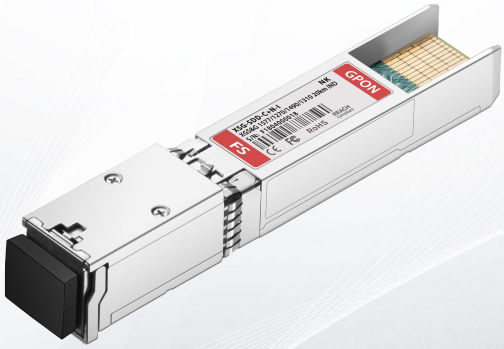
XGS-PON&GPON Combo OLT SFP-DD 1577nm-Tx/1270nm-Rx and 1490nm-Tx/1310nm-Rx Class C+ 20km DOM SC SMF Optical Transceiver Module (Industrial)

XSG-SDD-C+N-I



Application

- XGSPON&GPON Combo OLT C+,SFP-DD, 0~70°C
- XGSPON&GPON Combo OLT C+,SFP-DD, -40~85°C

Features

- Combination of XGS-PON OLT and GPON OLT optical transceiver in a SFP-DD package
- Comply ITU-T G.984.5 (2014)/Amd.2 (10/2020) GPON & XGS-PON OPL Class C+
- Comply with SFF-8472 Rev11.0
- Comply with SFP-DD Hardware Rev. 4.2
- +3.3V power supply
- 20km Reach
- Single fiber bi-directional data links with Tx1: 9.953Gbps, Rx1: 9.953Gbps/2.488Gbps Tx2: 2.488Gbps, Rx2: 1.244Gbps
- 1577nm continuous-mode transmitter with EML laser
- 1490nm continuous-mode transmitter with DFB laser
- 1270nm burst-mode receiver with APD-TIA
- 1310nm burst-mode receiver with APD-TIA
- Two-Wire-Interface for integrated digital diagnostic monitoring
- RoHS With Exemptions 7C(I)
- Operating temp support:
  Commercial Temp: 0~70°C
  Industry Temp: -40~85°C

Description

Over the years, fiber-based access has proven to be a cost-effective way to reach customer premises to deliver managed business and residential services. Ethernet or Passive Optical Network (PON) technologies such as Gigabit PON (GPON) are supported by FS OLT/ONU. PON modules support fiber-based (FTTx) access scenarios, including Fiber To The Home (FTTH), Fiber To The Building (FTTB), Fiber To The Curb (FTTC), Fiber To The cell (FTTc), and Fiber To The business (FTTb).

Product Specifications

I. Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Unit	Note
Storage Temperature Range	Ts	-40	85	℃	
Operating Temperature	Tc	0	70	° C	C-Temp
Operating Temperature	Tc	-40	85	°C	I-Temp
Relative Humidity	RH	5	85	%	
Supply Voltage	V_{CC}	0	3.6	V	

II. Recommended Operating Conditions

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Operating Case Temperature	Tc	0	-	70	° C	C-Temp
Operating Case Temperature	Tc	-40	-	85	° C	I-Temp
Power Supply Voltage	V_{CC}	3.14	3.3	3.47	V	
Power Consumption(C-temp)			3		W	

Power Consumption(I-temp)			3.5		W	
XGS Rx Optical Isolation (From external 1290- 1650nm)	ISO	-30			dB	
Reflectance of XGS Rx (1260- 1280nm)				-12	dB	
GPON Rx Optical Isolation (From external 1260- 1280nm)	ISO	-30			dB	
GPON Rx Optical Isolation (From external 1342- 1650nm)	ISO	-30			dB	
Reflectance of GPON Rx (1290- 1330 nm)				-20	dB	
Differential Power Range				20	dB	1

Notes:
1. Power differential between sequential ONU bursts

III. Optical Characteristics

Parameter	Symbol	Unit	Min.	Typ.	Max.	Note
Transmitter (9.953G)						
Centre Wavelength	λC	nm	1575	1577	1580	
Side Mode Suppression Ratio	SMSR	dB	30			
Average Launch Power	Aop	dBm	5		8	
Average Launch Power-OFF	POFF	dBm			-39	
Extinction Ratio	ER	dB	8.2			
Transmitter tolerance to reflected power		dB	- 15			
Eye Diagram			ITU-T G.9807. 1 Compliant			
Transmitter (2.488G)						
Centre Wavelength	λC	nm	1480	1490	1500	
Side Mode Suppression Ratio	SMSR	dB	30			
Average Launch Power	Aop	dBm	3		7	
Average Launch Power-OFF	POFF	dBm			-40	
Extinction Ratio	ER	dB	8.2			

