

155Mbps Single Mode SFP Transceiver (80km) ATR-S0105

■ Features

- a. Single Power Supply 3.3V
- b. Small Form Factor Pluggable (SFP) MSA compatible
- c. LVPECL Compatible Signal Interface
- d. Duplex LC Connector

■ Applications

- a. ATM Switches and Routers
- c. SONET/SDH Switches Infrastructure
- d. Fast Ethernet Application



■ Absolute maximum ratings

Parameter	Symbol	Min.	Max.	Unit
Storage Temperature	T_S	-40	+85	°C
Operating Temperature	T_{op}	0	+70	°C
Supply Voltage	V_{CC}	-0.5	+3.6	V
Voltage at any Input Pin	V_{IN}	0	Vcc	V

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■ Operating Conditions

Transmitter (T=0 to +70°C, $V_{CC}=3.13\sim 3.47V$)

Parameter	Symbol	Min.	Typ.	Max.	Unit
Central Wavelength	λ_C	1480	1550	1580	nm
Spectral Width(-20dB)	$\Delta\lambda$	-	-	1	nm
Side Mode Suppression Ratio	SMSR	30			
Output Power	P_o	-5	-	0	dBm
Extinction Ratio	ER	10	-	-	dB
Optical Rise/Fall Time	T_r/T_f	-	-	2	ns
Differential Input Voltage	$V_{IH}-V_{IL}$	500	-	2000	mV
Tx Disable Input Voltage_Low	$T_{DIS,L}$	0		0.5	V
Tx Disable Input Voltage_High	$T_{DIS,H}$	2.0		Vcc	V
Transmit Fault Output-Low	TX_FAULTL	0	-	0.8	V
Transmit Fault Output-High	TX_FAULTH	2.0	-	V _{CC}	V

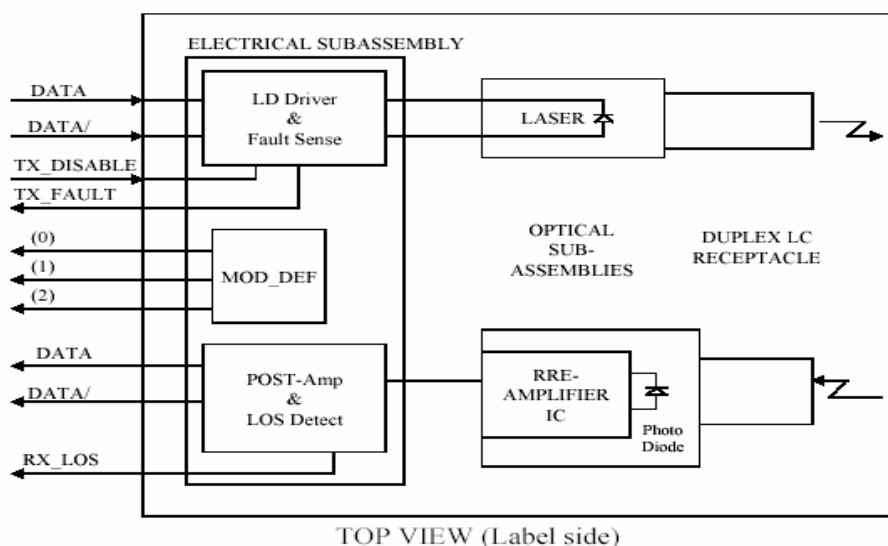
Receiver (T=0 to +70°C, $V_{CC}=3.13\sim 3.47V (+3.3V)$)

Parameter	Symbol	Min.	Typ.	Max.	Unit
Wavelength Range	λ	1100	-	1600	nm
MIN. Input Power (Sensitivity)	P_{MIN}	-	-	-34	dBm
MAX. Input Power (Saturation)	P_{MAX}	-3	-	-	dBm
Signal Detect-Asserted	P_A	-	-	-34	dBm
Signal Detect-Deasserted	P_D	-45	-	-	dBm

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Signal Detect Hysteresis	P_{HYS}	1	-		dB
Return Loss	ORL	12	-	-	dB
Differential Output Voltage	$V_{OH} - V_{OL}$				
Receiver Loss of Signal Output Voltage-Low	RX_LOSL	0	-	0.8	V
Receiver Loss of Signal Output Voltage-High	RX_LOSH	2.0	-	V_{CC}	V

