

# Mini-GBIC (SFP)

1.25Gbps, WDM1310~1550, Single Fiber Bi-directional SFP,  
ONU Transceiver

- Distance: 10km, 20km, 40km, 60km, 80km
- Standard Operating Temperature: -10°C ~ 70°C



## OVERVIEW

Lantech 1.25Gbps Bi-directional (BiDi) Small Form Factor Pluggable (SFP) transceiver module series is specifically designed for the high performance integrated duplex data link over a single optical fiber. These transceiver modules are compliant with the SFP Multisource Agreement (MSA). With the hot pluggability, these modules offer an easy way to be installed into

SFP MSA compliant ports at any time without the interruption of the host equipments operating online.

Lantech 1.25Gbps BiDi SFP transceiver module series using a long wavelength DFB laser diode and enable data transmission up to 80km on a single-mode (9/125μm) optical fiber.

## FEATURES & BENEFITS

- 1.25G bi-directional single-fiber link
- Single LC receptacle
- 1310~1550nm FP/DFB transmitter
- 1310~1550nm PIN receiver
- 10km to 80km point-to-point transmission
- SFP Multi-Source Agreement compliant
- Serial ID functionality support
- Class 1 laser safety standard IEC 825 compliant
- Low power dissipation

## SPECIFICATION

### Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Unit	Note
Storage Temperature	Ts	-40	+85	°C	
Supply Voltage	VccT, VccR	-0.5	4.0	V	
Storage Relative Humidity	RH	5	95	%	

### Recommended Operating Conditions

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note		
Case Operating Temperature	Tc	-10		70	°C			
Supply Voltage	Vcc	3.1	3.3	3.5	V			
Supply Current	10km	WDM1310		150	250	mA		
		WDM1550		150	300			
	20km	WDM1310	ITX + IRX		160			250
		WDM1550			150			300
	40km	WDM1310			150			300
		WDM1550			150			300
	60km	WDM1310			150			300
		WDM1550			150			300
	80km	WDM1490			150			300
		WDM1550			150			300

**Transmitter Electro-Optical Interface**

Parameter		Symbol	Min.	Typ.	Max.	Unit	Note			
Transmitter Differential Input Voltage		TD +/-	400		2400	mV				
Tx_Fault - High		VFault_H	2		VccT	V				
Tx_Fault - Low		VFault_L	VeeT		VeeT+0.8	V				
Tx_Disable - High		VDisable_H	2		VccT	V				
Tx_Disable - Low		VDisable_L	VeeT		VeeT+0.8	V				
Optical Output Power	10km	WDM1310	-9		-3	dBm	1			
		WDM1550	-9		-3					
	20km	WDM1310	-8		-2					
		WDM1550	-8		-2					
	40km	WDM1310	-3		+2					
		WDM1550	-3		+2					
	60km	WDM1310	-3		+2					
		WDM1550	0		+5					
	80km	WDM1490	-2		+3					
		WDM1550	-2		+3					
	Optical Extinction Ratio		ER	6					dB	
	Center Wavelength	10km	WDM1310	1270	1310			1355	nm	
WDM1550			1530	1550	1570					
20km		WDM1310	1270	1310	1355					
		WDM1550	1530	1550	1570					
40km		WDM1310	1260	1310	1360					
		WDM1550	1530	1550	1570					
60km		WDM1310	1260	1310	1360					
		WDM1550	1530	1550	1570					
80km		WDM1490	1480	1490	1500					
		WDM1550	1530	1550	1570					
Spectral Width		10km	WDM1310				nm	2		
			WDM1550			1				
	20km	WDM1310			2.5					
		WDM1550			1					
	40km	WDM1310			1					
		WDM1550			1					
	60km	WDM1310			1					
		WDM1550			1					
	80km	WDM1490			1					
		WDM1550			1					
	Optical Rise / Fall Timet		tr / tf			260			ps	
	Relative Intensity Noise		RIN			-113			dB/Hz	
Total Contributed Jitter		TJ			227	ps				

**Notes:** 1. Coupling into a 9/125µm single-mode fiber. 2. 1000BASE-BX10 transmitter spectral limits.

1000BASE-BX10 transmitter spectral limits	
Center wavelength (nm) Max.	RMS spectral width (nm)
1260	2.09
1270	2.52
1280	3.13
1286-1343	3.50
1350	3.06
1360	2.58

