



## **AXFT-1621 125Mbps Single Fiber Bi-directional, 1x9, SC Receptacle, ONU Transceiver**



### **Product Overview**

The AXFT-1621 family of 1x9 transceiver modules is specifically designed for the high performance integrated duplex data link over single-mode optical fiber. These transceiver modules are compliant with the Multisource Agreement (MSA). These modules are designed to provide 100Base-BX10 compliant in Fast Ethernet applications.

The AXFT-1621 BiDi 1x9 transceivers using a 1310nm FP laser diode and 1550nm PIN diode enable data transmission up to 60km on a single-mode (9/125 $\mu$ m) optical fiber.

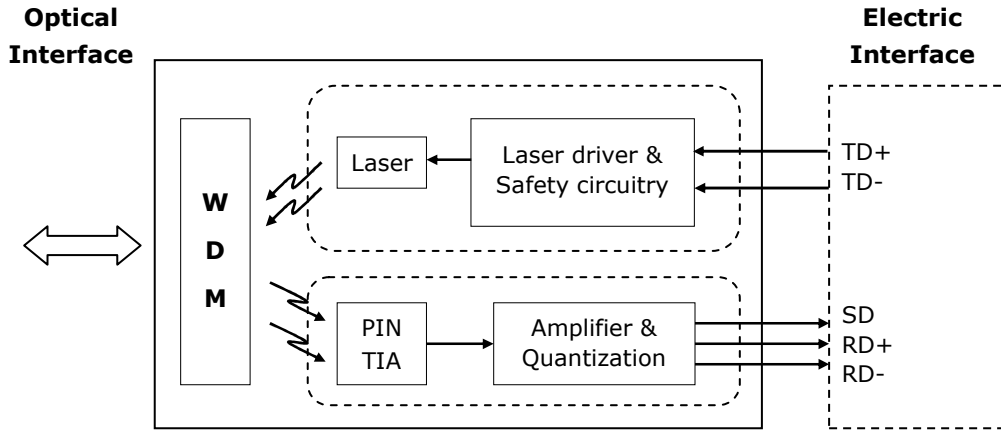
### **Applications**

- **FTTx**
- **Fast Ethernet**
- **ATM switches and routers**
- **SONET/SDH switch infrastructure**

### **Features**

- **125Mbps~155Mbps bi-directional single fiber link**
- **Low Profile plastic molded package**
- **Single SC receptacle**
- **1310nm FP transmitter, 1550nm PIN receiver**
- **125Mbps IEEE 802.3ah 100BASE-BX10-U compliant**
- **125Mbps ITU-T G.985 Class S compliant**
- **155Mbps OC-3 LR-1/STM L-1.1 compliant**
- **Single +3.3V power supply operation**
- **DC coupling PECL level inputs and outputs**
- **PECL signal detect output**
- **Class 1 laser safety standard IEC 60825 compliant**
- **40km/60km link on a single-mode fiber**
- **Low power dissipation**

**Block diagram**



The transceiver is fundamentally consisted by two parts: transmitter and receiver. The transmitter features LVPECL differential data inputs (TD+ and TD-). The receiver features LVPECL differential data outputs (RD+ and RD-) and LVPECL for signal detect output (SD).

**Absolute Maximum Ratings**

Parameter	Symbol	Min.	Max.	Unit	Note
Storage Temperature	T <sub>S</sub>	-40	+85	°C	
Supply Voltage	V <sub>CC</sub> T V <sub>CC</sub> R	-0.5	4.0	V	
Storage Relative Humidity	RH	5	95	%	
Lead Soldering Temperature	T <sub>IS</sub>		260	°C	
Lead Soldering Time	t <sub>IS</sub>		10	sec	

**Recommended Operating Conditions**

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Case Operating Temperature	T <sub>C</sub>	0		70	°C	Refer to ordering information
		-40		85		
Supply Voltage	V <sub>CC</sub>	3.1	3.3	3.5	V	
Supply Current	I <sub>TX</sub> + I <sub>RX</sub>		150	300	mA	



## Transmitter Electro-Optical Interface

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Data Input Voltage - Low	$V_L-V_{CC}$	-1.81		-1.475	V	
Data Input Voltage - High	$V_H-V_{CC}$	-1.165		-0.880	V	
Optical Output Power	40km	-8		0	dBm	1
	60km	-5		0		
Optical Extinction Ratio	$E_R$	9			dB	
Center Wavelength	$\lambda_C$	1260	1310	1360	nm	
Spectral Width (RMS)	$\Delta\lambda$			2.5	nm	
Optical Rise / Fall Time	$t_r / t_f$			2	ns	2

