

# AXCEN

PHOTONICS CORPORATION

## AXFE-1311 125Mbps Multimode 1310nm, 1x9 ST Transceiver



### Product Overview

The AXFE-1311 family of 1x9 ST transceiver module is specifically designed for the high performance integrated duplex data link over multimode optical fiber. These transceiver modules are compliant with the ST Multisource Agreement (MSA). These modules are designed to provide 100Base-FX compliant in Fast Ethernet applications.

The AXFE-1311 transceivers using a long wavelength (1310nm) light source enable data transmission up to 2km on a multimode optical fiber.

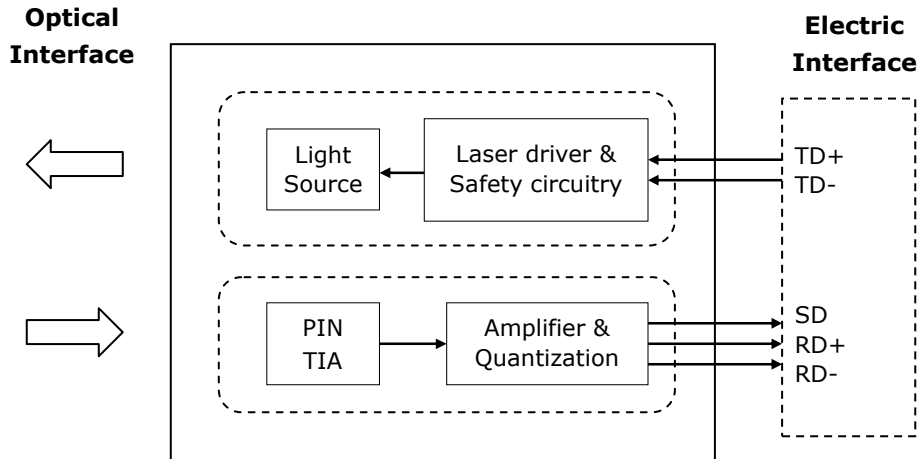
### Features

- Duplex ST receptacle
- 125Mbps IEEE802.3u 100BASE-FX compliant
- 125Mbps FDDI ISO/IEC 9314-1 compliant
- Single +3.3~5V power supply operation
- DC coupled PECL level inputs and outputs
- PECL signal detect output
- Class 1 laser safety standard IEC 60825 compliant
- 2km link on a multimode fiber
- Low power dissipation

### Applications

- ATM switches and routers
- Fast Ethernet
- FDDI

**Block diagram**



**Absolute Maximum Ratings**

Parameter	Symbol	Min.	Max.	Unit	Note
Storage Temperature	$T_S$	-40	+85	°C	
Supply Voltage	$V_{CCT}$ $V_{CCR}$	-0.5	6.0	V	
Storage Relative Humidity	RH	5	95	%	
Lead Soldering Temperature	$T_{Is}$		260	°C	
Lead Soldering Time	$t_{Is}$		10	sec	

**Recommended Operating Conditions**

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Case Operating Temperature	$T_C$	0		70	°C	Refer to ordering information
		-40		85		
Supply Voltage	$V_{CC}$	3.1	3.3	3.5	V	
		4.75	5.0	5.25		
Supply Current	$I_{TX} + I_{RX}$		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	$P_O$	-20		-14	dBm	1
		-23.5		-14		2
Optical Extinction Ratio	$E_R$	10			dB	
Center Wavelength	$\lambda_C$	1270		1380	nm	
Spectral Width (RMS)	$\Delta\lambda$			7.7	nm	
Optical Rise / Fall Time	$t_r / t_f$			3.0	ns	3
Duty Cycle Distortion	DCD			1.0	ns	
Random Jitter	RJ			0.76	ns	

