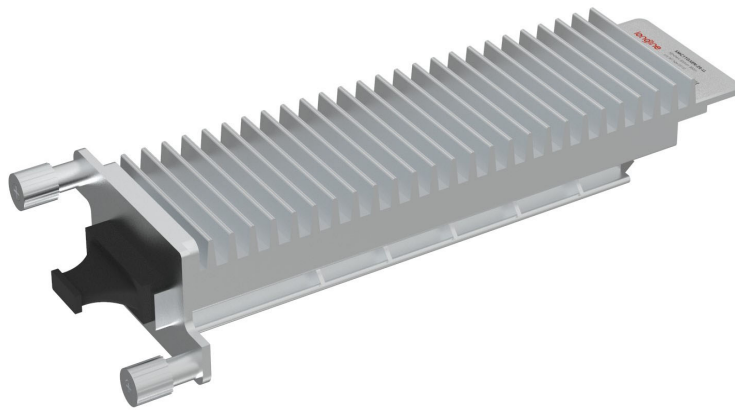


100BASE-ZX SFP 1550nm 80km DOM LC SMF Transceiver

SMC11GXEN-ZR-LL



Application

- SONET OC-3/SDH STM-1
- Fast Ethernet
- Other Optical Links

Features

- Up to 155M b/s Data Links
- Hot-Pluggable
- 1550nm DFB Laser Transmitter
- Duplex LC Connector
- RoHS Compliant and Lead Free
- Up to 80km on 9/125 μ m SMF
- Single +3.3V Power Supply
- Monitoring Interface Compliant with SFF-8472
- Industrial /Extended/ Commercial Operating Temperature Range: -40°C to 85°C /-5°C to 85°C /0°C to 70°C Version Available

Description

The 100BASE SFP transceiver is a high performance, cost effective module with a duplex LC optical interface. It can be used for high-speed signals, LVTTTL control and monitoring of signals with standard AC-coupled CML.

The receiver section uses a PIN receiver and the transmitter uses 1550 nm DFB laser, and the 20dB link budget ensures this module SONET OC-3/SDH STM-1 80Km application.

Specification

I. Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Unit
Storage Temperature Range	T_S	-40	85	°C
Supply Voltage	$V_{CC,T,R}$	-0.5	4	°C
Relative Humidity	RH	0	85	%
Case Operating Temperature	Industrial	-40	85	°C
	Extended	-5	85	
	Commercial	0	70	

II. Recommended Operating Environment

Parameter	Symbol	Min.	Max.	Unit	
Case Operating Temperature	Industrial	-40	85	°C	
	Extended	T_C	-5	85	°C
	Commercial		0	70	°C
Supply Voltage	$V_{CC,T,R}$	3.0	3.6	V	

III. Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Supply Voltage	V_{CC}	3.0	3.30	3.60	V	
Supply Current	I_{CC}		130	170	mA	
Inrush Current	I_{surge}			$I_{CC}+30$	mA	
Maximum Power	P_{max}			1.0	W	
Transmitter						
Input Differential Impedance	R_{in}	90	100	110	W	1
Single Ended Data InPut Swing	V_{inPP}	200		1200	mVp-p	
Transmit Disable Voltage	V_D	$V_{CC}-1.3$		V_{CC}	V	2
Transmit Enable Voltage	V_{EN}	V_{EE}		$V_{EE}+0.8$	V	
Transmit Disable Assert Time	$T_{dessert}$			10	us	
Receiver						
Single Ended Data Output Swing	$V_{out,pp}$	300		1000	mv	3
Data Output Rise Time	t_r			1300	ps	4
Data Output Fall Time	t_f			1300	ps	4
LOS Fault	$V_{losfault}$	$V_{CC}-0.5$		V_{CC_host}	V	5
LOS Normal	$V_{losnorm}$	V_{EE}		$V_{EE}+0.5$	V	5
Power Supply Rejection	PSR	100			mVpp	6

IV. Optical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Ref.
Transmitter						
Center Wavelength	λ_c	1480	1550	1580	nm	1
Spectral Width (-20dB)	σ			1	nm	
Optical Output Power	P_{out}	-5		0	dBm	2
Optical Rise / Fall Time	t_r/t_f			1300	ps	3
Extinction Ratio	ER	9.2			dB	
Eye Mask for Optical Output	Compliant with Eye Mask Defined in IEEE802.3 Standard					
Receiver						
Optical Input Wavelength	λ	1100		1670	nm	
Optical Input Power	P_{in}	-36		-3	dBm	4.5
Receiver Reflectance		12			dB	
Receiver Overload	P_{ol}			-3	dBm	4.5
RX Sensitivity	S_{en}			-34	dBm	4.5
RX_LOS Assert	LOS_A	-44			dBm	
RX_LOS Deassert	LOS_D			-35	dBm	
RX_LOS Hysteresis	LOS_H		2	2.5	dB	

