

LS-SC5210-20IN1

XGSPON OLT SFP+ Class N1 Transceiver, DOM SC,
9.953G 1577nm TX/ 9.953G 1270nm RX ,SMF 20km Reach

Product Features

- SFP+ package with SC receptacle optical interface compliant
- Single fiber bi-directional data links with
- 9.953Gbps downstream and 9.953Gbps/2.488Gbps upstream
- 1577nm continuous-mode transmitter with EML laser
- 1270nm burst-mode receiver with APD-TIA
- 2-wire interface for integrated digital diagnostic Monitoring
- Hot - Plugable
- +3.3V power supplies
- Compliant with RoHS&WEEE, SFP MSA, SFF 8472, ITU-T G.9807.1
- Excellent EMI and EMC characteristics
- Operating case temperature:
Standard: 0 to +70°C
Industrial: -40 to +85°C

Applications

- Access Network



Description

This product is designed for OLT module based on XGSPON N1 technology. The product is an integrated module containing a micro-optic component and semiconductor material. The module could implement DDM function. It could be used at key locations in optical networks.

Recommended Operating Conditions

Parameter	Symbol	Min	Typical	Max	Unit	Notes
Operating Case Temperature	Tc	0		70	°C	Standard
		-40		85		Industrial
Storage Temperature	Ts	-40		85	°C	
Operating Relative Humidity	Ho	5		85	%	
Storage Relative Humidity	Hs	5		90	%	
Power Supply Voltage	Vcc	3.135	3.3	3.465	V	

Optical Characteristics

Parameter	Min	Typical	Max	Unit	Notes
Transmitter(9.953G)					
Data Rate	-	9953.28	-	Mbps	
Center Wavelength Range	1575	-	1580	nm	
Spectral Width(@-20dB)	-	-	1	nm	
Launch Optical Power	+2	-	+5	dBm	
Pout @TX-Disable Asserted			-39	dBm	
Extinction Ratio	8.2	-	-	dB	1
Transmitter dispersion penalty	-	-	1	dB	2
Eye Diagram	Compliant with ITU-TG.987.2				
Receiver(9.953G)					
Data Rate	-	9953.28	-	Mbps	
Center Wavelength Range	1260	1270	1280	nm	
Receiver Sensitivity	-	-	-26	dBm	3
Overload Input Optical Power	-5			dBm	
LOS Optical Dessert	-	-	-27	dB	
LOS Optical Assert	-45	-	-		
LOS Hysteresis	0.5	-	6	dB	
Receiver(2.488G)					
Data Rate	-	2488.32	-	Mbps	
Center Wavelength Range	1260	1270	1280	nm	
Receiver Sensitivity		-	-27.5		4
Overload Input Optical Power	-7				
LOS Optical Dessert	-	-	-28.5		

LOS Optical Assert	-45	-	-		
LOS Hysteresis	0.5	-	6		

Notes:

1. Measured with PRBS 2³¹-1 test pattern @9.95328Gbps .
2. Transmit on 20km SMF.
- 3 . Measured with PR BS 2³¹-1 test pattern @ 9 . 9 5 3 Gb ps , BER = 1 0⁻³ .
- 4 . Measured with PRBS 2²³-1 test pattern @ 2 . 4 8 8 3 2 Gbps, BER = 1 0⁻⁴ .

Electrical Characteristics

Parameter	Min	Typical	Max	Unit	Notes
Power Consumption	-	-	2.5	W	
CML Signal Differential Data Input Swing	100	-	800	mV	
CML Single Differential Data Output Swing	600		1000	mV	
Differential Data input impedance	-	100	-	Ω	
Signal Level (LVTTTL)	2.4	-	Vcc	V	
Signal Level (LVTTTL)	0	-	0.8	V	

Pin definition

Pin No	Symbol	Description	Note
1	GND_T	Transmitter ground	
2	TX_FAULT	LVTTTL Signal detect output internally pull up	
3	TXDisable	Transmitter Disable	1
4	SDA	I2C SerialData (LVTTTL)	
5	SCL	I2C SerialClock (LVTTTL)	
6	MOS_ABS	Internally connected GND	
7	RESET	RXReset (LVTTTL)	
8	RX_SD	LVTTTL Signal detect output, internally pull up	2
9	RSSI TRIG	RSSI TRIG Receiver RSSI trigger input	3
10	GND_R	Receiver ground	
11	10GND_R	Receiver ground	
12	RD-	CML data output-(DC coupled and internal terminated)	
13	RD+	8CML data output+(DC coupled and internal terminated)	
14	GND_R	Receiver ground	
15	VCC_R	Receiver power supply	
16	VCC_T	Transmitter power supply	

17	GND_T	Transmitter ground	
18	TD+	LVPECL Data input+ (AC coupled and internal terminated)	
19	TD-	LVPECL Data input- (AC coupled and internal terminated)	
20	GND_T	Transmitter ground	

Note :

1.TX Disable input is used to shut down both the 10G laser and 1G laser (if module has 1G transmitter) output per the state table below. It is pulled up within the module with a 4.7 – 10K resistor.