**Receiver Electro-Optical Interface**

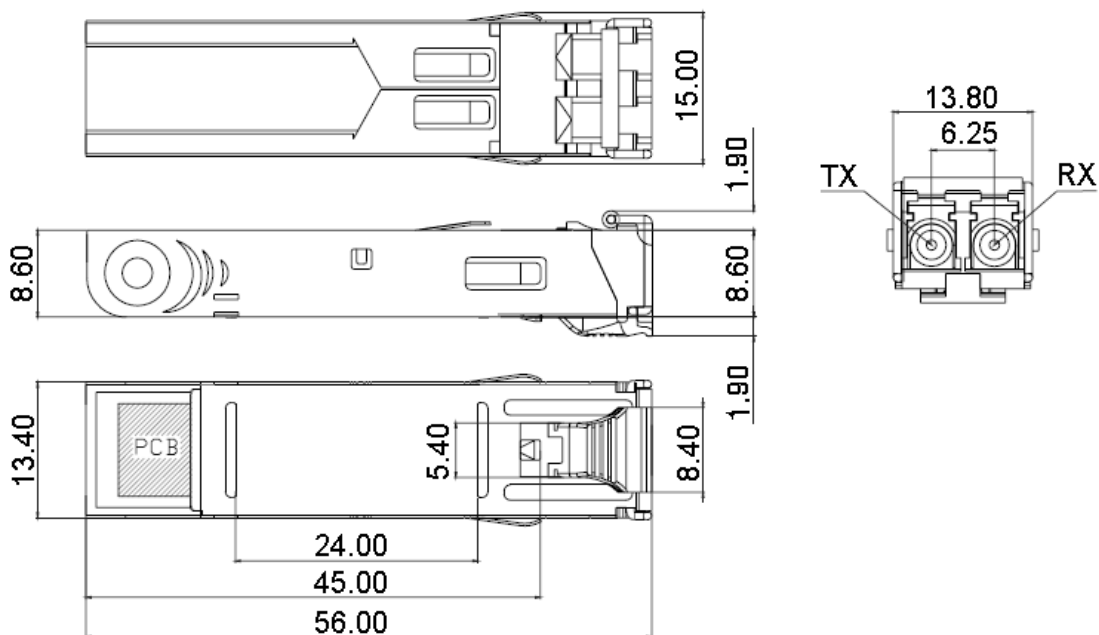
Parameter		Symbol	Min.	Typ.	Max.	Unit	Note			
Receiver Differential Output Voltage		RD +/-	400		2000	mV				
Receiver Overload	10km	WDM1310	-3				1			
		WDM1550	-2							
	20km	WDM1310	-2							
		WDM1550	-2							
	40km	WDM1310	-1							
		WDM1550	-1							
	60km	WDM1310	-1							
		WDM1550	-1							
80km	WDM1490	-1								
	WDM1550	-1								
Receiver Sensitivity	10km	WDM1310			-20	dBm	1			
		WDM1550								
	20km	WDM1310			-23					
		WDM1550								
	40km	WDM1310			-23					
		WDM1550								
	60km	WDM1310			-24					
		WDM1550								
80km	WDM1490			-26						
	WDM1550									
Operating Center Wavelength	10km	WDM1310	1480		1580	nm				
		WDM1550	1260		1360					
	20km	WDM1310	1480		1580					
		WDM1550	1260		1360					
	40km	WDM1310	1480		1580					
		WDM1550	1260		1360					
	60km	WDM1310	1480		1580					
		WDM1550	1260		1360					
	80km	WDM1490	1530		1570					
		WDM1550	1480		1500					
	Return Loss		RL	12					dB	
	Receiver Loss of Signal - TTL Low	10km	WDM1310					-20	dBm	
WDM1550										
20km		WDM1310			-23					
		WDM1550								
40km		WDM1310			-24					
		WDM1550								
60km		WDM1310			-24					
		WDM1550								
80km	WDM1490			-26						
	WDM1550			-24						
Receiver Loss of Signal - TTL High		PRX_LOSA	-35			dBm				
Receiver Loss of Signal - Hysteresis		PRX_LOSH	0.5			dB				

Notes: 1. With BER better than or equal to  $1 \times 10^{-12}$ , measured in the center of the eye opening with PRBS  $2^7 - 1$

**MTBF**

		60% Confidence Level, 25°C		90% Confidence Level, 25°C	
		MTBF	FIT	MTBF	FIT
10km	WDM1310	2532284	395	1012914	987
	WDM1550	2532284	395	1012914	987
20km	WDM1310	2532284	395	1012914	987
	WDM1550	2532284	395	1012914	987
40km	WDM1310	813526	1229	325410	3073
	WDM1550	813526	1229	325410	3073
60km	WDM1310	813526	1229	325410	3073
	WDM1550	813526	1229	325410	3073
80km	WDM1490	813526	1229	325410	3073
	WDM1550	813526	1229	325410	3073

**DIMENSIONS (unit=mm)**



\*All dimensions are ±0.2mm unless otherwise specified

**ORDERING INFORMATION**

Part Number	TX	LD	RX	IO	LOS	Link	Temp.
8330-188	1310nm	FP	1550nm	AC/AC	TTL	10km	-10~70°C
8330-186		FP				20km	
8330-180		DFB				40km	
8330-181		DFB				60km	
8330-184	1490nm	DFB				80km	

Part Number	TX	LD	RX	IO	LOS	Link	Temp.
8330-189	1550nm	DFB	1310nm	AC/AC	TTL	10km	-10~70°C
8330-187						20km	
8330-182						40km	
8330-183						60km	
8330-185			1490nm			80km	

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