Transmitter tolerance to reflected power	ER	dB	- 15			
Eye Diagram		dB	ITU-TG.984.2 Compliant			
Parameter	Symbol	Unit	Min.	Typ.	Max.	Note
Receiver (9.953G)						
Operating Wavelength	λC	nm	1260	1270	1280	
Sensitivity	PSEN	dBm			-29	1
Saturation	PSAT	dBm	-8			
Signal Detected De-assert Level	Psdd	dBm	-45			
Signal Detected Assert Level	Psda	dBm			-30	
Max Optical input Power	Pdamage	dBm			0	
Receiver (2.488G)						
Operating Wavelength	λC	nm	1260	1270	1280	
Sensitivity	PSEN	dBm			-30.5	2
Saturation	PSAT	dBm	-10			
Signal Detected De-assert Level	Psdd	dBm	-45			
Signal Detected Assert Level	Psda	dBm			-31	
Max Optical input Power	Pdamage	dBm			0	
Receiver (1.244G)						
Operating Wavelength	λC	nm	1290	1310	1330	
Sensitivity	PSEN	dBm			-32	3
Saturation	PSAT	dBm	-12			
Signal Detected De-assert Level	Psdd	dBm	-45			
Signal Detected Assert Level	Psda	dBm			-33	
Max Optical input Power	Pdamage	dBm			0	

Notes:
1. Measured with PRBS 2^31- 1 test pattern @9.953Gbps and ER=6dB BER =10^-3
2. Measured with PRBS 2^23- 1 test pattern @2.488Gbps and ER=8.2dB, BER =10^-4
3. Measured with PRBS 2^23- 1 test pattern @1.244Gbps and ER=8.2dB, BER =10^-4

Ⅳ. Optical Characteristics

Parameter	Symbol	Unit	Min.	Typ.	Max.	Note
Transmitter (9.953G)						
Data Input Differential Swing	VIN	mVp-p	200	-	850	

Data Input Differential Swing	VIN	mVp-p	200	-	850	
Input Differential Impedance	ZIN	mVp-p		100		
Tx_Disable Voltage	VIL	Q	0	-	0.8	
	VIH	V	2		3.3	
Transmitter Fault Voltage - Low	VTF, L	V	0	-	0.4	
Transmitter Fault Voltage - High	VTF, H	V	2.4		VCC	
Transmitter (2.488G)						
Data Input Differential Swing	VIN	mVp-p	200	-	850	
Input Differential Impedance	ZIN	Q		100		
Tx_Disable Voltage	VIL	V	0	-	0.8	
	VIH	V	2		3.3	
Transmitter Fault Voltage - Low	VTFI, L	V	0	-	0.4	
Transmitter Fault Voltage - High	VTFI, H	V	2.4		VCC	
Receiver (9.953G)						
Data Output Differential Swing	VOUT	mVP-P	300		800	
Signal Detected Voltage_low	VSD, L	V	0		0.4	
Signal Detected Voltage_high	VSD, H	V	2.4		VCC	
Receiver (2.488G)						
Data Output Differential Swing	VOUT	mVP-P	300		800	
Signal Detected Voltage_low	VSD, L	V	0		0.4	
Signal Detected Voltage_high	VSD,H	V	2.4		VCC	
Receiver (2.488G)						
Data Output Differential Swing	VOUT	mVP-P	300		800	
Signal Detected Voltage_low	VSD, L	V	0		0.4	
Signal Detected Voltage_high	VSD, H	V	2.4		VCC	