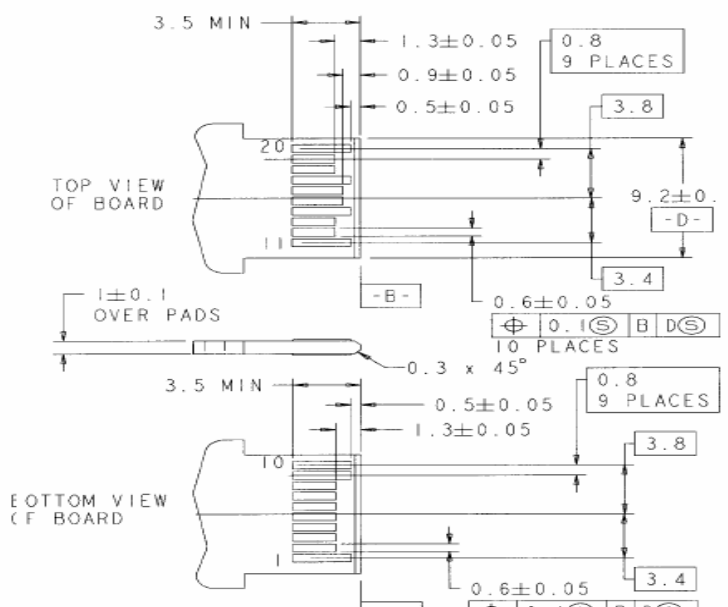
Block Diagram of Transceiver



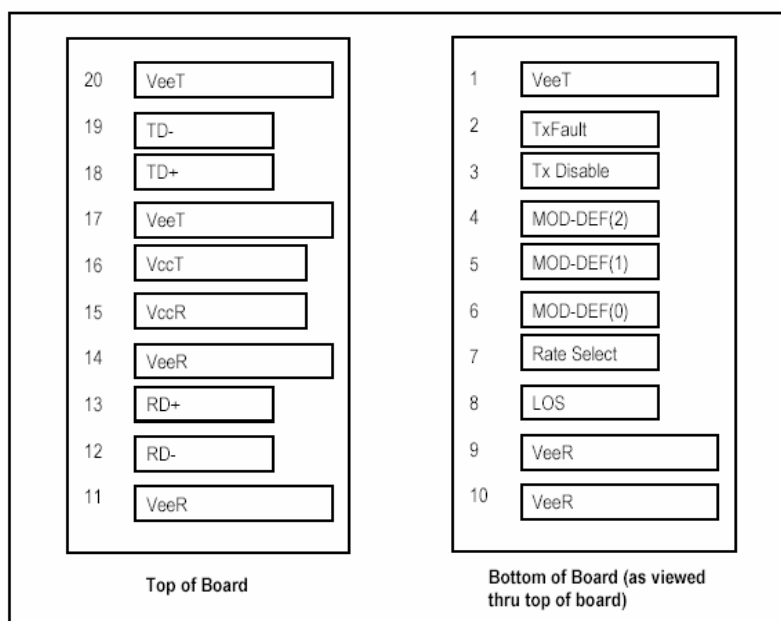
Pin Assignment and Function Definitions

It is the responsibility of the system integrator to assure that no thermal, energy, or voltage hazard exists during the hot-plug-unplug sequence. It is also the responsibility of the system integrator and end-user to minimize static electricity and the probability of ESD events by careful design.

SFP Transceiver Electrical Pad Layout



Pins Assignment



■ **Function**

Pin No.	Name	Function	Plug Seq.	Notes
1	VeeT	Transmitter Ground	1	
2	TX Fault	Transmitter Fault Indication	3	Note 1
3	TX Disable	Transmitter Disable	3	Note 2
4	MOD-DEF2	Module Definition 2	3	Note 3
5	MOD-DEF1	Module Definition 1	3	Note 3
6	MOD-DEF0	Module Definition 0	3	Note 3
7	Rate Select	Not Connected	3	
8	LOS	Loss of Signal	3	Note 4
9	VeeR	Receiver Ground	1	
10	VeeR	Receiver Ground	1	
11	VeeR	Receiver Ground	1	
12	RD-	Inv. Received Data Out	3	Note 5
13	RD+	Received Data Out	3	Note 5
14	VeeR	Receiver Ground	1	
15	VccR	Receiver Power	2	
16	VccT	Transmitter Power	2	
17	VeeT	Transmitter Ground	1	
18	TD+	Transmit Data In	3	Note 6
19	TD-	Inv Transmit Data In	3	Note 6

