

155Mbps SFP Transceiver w/o DDMI ATB-PH22-LCN Series

Description:

The transceiver is a low power, high performance, cost effective module supporting data-rate up to 155Mbps and 20km transmission distance. The low jitter and high sensitivity are extinguished features with TX1310nm/RX1550nm FP laser and PIN/TIA receiver. It incorporates TX_DIS control, TX-FAULT and RX_LOS monitor functions. The devices are Class I laser safety compliant.

Application

- Fast Ethernet
- Switch to switch interface
- SONET/SDH
- Switched backplane applications
- Router/Server interface
- Other optical links

Feature:

- Compliant with ITU-T G.957
- Compliant with SFP MSA Up
- to 155Mbps data rate
- Up to 20km transmission with SMF, LC
- optical interface, without DDMI
- 1310nm/1550nm FP LD and PIN photodetector

Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Unit
Storage Temperature	Tst	-40	+85	С
Storage Relative Humidity	RHs	-	95	%
Supply Voltage	Vcc	0	6	V
Voltage on any input/output pin	V _{IO}	0	VCC	V

Operation Environment:

Parameter	Symbol	Min.	Max.	Unit
Supply Voltage	V _{CC}	3.1	3.5	V
Ambient Operating Temperature	TA	0	70	С



ATRIE TECHNOLOGY INC.



Performance Specification

Transmitter Characteristics								
Parameter	Symbol	Min.	Typ.	Max.	Unit	Note		
Supply Voltage	V _{CC}	3.1	3.3	3.5	V			
Differential Input Voltage	V _{IN}	400	-	1600	mV			
Data Rate	Rate	-	155	-	Mbps			
Optical Output Power	Ро	-15	-	-8	dBm			
Extinction Ratio	ER	8.2	-	-	dB			
		1270	1310	1355	nm	ATB-PH22-LCN		
Central Wavelength		1530	1550	1570	11111	ATB-PH32-LCN		
RMS Spectral Width		-	-	7	nm			
Optical Rise/Fall Time	T_r/T_f	-	-	2	ns	20~80%		
Eye Diagram	Compliance with ITU-T G.957							

Receiver Characteristics							
Parameter	Symbol	Min.	Тур.	Max.	Unit	Note	
Supply Voltage	V _{CC}	3.1	3.3	3.5	V		
Differential Output Voltage	V _{OUT}	400	-	2000	mV		
Data Rate	Rate	-	155	-	Mbps		
Sensitivity	S	-	-	-34	dBm	1	
Optical Input Overload	P _{OL}	-3	-	-	dBm		
Central Wavelength		1270	1310	1355	nm	ATB-PH32-LCN	
		1530	1550	1570	11111	ATB-PH22-LCN	
LOS (Loss of Signal)	Optical Decreased	-47	-	-	dBm		
	Optical Increased	-	-	-36	dBm		
LOS Hysterics	P _H	0.5	-	5	dB		

Notes:

1. Average received power where the BER = 10^{-10} , measured with a 2^{23} -1 NRZ test pattern..



Transceiver Pin Locations



Pin Descriptions

Pin	Name	Description	Plug Sequence	Note
1	VEET	Transmitter Ground	1	
2	TX Fault	Transmitter Fault Indication	3	1
3	TX Disable	Transmitter Disable	3	2
4	MOD-DEF2	Module Definition 2	3	3
5	MOD-DEF1	Module Definition 1	3	3
6	MOD-DEF0	Module Definition 0	3	3
7	Rate Select	Not Connected	3	



SFP Bidi Transceiver w/o DDMI SM, 155Mbps, 20km, TX1310nm/RX1550nm

LOS	Loss of Signal	3	4
VeeR	Receiver Ground	1	
VeeR	Receiver Ground	1	
VeeR	Receiver Ground	1	
RD-	Inverse Received Data Out	3	5
RD+	Received Data Out	3	5
VeeR	Receiver Ground	1	
VccR	Receiver Power	2	
VccT	Transmitter Power	2	
VeeT	Transmitter Ground	1	
TD+	Transmit Data In	3	6
TD-	Inverse Transmit Data In	3	6
VeeT	Transmitter Ground	1	
	LOS VeeR VeeR RD- RD+ VeeR VccR VccT VeeT TD+ TD- VeeT	LOSLoss of SignalVeeRReceiver GroundVeeRReceiver GroundVeeRReceiver GroundRD-Inverse Received Data OutRD+Receiver GroundVeeRReceiver GroundVeeRReceiver GroundVeeRReceiver GroundVeeRTransmitter PowerVccTTransmitter GroundTD+Transmit Data InTD-Inverse Transmit Data InVeeTTransmitter Ground	LOSLoss of Signal3VeeRReceiver Ground1VeeRReceiver Ground1VeeRReceiver Ground1RD-Inverse Received Data Out3RD+Receiver Ground1VeeRReceiver Ground1VccRReceiver Ground1VccTTransmitter Power2VeeTTransmit Data In3TD-Inverse Transmit Data In3VeeTTransmitter Ground1

Notes:

- 1. TX Fault is an open collector output, which should be pulled up with a $4.7k\sim10k\Omega$ resistor on the host board to a voltage between 2.0V and Vcc+0.3V. Logic 0 indicates normal operation; logic 1 indicates a laser fault of some kind. In the low state, the output will be pulled to less than 0.8V.
- 2. TX Disable is an input that is used to shut down the transmitter optical output. It is pulled up within the module with a $4.7k \sim 10k\Omega$ resistor. Its states are:

Low (0~0.8V): Transmitter on (>0.8V, <2.0V): Undefined High (2.0~3.5): Transmitter Disabled Open: Transmitter Disabled

3. MOD-DEF 0,1,2 are the module definition pins. They should be pulled up with a $4.7k\sim10k\Omega$ resistor on the host board. The pull-up voltage shall be VccT or VccR.

MOD-DEF 0 is grounded by the module to indicate that the module is present MOD-DEF 1 is the clock line of two wire serial interface for serial ID MOD-DEF 2 is the data line of two wire serial interface for serial ID

- 4. LOS is an open collector output, which should be pulled up with a $4.7k\sim10k\Omega$ resistor on the host board to a voltage between 2.0V and Vcc+0.3V. Logic 0 indicates normal operation; logic 1 indicates loss of signal. In the low state, the output will be pulled to less than 0.8V.
- 5. These are the differential receiver outputs. They are AC-coupled 100Ω differential lines which should be terminated with 100Ω (differential) at the user SERDES.

These are the differential transmitter inputs. They are AC-coupled, differential lines with 100Ω differential termination inside the module.



Block Diagram



Power Supply

The Transceiver includes internal circuit components to filter power supply noise. Under some conditions of EMI and power supply noise, external power supply filtering may be necessary. If receiver sensitivity is found to be degraded by power supply noise, the filter network illustrated in the following figure may be used to improve performance. The values of the filter components are general recommendations and may be changed to suit a particular system environment. Shielded inductors are recommended.



Recommended Front Panel Layout Opening for LC





Recommended Application Circuits



Outline Specification



ATRIE TECHNOLOGY INC.





Note: Atrie Technology Inc. reserves all the rights to make changes in product design, features, capabilities, function, or specifications at any time without notice.