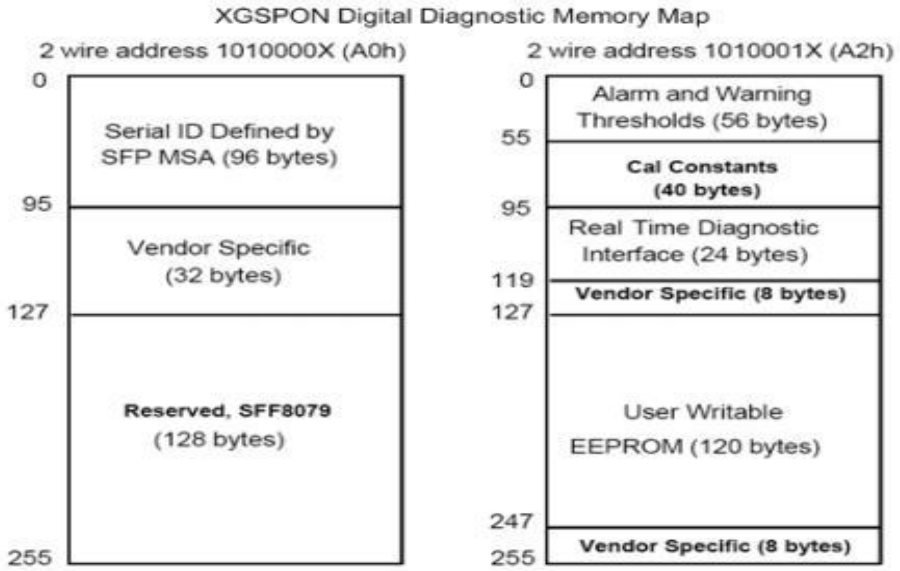
V. Pin Description

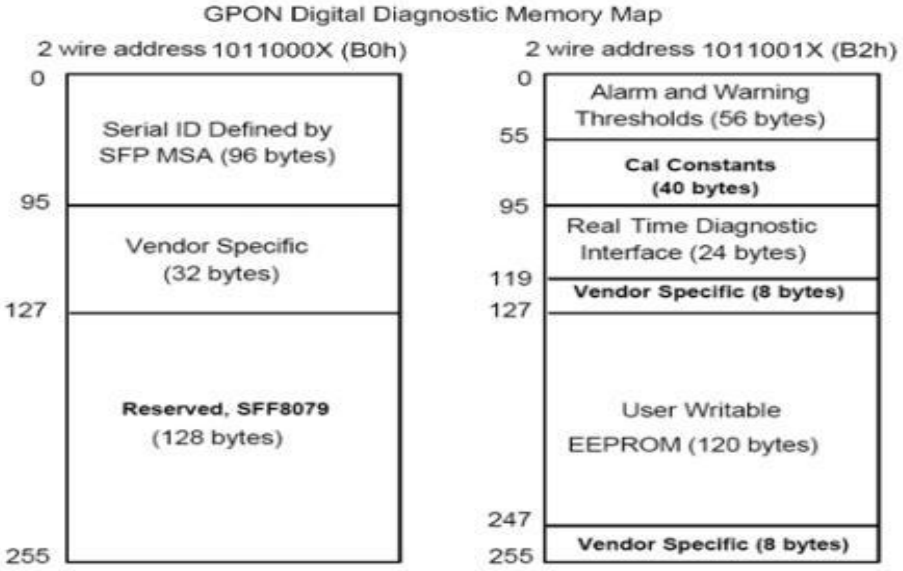
Pin No.	Symbol	Name	Definition	Notes
1	LVTTL-I	Rate_S1	2..488G = Low, 9.953G = High	
2	LVTTL-O	TX_Fault1	XGS Transmit fault, active high	

3	LVTTL-I	Tx_Disable1	Active high to disable XGSPON	
4	LVTTL-I/O	SDA	2-Wire serial interface SDA	
5	LVTTL-I	SCL	2-Wire serial interface SCL	
6		MOB_ABS	Module Ground	
7	LVTTL-I	RESET1	Reset for XGSPON LA, active High	
8	LVTTL-O	Rx_SD1	XGS Receiver signal detect, logic 1 indicates normal operation	
9	LVTTL-I	RSSI_Trigger1	XGS RSSI trigger input, active high	
10		GND	Module Ground	
11		GND	Module Ground	
12	CML-O	RD1-	Inverted XGSPON received data output, DC coupling	
13	CML-O	RD1+	XGSPON received data output, DC coupling	
14		GND	Module Ground	
15		VCC	+3.3V Power supply	
16		VCC	+3.3V Power supply	
17		GND	Module Ground	
18	CML-I	TD1+	XGS transmit data input, AC coupling	
19	CML-I	TD1-	Inverted XGS transmit data input, AC coupling	