Low (<0.8V):Transmitter on

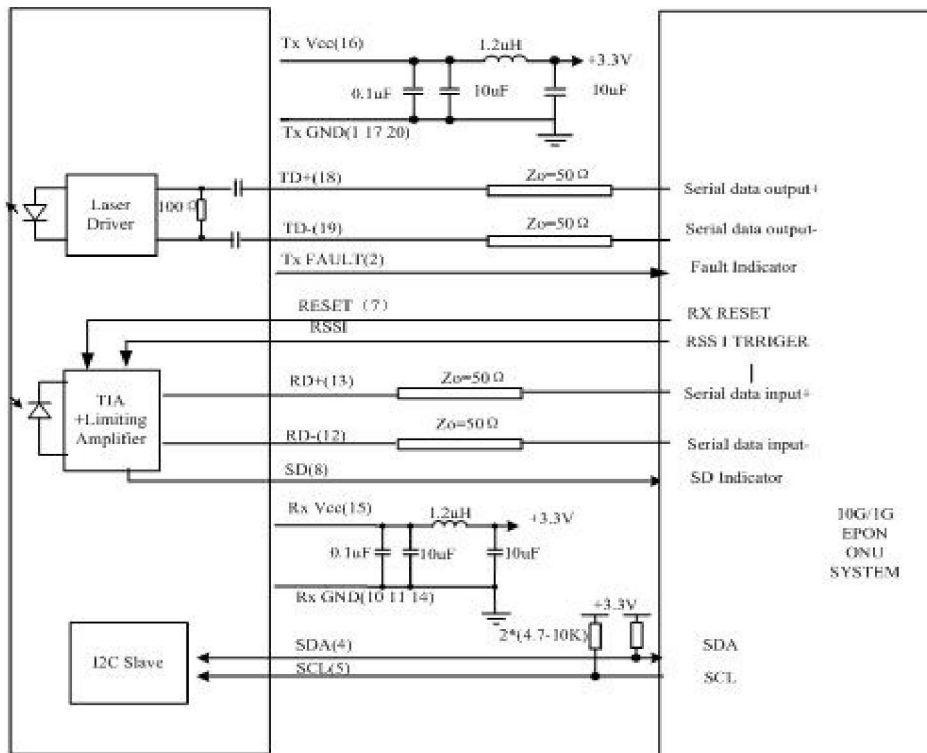
High (>2.0 V):Transmitter Disabled

Open :Transmitter Disabled

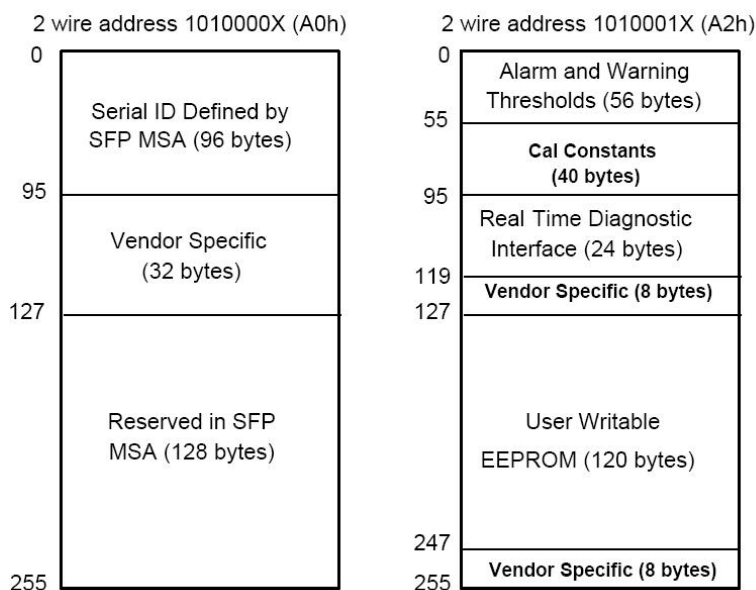
2.SD (signal Detect) is an open collector/drain output which should be pulled up externally with a 4.7 – 10K resistor on the host board to supply <VccT+0.3V or VccR+0.3V. When low, this output indicates the received optical power is below the worst case receiver sensitivity. High indicates normal operation. In the low state, the output will be pulled to <0.8V.