### Notes:

1. Coupling into a 62.5/125 $\mu$ m, NA=0.275 fiber
2. Coupling into a 50/125 $\mu$ m, NA=0.20 fiber
3. 10% to 90% value

## Receiver Electro-Optical Characteristics

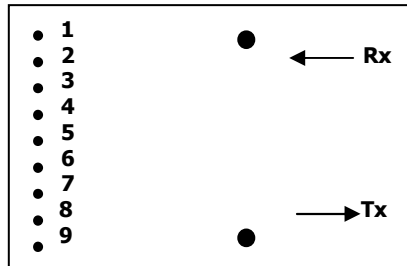
Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Receiver Overload	$P_{INMAX}$	-8			dBm	1
Receiver Sensitivity	$P_{INMIN}$			-32	dBm	1
Operating Center Wavelength	$\lambda_C$	1270		1380	nm	
Receiver Signal Detect – High	$P_{RX\_SDA}$			-32	dBm	
Receiver Signal Detect – Low	$P_{RX\_SDD}$	-45			dBm	
Receiver Signal Detect - Hysteresis	$P_{RX\_SDH}$	1.0			dB	
Receiver Signal Detect Voltage - Low	$V_{SDL}-V_{CC}$	-2		-1.58	V	
Receiver Signal Detect 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

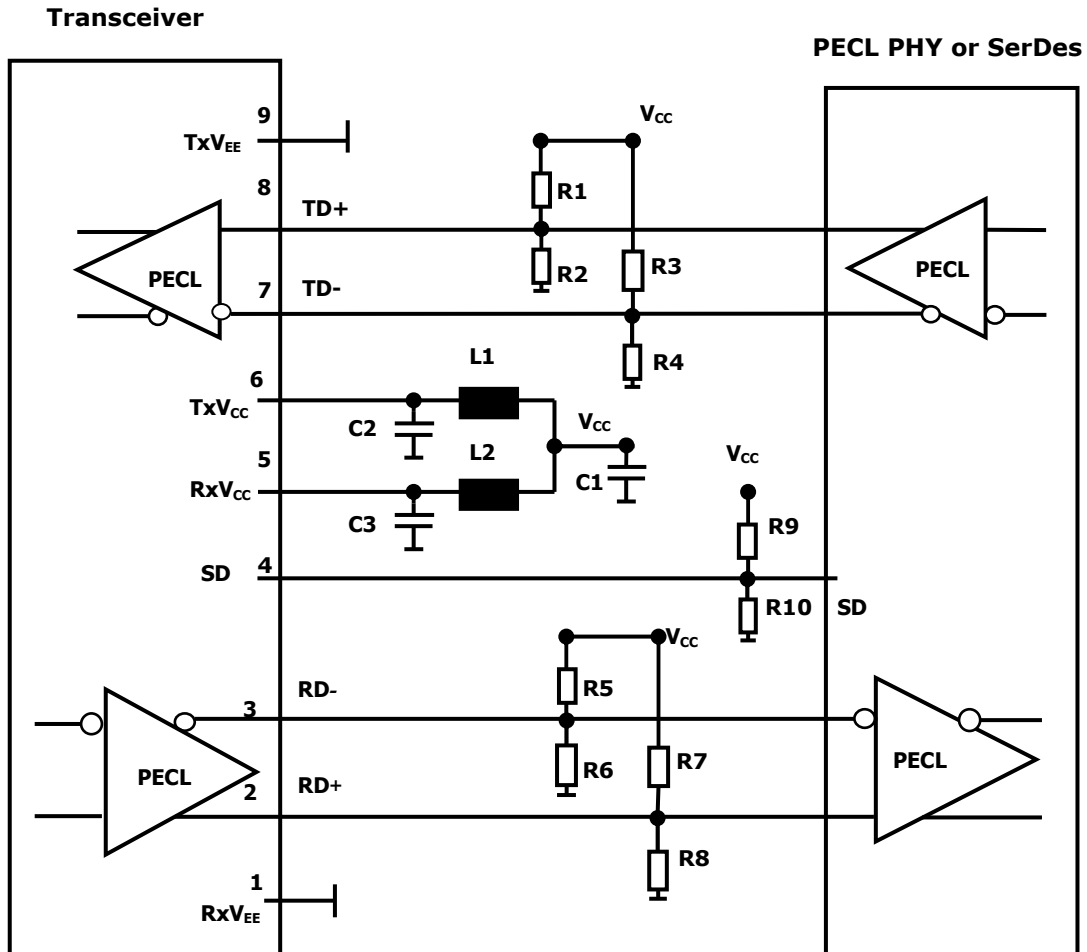


**Top View**

Pin No	Pin Name	Function	Notes
1	RxV <sub>EE</sub>	Receiver signal ground	
2	RD+	Receiver data out	
3	RD-	Receiver data out bar	
4	SD	Signal detect	
5	RxV <sub>CC</sub>	Receiver power supply	
6	TxV <sub>CC</sub>	Transmitter power supply	
7	TD-	Transmitter data in bar	
8	TD+	Transmitter data in	
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 @3.3V (Depends on SerDes chip used.)**