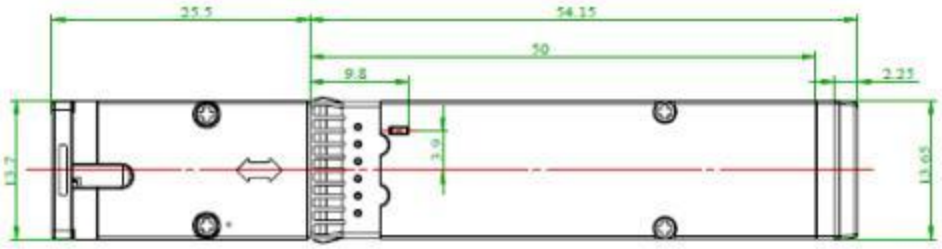
20		GND	Module Ground	
21		GND	Module Ground	
22	LVTTL-O	TX_Fault2	GPON Transmit fault, active high	
23	LVTTL-I	Tx_Disable2	Active high to disable GPON	
24		NC	Reserved	
25		NC	Reserved	
26		NC	Reserved	
27	LVTTL-I	RESET2	Reset for GPON LA, active High	
28	LVTTL-O	Rx_SD2	GPON Receiver signal detect, logic 1 indicates normal operation	
29	LVTTL-I	RSSI_Trigger2	GPON RSSI trigger input, active high	
30		GND	Module Ground	
31		GND	Module Ground	
32	CML-O	RD2-	Inverted GPON received data output, DC coupling	
33	CML-O	RD2+	GPON received data output, DC coupling	
34		GND	Module Ground	
35		VCC	+3.3V Power supply	
36		VCC	+3.3V Power supply	

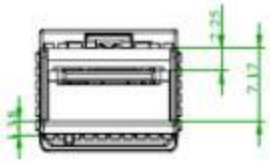
37		GND	Module Ground	
38	CML-I	TD2+	GPON transmit data input, AC coupling	
39	CML-I	TD2-	Inverted GPON transmit data input, AC coupling	
40		GND	Module Ground	

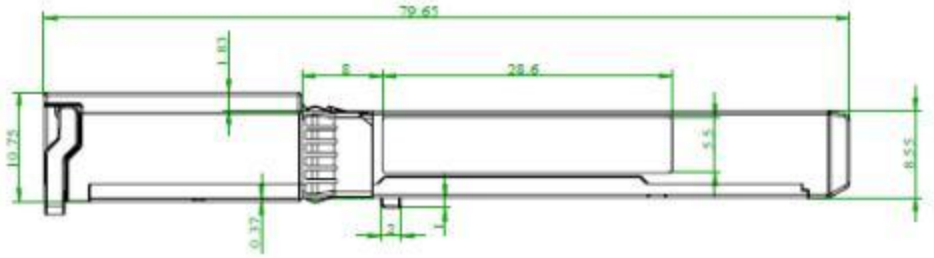


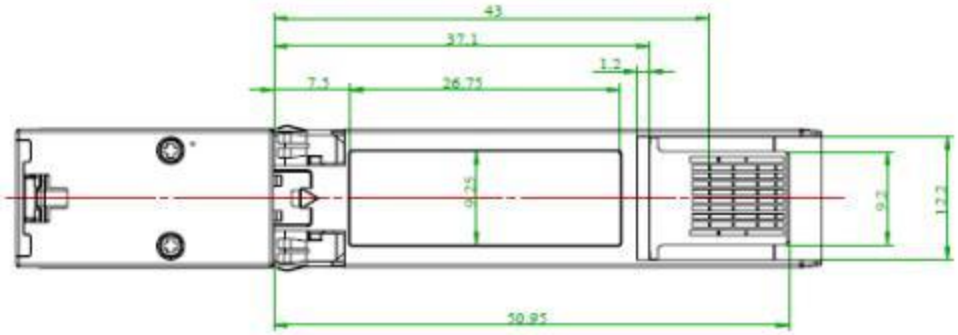


VI. Mechanical Specifications









Order Information

Part Number	Description
XSG-SDD-C+N-I	XGS-PON&GPON Combo OLT SFP-DD 1577nm-TX/1270nm-RX and 1490nm-TX/1310nm-RX Class C+ 20km DDM SC SMF Optical Transceiver Module (Industrial)
XSG-SFP-C+L-I	XGS-PON&GPON Combo OLT SFP+1577nm-TX/1270nm-RX and 1490nm-TX/1310nm-RX Class C+ 20km DDM SC SMF Optical Transceiver Module (Industrial)