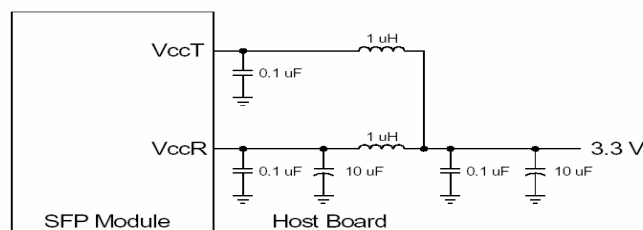
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20	VeeT	Transmitter Ground	1	
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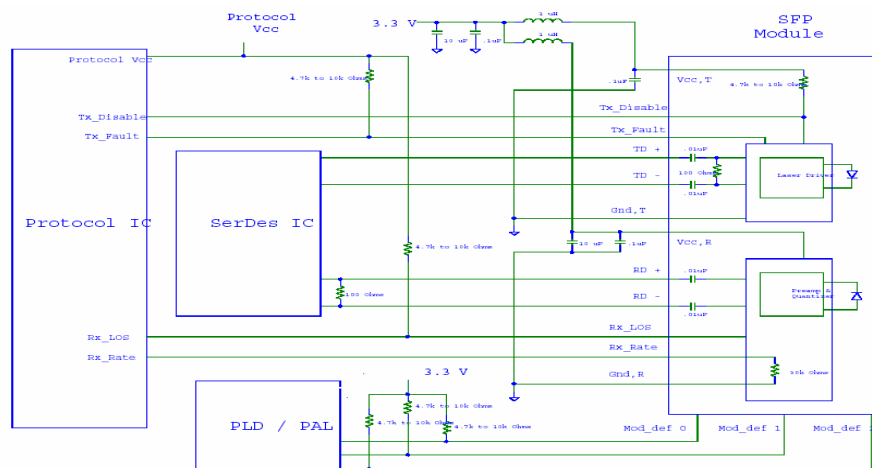
Notes:

1. TX Fault is an open collector output, which should be pulled up with a 4.7K~10K. resistor on the host board to a voltage between 2.0V and $V_{cc}+0.3V$. 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~10K. resistor. Its states are:
Low (0~0.8V) : Transmitter on
(>0.8V, <2.0V) : Undefined
High (2.0~3.465V) : 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~10K. resistor on the host board. The pull-up voltage shall be V_{ccT} or V_{ccR} .
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~10K. resistor on the host board to a voltage between 2.0V and $V_{cc}+0.3V$. 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 100. differential lines which should be terminated with 100. (differential) at the user SERDES.
6. These are the differential transmitter inputs. They are AC-coupled, differential lines with 100.differential termination inside the module.

■ Recommended Host Board Supply Filtering Network

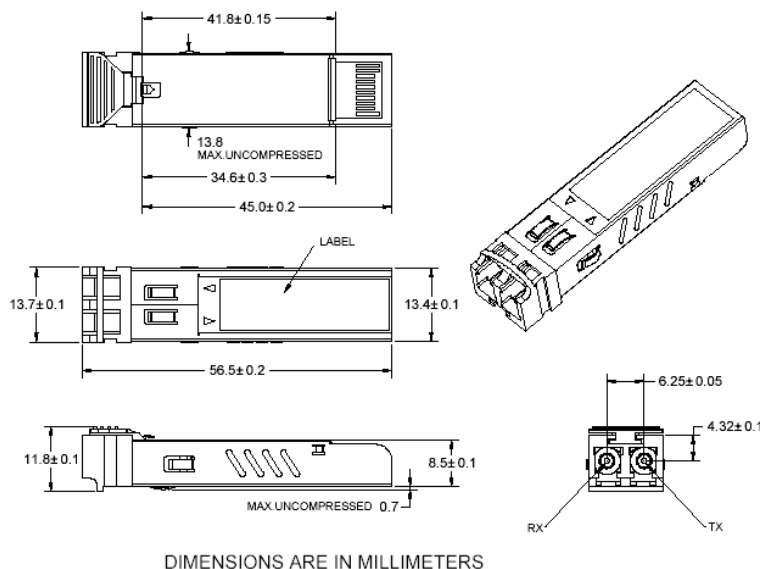


■ Example SFP Host Board Schematic SFP



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■ Mechanical



■ Ordering Information

Part No.	TX Power (dBm)	RX Sens (Max.) (dBm)	Supply Voltage	Distance
ATR-S0105	-5~0	-34	3.3V	80km