### Notes:

1. Coupling into a 9/125 $\mu$ m single-mode fiber.
2. 10% to 90% value

## Receiver Electro-Optical Characteristics

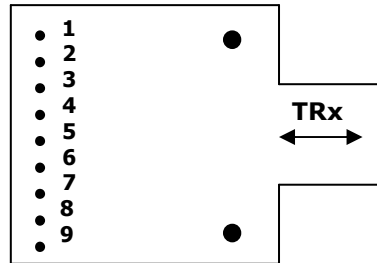
Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Receiver Overload	$P_{INMAX}$	0			dBm	1
Receiver Sensitivity	$P_{INMIN}$			-34	dBm	1
Operating Center Wavelength	$\lambda_C$	1480		1580	nm	
Receiver Output Voltage - Low	$V_{OL}-V_{CC}$	-2		-1.58	V	
Receiver Output Voltage - High	$V_{OH}-V_{CC}$	-1.1		-0.74	V	
Receiver Signal Detect - Low	$P_{RX\_SDD}$	-45			dBm	
Receiver Signal Detect - High	$P_{RX\_SDA}$			-34	dBm	
Receiver Signal Detect - Hysteresis	$P_{RX\_SDH}$	0.5			dB	
Signal Detect Output Voltage - Low	$V_{SDL}-V_{CC}$	-2		-1.58	V	
Signal Detect Output Voltage - High	$V_{SDH}-V_{CC}$	-1.1		-0.74	V	

### Notes:

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



## Pin Description

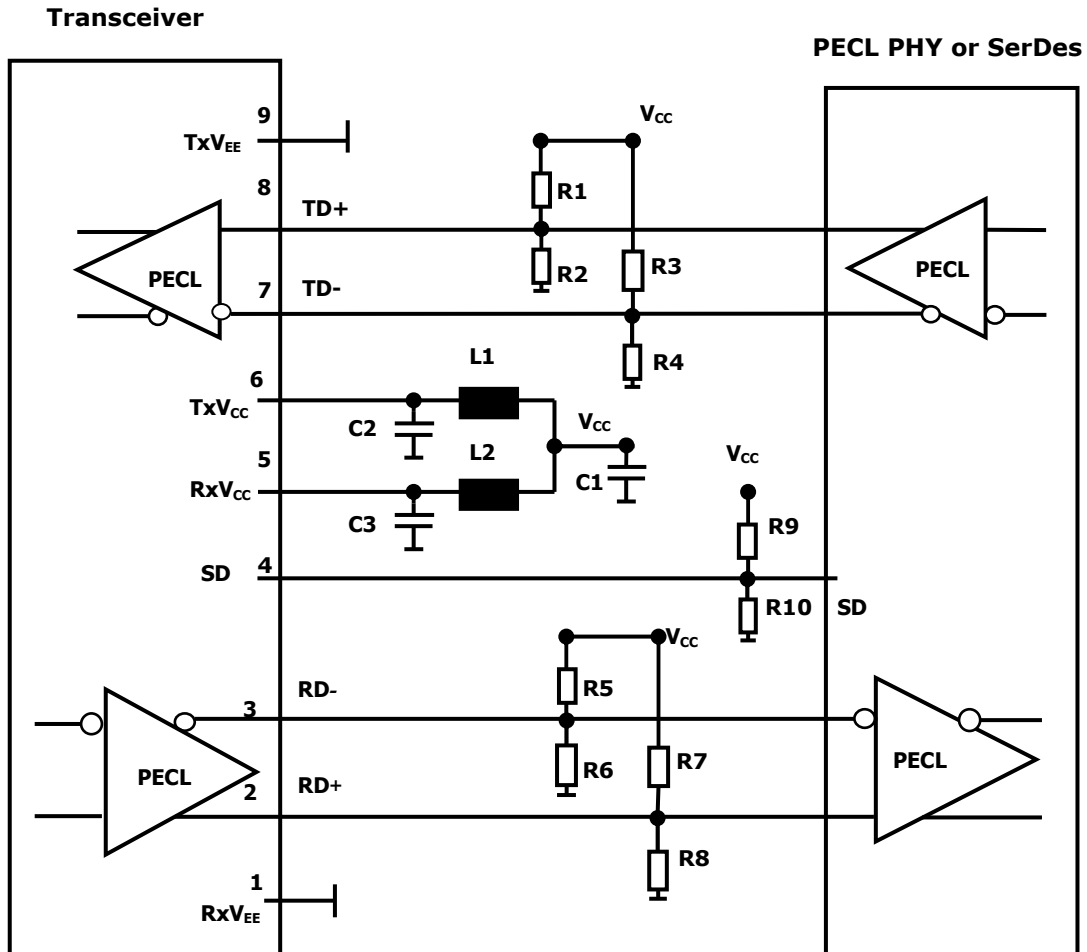


**Top View**

Pin No	Pin Name	Function	Notes
1	RxV <sub>EE</sub>	Receiver signal ground	
2	RD+	Receiver data out	PECL
3	RD-	Receiver data out bar	PECL
4	SD	Signal detect	PECL
5	RxV <sub>CC</sub>	Receiver power supply	
6	TxV <sub>CC</sub>	Transmitter power supply	
7	TD-	Transmitter data in bar	PECL
8	TD+	Transmitter data in	PECL
9	TxV <sub>EE</sub>	Transmitter signal ground	

## Recommended Interface Circuit

### TX DC Coupling / RX DC Coupling, PECL Signal Detect



**Notes:**

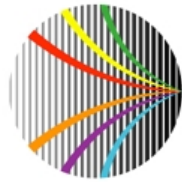
R1/R3/R5/R7/R9=130 ohm (Depends on SerDes chip used.)

