

C-15/13-DXX-PX-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 +5V Power Supply
- Integrated WDM coupler
- Un-cooled operation from 0°C to +70°C
- Hermetically sealed active component
- Single mode fiber pigtailed packaging 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}	6	V
Operating Temperature	T_{opr}	0 ~ +70	°C
Storage Temperature	T_{stg}	-40 ~ +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	- - 1.6	0.5 1 -	mW	CW, $I_{th} + 30mA$, kink free
Peak Wavelength	λ	1535	1550	1565	nm	CW, $P_f = P_f(\text{Min})$
Side mode Supperssion	$\Delta\lambda$	30	35	-	nm	CW, $P_f = P_f(\text{Min})$, 0 ~ +70°C
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% ~ 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, 0 ~ +70°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($T_c=25^\circ\text{C}$)

Parameter	Symbol	Min	Typical	Max	Unit	Test Condition
Power Supply	V_{CC}	4.5	5	5.5	V	
Differential Output Voltage	V_d					
	D01	-	1000	-		
	D03	-	260	450	mV	
	D05	185	250	415		
Supply Current (no load)	I_{CC}					
	D01	-	-	35		
	D03	-	21	30	mA	
	D05	-	26	50		

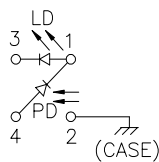
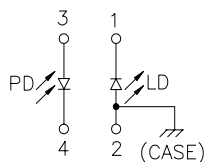
AC/Optical and Electrical Characteristics($T_c=25^\circ\text{C}$)

Parameter	Symbol	Min	Typical	Max	Unit	Test Condition
Detection Range		1100	1310	1360	nm	-
Gain @ 10 Mbps Differential	G					
	D01	0.17	-	220		Measure differentially, AC coupled, $R_L=50\Omega$
	D03	6	7	-	V/mW	Measure differentially, AC coupled, $R_L=50\Omega$
	D05	1.92	2.5	3.4		Measure differentially with 30uAp-p signal
Bandwidth	BW					
	D01	120	140	-		
	D03	404	470	-	MHz	
	D05	700	920	1100		
Saturation Power	Psat					
	D01	-3	0	-		$BER<10^{-10}$ @155Mbps PRBS $2^{23}-1$, $E_r=10\text{dB}$
	D03	-7	-6	-	dBm	$BER<10^{-10}$ @622MbpsPRBS $2^{23}-1$, $E_r=10\text{dB}$
	D05	-3	-	-		$BER<10^{-12}$ @1.25GbpsPRBS 2^7-1 , $E_r=10\text{dB}$
Sensitivity	Sens.					
	D01	-	-37	-35		$BER<10^{-10}$ @155Mbps PRBS $2^{23}-1$, $E_r=10\text{dB}$
	D03	-	-33	-30	dBm	$BER<10^{-10}$ @622MbpsPRBS $2^{23}-1$, $E_r=10\text{dB}$
	D05	-	-26	-23		$BER<10^{-12}$ @1.25GbpsPRBS 2^7-1 , $E_r=10\text{dB}$
Output Resistance	Rout					
	D01	-	50	65		
	D03	48	50	52	ohm	
	D05	48	50	62		

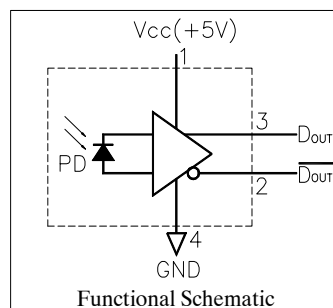
LD Pin Assignment

D Type

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

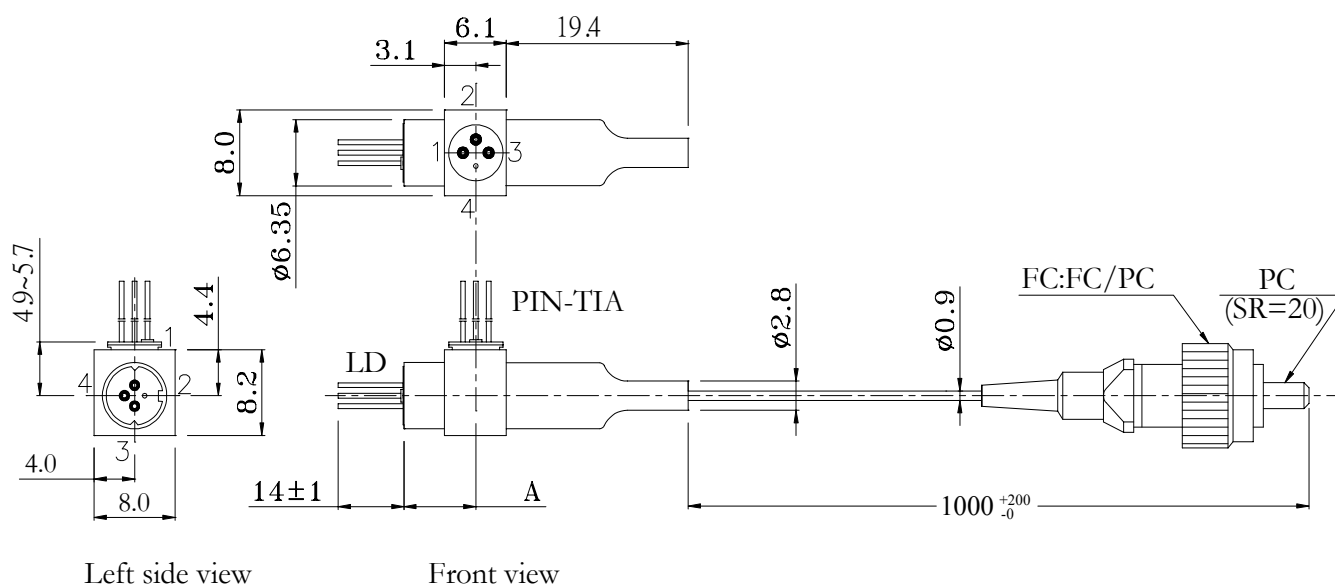


PIN-TIA Pin Assignment



Units in mm.

Top view



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

Ordering Information

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

1550nm Transmitter
1310nm Receiver

Package
P=Pigtail

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

- : PC Fiber
APC : APC Fiber

01: 155 Mb/s PIN-TIA +5V
03: 622 Mb/s PIN-TIA +5V
05:1250 Mb/s PIN-TIA +5V

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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