**=82 ohm @5V (Depends on SerDes chip used.)**

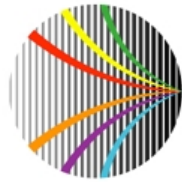
**R2/R4/R6/R8/R10=82 ohm @3.3V (Depends on SerDes chip used.)**

**=130 ohm @5V (Depends on SerDes chip used.)**

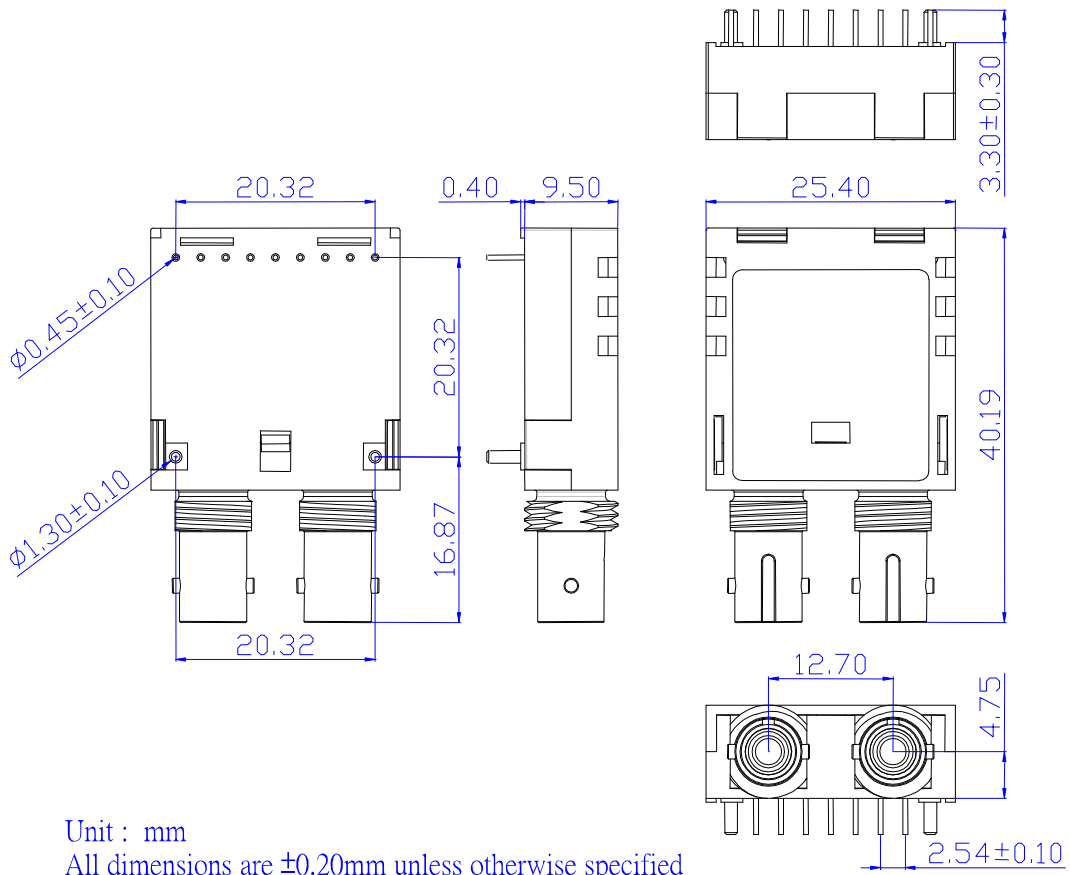
**C1=10uF**

**C2/C3=0.1uF**

**L1=L2=1uH**



## Mechanical Dimensions (Units in mm)



## Ordering Information

### AXFE-1311-0K2<sub>x</sub>



#### Operating Temperature

6: 0~70°C

7: -40~85°C

Model No.	Wavelength	LD	I/O	SD	Link	Temp.
AXFE-1311-0K26	1310nm	FP	DC/DC	PECL	2km	0~70°C
AXFE-1311-0K27	1310nm	FP	DC/DC	PECL	2km	-40~85°C