1.25G SFP Duplex 850nm Multimode Transceiver Module

(TN3SFPMMLCG)

DESCRIPTION

DescriptionThe transmitter section uses a multiple quantum well laser and is a class 1 laser compliant according to International Safety Standard IEC-60825. The receiver section uses an integrated InGaAs detector preamplifier (IDP) mounted in an optical header and a limiting post-amplifier IC. The SFP series are designed to be compliant with SFF-8472 SFP Multi-source Agreement (MSA).

FEATURES

Distance up to 500M
DDM function optional
Single 3. 3V Power supply
Tx850, 850nm VCSEL Laser
Duplex LC Connector Interface
Temperature Range: 0℃~+70℃
Compliant with MSA SFP Specification
Operating data rate up to 1.25/1.063Gbps
Hot Pluggable, Metal enclosure, for Lower EMI
Digital Diagnostic Monitor Function Compatible with SFF-8472

APPLICATIONS

Gigabit Ethernet
Xdsl Applications
Metro Edge Switching
WDM Gigabit Ethernet Links

ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Min.	Typ.	Max.	Unit
Storage Temperature	Ts	-40		85	ºC
Supply Voltage	VCC	-0.5		3.6	V

RECOMMENDED OPERATING CONDITIONS

Parameter		Symbol	Min.	Typ.	Max.	Unit
Ambient Operating Temperature	Standard	TA	0		70	ºC
	Industrial					
Supply Voltage		VCC	3.15	3.3	3.45	V
Data Rate	Giga Ethernet			1.25		Gbps
	Fiber Channel			1.063		
Total Supply Current		ICC			300	mA
Surge Current		Isurge			+30	mA

PERFORMANCE SPECIFICATIONS - ELECTRONICAL

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
TRANSMITTER						
CML/PECL Inputs (Differential)	Vin	400		1800	mVpp	AC coupled inputs
Input Impedance (Differential)	Zin	90	100	110	ohms	Rin>100 kohms@ DC
Tx_DISABLE Input Voltage- High		2		3.45	V	
Tx_DISABLE Input Voltage- Low		0		0.8	V	
Tx_FAULT Output Voltage- High		Vcc-0.5		Vcc+0.3	V	Io=400µA, Host Vcc
Tx_FAULT Output Voltage- Low		0		0.5	V	Io = -4.0mA
TX_Disable Assert Time	t_off			10	us	
TX_Disable Negate Time	t_off			1	us	
RECEIVER						
CML Outputs (Differential)	Vout	370		1800	mVpp	AC coupled outputs
Output Impedance (Differential)	Zout	90	100	110	ohms	
Rx_LOS Output Voltage -High		Vcc-0.5		Vcc+0.3	V	Io =400µA, Host Vcc
Rx_LOS Output Voltage -Low		0		0.8	V	Io = -4.0mA

PERFORMANCE SPECIFICATIONS- OPTICAL

Parameter		Symbol	Min.	Typical	Max.	Unit
62µm Core Diameter MMF	SFP 850 1.25G MM	850		0.5		Km
Data Rate				1.25/1.06		Gbps
Transmitter						
Centre Wavelength		λC	820	850	880	nm
Spectral Width (RMS)		λ			4	nm
Average Output Power	SFP 850 1.25G MM	P0ut	-12		-3	dBm
Extinction Ratio		EX	9			dB
Output Optical Eye		ITU-T G.957.Compliant				
Receiver						
Centre Wavelength		λC	820		880	nm
Receiver Sensitivity	SFP 850 1.25G MM	PIN			-22	dBm
Receiver Overload		Pmax-PIN			-3	dBm
LOS De-Assert	PIN	LOSD			-26	dBm
LOS Assert	PIN	LOSA	-35			dBm