Parameter	Symbol	Min.	Typ.	Max.	Unit	Ref.
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General Specifications

Data Rate	BR		155		Mb/s	
Bit Error Rate	BER			10 ⁻¹²		
Max. Supported Link Length on 9/125µm SMF@155Mb/s	L _{MAX}		80		Km	6
Total System Budget	LB	20			dB	7

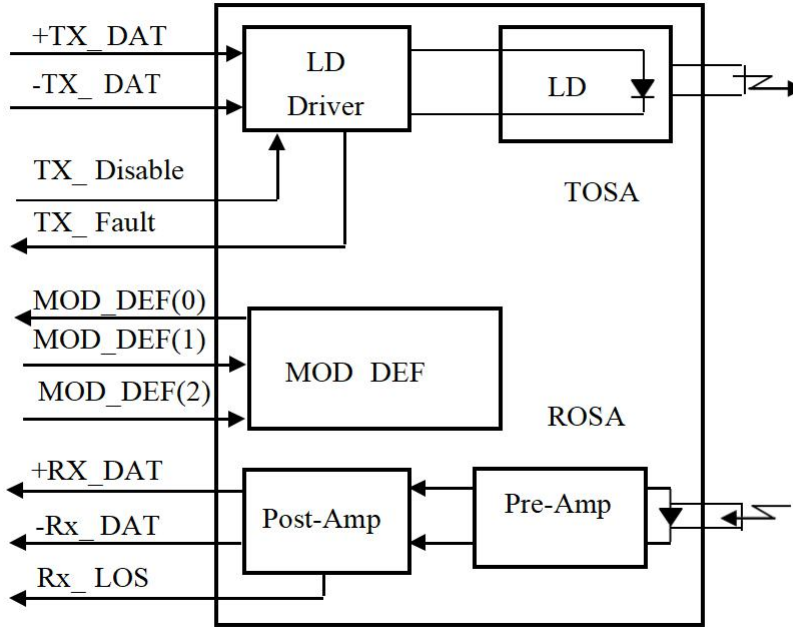
Notes:

- Also specified to meet curves in FC-PI 13.0 Figures 18 and 19, which allow trade-off between wavelength spectral width.
- Class 1 Laser Safety per FDA/CDRH and EN (IEC) 60825 regulations.
- Unfiltered, 20-80%. Complies with IEEE 802.3 (Gig. E), FC 1x and 2x eye masks when filtered.
- Measured with conformance signals defined in FC-PI 13.0 specifications.
- Measured with PRBS 231 -1 at 10⁻¹² BER.
- Dispersion limited per FC-PI Rev. 13.
- Attenuation of 0.25 dB/km is used for the link length calculations. Distances are indicative only. Please refer to the Optical Specifications in Table IV to calculate a more accurate link budget based on specific conditions in your application.

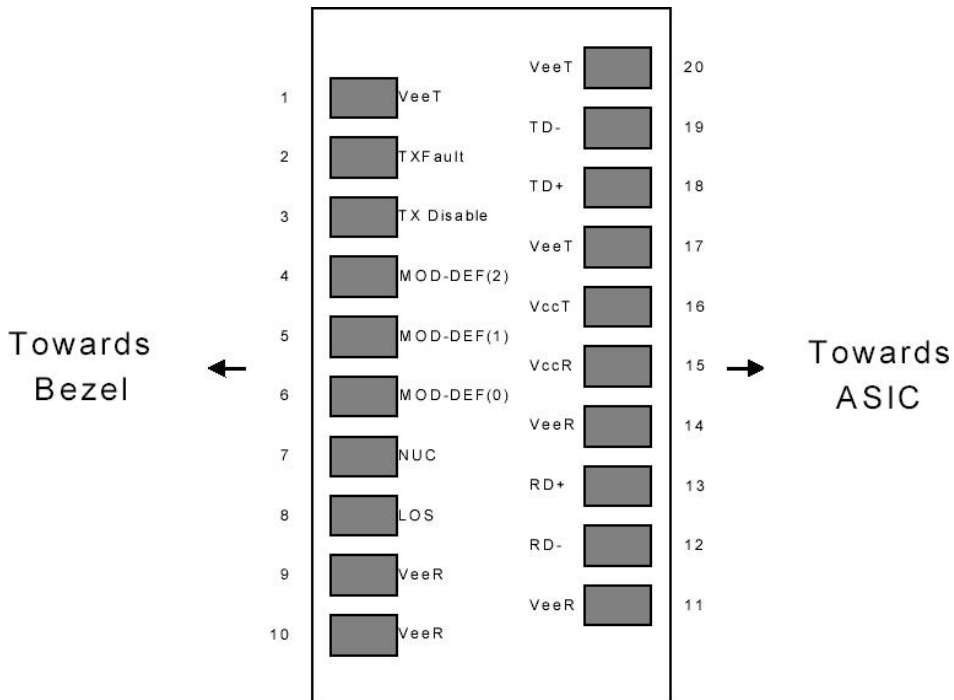
V. Digital Diagnostic Monitor Characteristics