3. RX_RSSI_TRIG is used to start a RX Power Monitoring. It is pulled high to trigger a A/D sample start.

Typical Application circuit



EEPROM Memory Map



EEPROM Serial ID Memory Contents

The optical transceiver contains an EEPROM. It provides access to sophisticated identification information that describes the transceiver's capabilities, standard interfaces, manufacturer, and other information. When the serial protocol is activated, the host generates the serial clock signal (SCL, Mod Def 1). The positive edge clocks data into those segments of the EEPROM that are not writing protected within the SFP transceiver. The negative edge clocks data from the SFP transceiver. The serial data signal (SDA, Mod Def 2) is bi-directional for serial data transfer. The host uses SDA in conjunction with SCL to mark the start and end of serial protocol activation. The memories are organized as a series of 8-bit data words that can be addressed individually or sequentially.

The Module provides diagnostic information about the present operating conditions. The transceiver generates this diagnostic data by digitization of internal analog signals. Calibration and alarm/warning threshold data is written during device manufacture. Received power monitoring, transmitted power monitoring, bias current monitoring, supply voltage monitoring and temperature monitoring all are implemented. The diagnostic data are raw A/D values and must be converted to real world units using calibration constants stored in EEPROM locations 56 – 95 at wire serial bus address A2h.

Package Outline

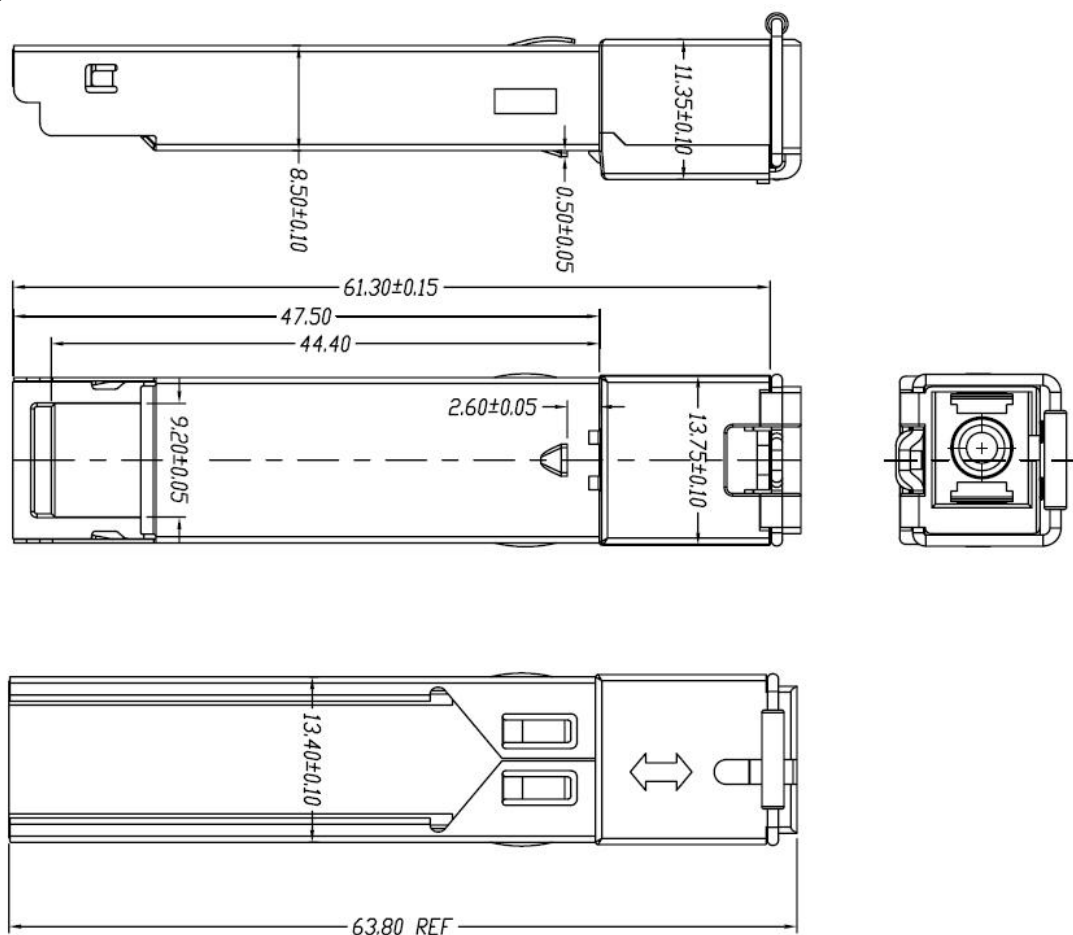


Figure 1. Package Outline

Ordering information

Part Number	Product Description
LG-SC5210-20CN1	XGSPON OLT SFP+, SC, 1577Tx/1270Rx, 9.953Gbps, SMF 20km, 0°C~+70°C, Class N1
LG-SC5210-20IN1	XGSPON OLT SFP+, SC, 1577Tx/1270Rx, 9.953Gbps, SMF 20km, -40°C~+85°C, Class N1