SFP TRANSCEIVER ELECTRICAL PAD LAYOUT

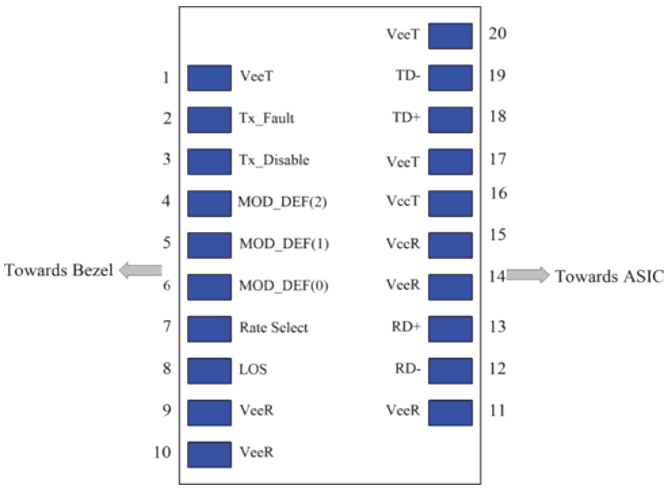

Figure 1 Transceiver pin descriptions

PIN FUNCTION DEFINITIONS

Pin Number	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, Module disables on high or open
4	MOD-DEF2	Module Definition 2	3	Note 3, Data line for Serial ID.
5	MOD-DEF1	Module Definition 1	3	Note 3, Clock line for Serial ID.
6	MOD-DEF0	Module Definition 0	3	Note 3, Grounded within the module.
7	Rate Select	Not Connect	3	Function not available
8	LOS	Loss of Signal	3	Note 4
9	VeeR	Receiver Ground	1	Note 5
10	VeeR	Receiver Ground	1	Note 5
11	VeeR	Receiver Ground	1	Note 5
12	RD-	Inv.Received Data Out	3	Note 6
13	RD+	Received Data Out	3	Note 7
14	VeeR	Receiver Ground	1	Note 5
15	VccR	Receiver Power	2	3.3 ± 5%, Note 7
16	VccT	Transmitter Power	2	3.3 ± 5%, Note 7
17	VeeT	Transmitter Ground	1	Note 5
18	TD+	Transmit Data In	3	Note 8
19	TD-	Inv. Transmit Data In	3	Note 8
20	VeeT	Transmitter Ground	1	Note 5

Notes:
TX Fault is an open collector/drain output, which should be pulled up with a 4.7K–10KΩ resistor on the host board. Pull up voltage between 2.0V and VccT, R+0.3V. When high, output indicates a laser fault of some kind. Low indicates normal operation. In the low state, the output will be pulled to<0.8V.
TX disable is an input that is used to shut down the transmitter optical output. It is pulled up within the module with a 4.7–10 KΩ resistor. Its states are:
Low (0 – 0.8V): Transmitter on
(>0.8, < 2.0V): Undefined
High (2.0 – 3.465V): Transmitter Disabled
Open: Transmitter Disabled
Mod-Def 0,1,2. These are the module definition pins. They should be pulled up with a 4.7K–10KΩ resistor on the host board. The pull-up voltage shall be VccT or VccR (see Section IV for further details).
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
VeeR and VeeT may be internally connected within the SFP module.

RD-/+: These are the differential receiver outputs. They are AC coupled 100Ω differential lines which should be terminated with 100Ω (differential) at the user SERDES. The AC coupling is done inside the module and is thus not required on the host board. The voltage swing on these lines will be between 370 and 2000 mV differential (185 –1000 mV single ended) when properly terminated.
VccR and VccT are the receiver and transmitter power supplies. They are defined as 3.3V ±5% at the SFP connector pin. Maximum supply current is 300mA. Recommended host board power supply filtering is shown below. Inductors with DC resistance of less than 1 ohm should be used in order to maintain the required voltage at the SFP input pin with 3.3V supply voltage. When the recommended supply-filtering network is used, hot plugging of theSFP transceiver module will result in an inrush current of no more than 30mA greater than the steady state value. VccR and VccT may be internally connected within the SFP transceiver module.
TD-/+: These are the differential transmitter inputs. They are AC-coupled, differential lines with 100Ω differential termination inside the module. The AC coupling is done inside the module and is thus not required on the host board. The inputs will accept differential swings of 500 – 2400 mV (250 – 1200mV single-ended), though it is recommended that values between 500 and 1200 mV differential (250 – 600mV single-ended) be used for best EMI performance.