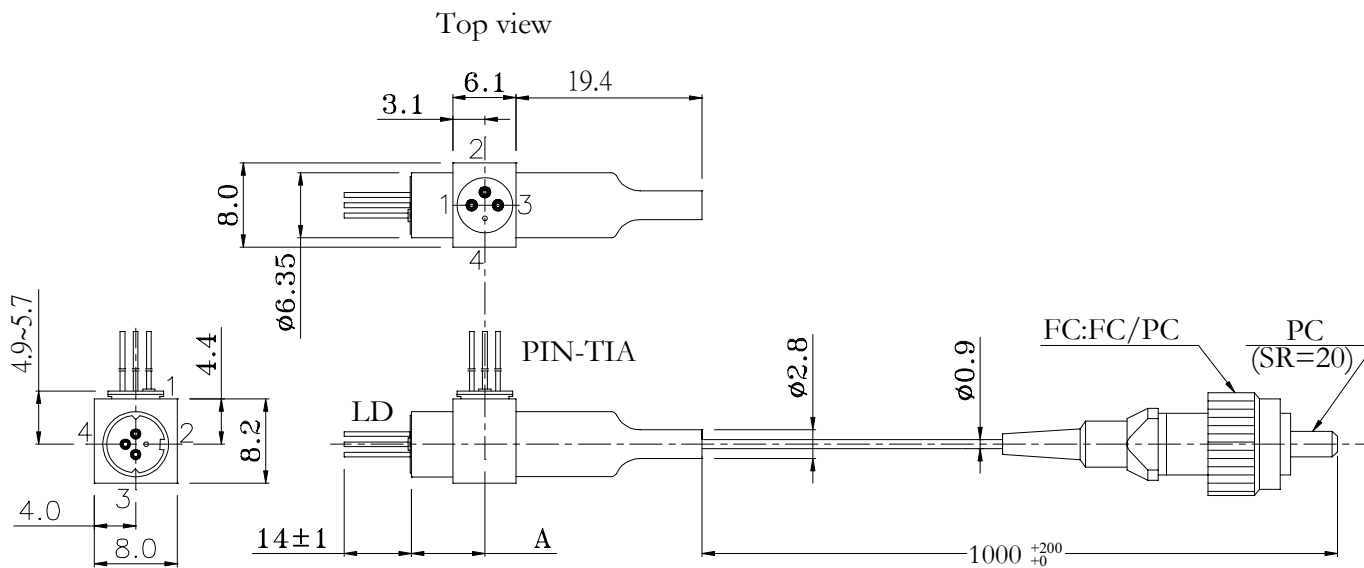
PIN-TIA Pin Assignment



Outline Dimensions

Units in mm.

Part Number: C-13/14-FXX-PX-SXXX/XXX-XX



Left side view

Front view

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

Ordering Information

C-13/14-FXX-PX-SXXX/XXX-XX

1310nm Transmitter
1490nm Receiver

Package
P=Pigtail

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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