R2/R4/R6/R8/R10=82 ohm (Depends on SerDes chip used.)

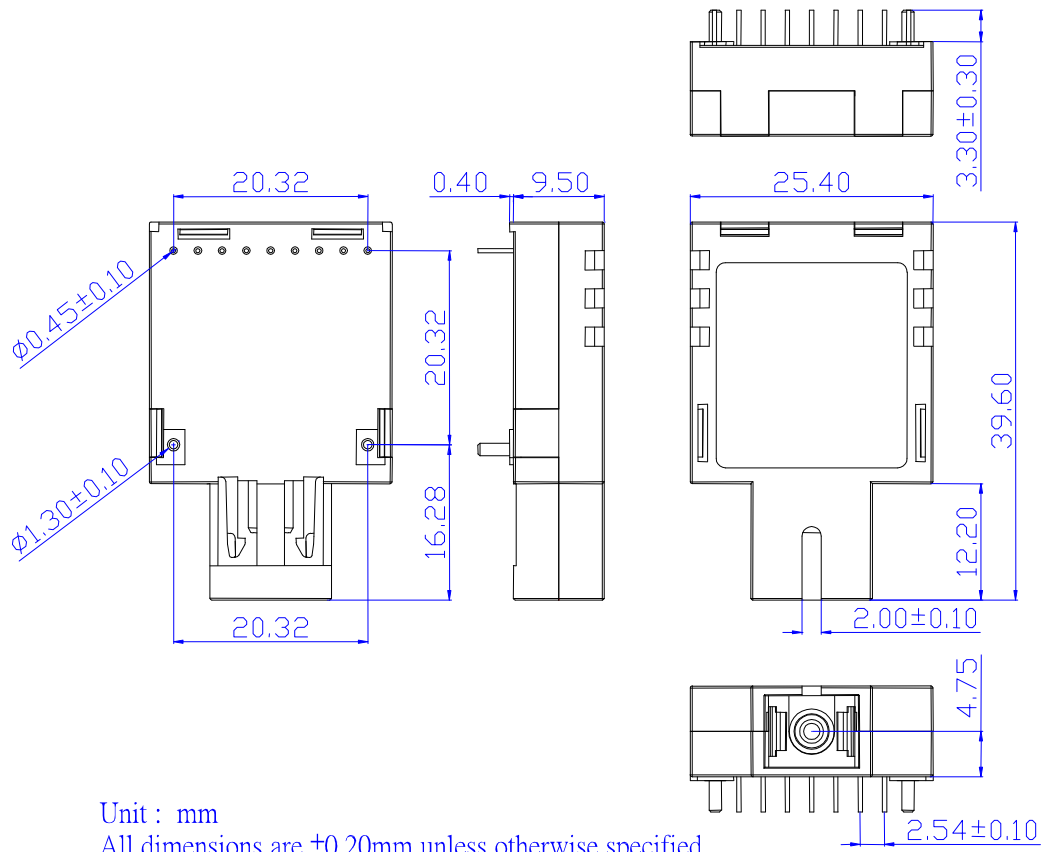
C1=10uF

C2/C3=0.1uF

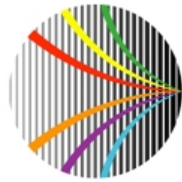
L1=L2=1uH



## Mechanical Dimensions (Units in mm)



Unit : mm  
All dimensions are  $\pm 0.20$ mm unless otherwise specified



**AXCEN**  
PHOTONICS CORPORATION

**Ordering Information**

**AXFT-1621-01xy**



**Operating temperature**

1: 0~70°C

3: -40~85°C

**Transmission Distance**

9: 40km

D: 60km

Model No.	Tx	LD	Rx	I/O	SD	Link	Temp.
AXFT-1621-0191	1310nm	FP	1550nm	DC/DC	PECL	40km	0~70°C
AXFT-1621-0193	1310nm	FP	1550nm	DC/DC	PECL	40km	-40~85°C
AXFT-1621-01D1	1310nm	FP	1550nm	DC/DC	PECL	60km	0~70°C
AXFT-1621-01D3	1310nm	FP	1550nm	DC/DC	PECL	60km	-40~85°C