Parameter	Symbol	Min.	Max.	Unit
Temperature Monitor Absolute Error	DMI_Temp	-3	3	degC
Laser Power Monitor Absolute Error	DMI_TX	-3	3	dB
RX Power Monitor Absolute Error	DMI_RX	-3	3	dB
Supply Voltage Monitor Absolute Error	DMI_V _{CC}	-0.08	0.08	V
Bias Current Monitor	DMI_I _{bias}	-10%	10%	mA

VI. Block Diagram of Transceiver



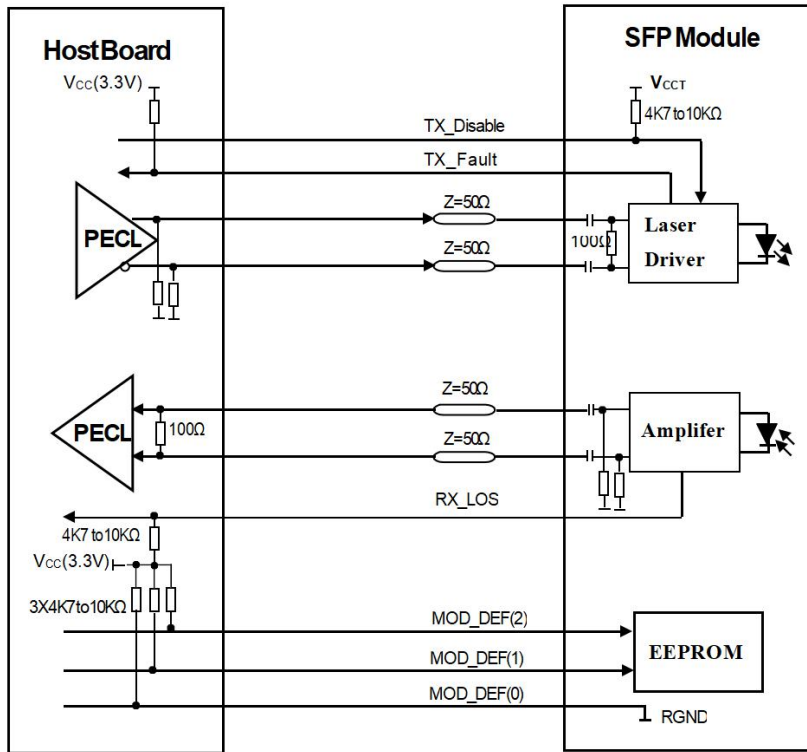
VII. Pin Configuration



VIII. Transceiver Pin Descriptions

Pin No.	Name	Function	PlugSeq	Notes
1	$V_{EE}T$	Transmitter Ground	1	1
2	TX Fault	Transmitter Fault Indication	3	
3	TX Disable	Transmitter Disable	3	2
4	MOD-DEF2	Module Definition	2	3
5	MOD-DEF1	Module Definition1	3	3
6	MOD-DEF0	Module Definition0	3	3
7	Rate Select	Not Connected	3	4
8	LOS	Loss of Signal	3	5
9	$V_{EE}R$	Receiver Ground	1	1
10	$V_{EE}R$	Receiver Ground	1	1
11	$V_{EE}R$	Receiver Ground		1
12	RD-	Inv. Received Data Out	3	6
13	RD+	Received Data Out	3	6
14	$V_{EE}R$	Receiver Ground	3	1
15	$V_{CC}R$	Receiver Power	2	1
16	$V_{CC}T$	Transmitter Power	2	
17	$V_{EE}T$	Transmitter Ground	1	
18	TD+	Transmit Data In	3	6
19	TD-	Inv. Transmit In	3	6
20	$V_{EE}T$	Transmitter Ground	1	

IX. Principle Diagram



X. Mechanical Dimensions

