



FEATURES

- Single fiber bi-directional data links asymmetric TX 9.953Gbps/RX9.953Gbps application
- Single 3.3V power supply
- SFP+ package with SC/UPC Receptacle connector
- Hot-pluggable capability
- High power 1270nm DML DFB LD and high sensitivity 1577nm APD
- Support 20km transmission distance with SMF
- CML compatible data input/output interface
- Low power dissipation
- Low EMI and excellent ESD protection
- Digital diagnostic monitor interface
- RoHS-6 compliance

APPLICATIONS

- 10-Gigabit-capable passive optical networks

STANDARDS

- Complies with SFP+ MSA (SFF-8431)
- Complies with ITU-T G.9807
- Complies with SFF-8472
- Complies with FCC 47 CFR Part 15, Class B
- Complies with FDA 21 CFR 1040.10 and 1040.11, Class I
- Complies with FDA 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No. 50, dated June 24, 2007

Note:

Some manufacturer's OLT equipment need to verify the EEPROM information of transceiver, otherwise it can't work normally. If this happens to you, please contact us.

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ABSOLUTE MAXIMUM RATING

Parameter	Symbol	Min.	Max.	Unit	Notes
Storage Ambient Temperature	T_{STG}	-40	85	°C	
Operating Case Temperature	T_c	0 -40	70 85	°C	Commercial Industrial
Operating Humidity	OH	5	95	%	
Power Supply Voltage	V_{CC}	0	3.6	V	

RECOMMENDED OPERATING CONDITION

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Operating Case Temperature	T_c	0 -40		70 85	°C	Commercial Industrial
Power Supply Voltage	V_{CC}	3.15	3.3	3.45	V	
Power Supply Current	I_{CC}			450	mA	
Nominal upstream line rate			9.953		Gbps	
Nominal downstream line rate			9.953		Gbps	

TRANSMITTER OPTICAL CHARACTERISTICS

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Average Launch Optical Power	P_{OUT}	4	-	9	dBm	Launched into 9/125 μ m single mode fiber
Extinction Ratio	ER	6	-	-	dB	
Centre Wavelength	λ	1260	1270	1280	nm	
Spectral Width (-20dB)	$\Delta\lambda$	-	-	1	nm	
Side Mode Suppression Mode	SMSR	30			dB	
Burst on time	T-on			30	ns	
Burst off time	T-off			30	ns	
Tx-SD Assert	SD-on			200	ns	
Tx-SD De-Assert	SD-off			200	ns	
Transmitter and dispersion penalty	TDP			1.5	dB	Transmit on 20km SMF
Transmitter tolerance to reflected optical power		-15			dB	
Eye Diagram	Compliant With ITU-T G.987.2, margin>5%					PRBS $2^{31}-1$ test pattern @9.953Gbit/s

TRANSMITTER ELECTRICAL CHARACTERISTICS

Parameter	Sym	Min.	Typ.	Max.	Unit	Notes
Input Differential Impedance	ZIN	90	100	110	Ω	
Data Input Swing Differential	VIN	200	-	1600	mV	
Burst Disable		2.0		Vcc	V	
Burst Enable		0		0.8	V	
Tx-Fault Voltage - Low		0		0.4	V	
Tx-Fault Voltage - High		2.4		Vcc	V	

RECEIVER CHARACTERISTICS

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Optical Center Wavelength	λ_c	1575	1577	1580	nm	
Receiver Sensitivity	SEN			-28.5	dBm	Measured with PRBS 2 ³¹ -1 test pattern @9.953Gbit/s, BER ≤1×10 ⁻³
Receiver Overload		-8			dBm	Measured with PRBS 2 ³¹ -1 test pattern @9.953Gbit/s, BER ≤1×10 ⁻³
Receiver reflectance				-20	dB	
Optical Return Loss tolerance				-15	dB	
LOS Assert	LOSA	-39			dBm	
LOS De-Assert	LOSD			-29	dBm	
LOS Hysteresis		1		5	dB	
Data Output Swing Differential	V _{OUT}	300	-	850	mV	
SD	High	2.4	-	Vcc	V	
	Low	0	-	0.4	V	

PIN DESCRIPTION			
PIN	Name	Description	Notes
1	VeeT	Module Transmitter Ground	
2	Tx_Fault	Module Transmitter Fault	Low : normal; High: abnormal
3	Tx_Burst	Transmitter Burst Enable	TTL Input, Low : transmitter on
4	SDA	Module Definition 2	2 wire serial ID interface, SDA
5	SCL	Module Definition 1	2 wire serial ID interface, SCL
6	MOD_ABS	Module Absent	Connected to VeeT or VeeR in the module
7	TX_SD	Tx Transmitter State Indication	TX_Indication Assert When Transmitter ON
8	Rx_SD	Receiver Signal Indication	High: signal detected; Low : loss of signal
9	NC	Not Connect	NC
10	VeeR	Module Receiver Ground	
11	VeeR	Module Receiver Ground	
12	RD-	Inverted Received Data Out	AC-coupled
13	RD+	Non-inverted Received Data Out	AC-coupled
14	VeeR	Module Receiver Ground	
15	VCCR	Module Receiver 3.3 V Supply	
16	VCCT	Module Transmitter 3.3 V Supply	
17	VeeT	Module Transmitter Ground	
18	TD+	Non-Inverted Transmit Data in	AC-coupled
19	TD-	Inverted Transmit Data in	AC-coupled
20	VeeT	Module Transmitter Ground	

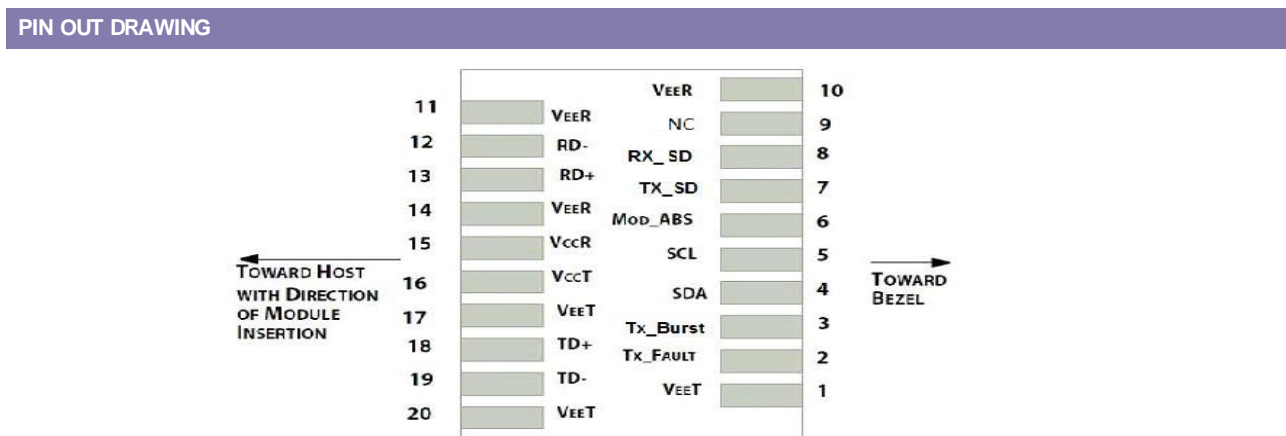


Figure 1 Pin out Drawing

TYPICAL INTERFACE CIRCUIT

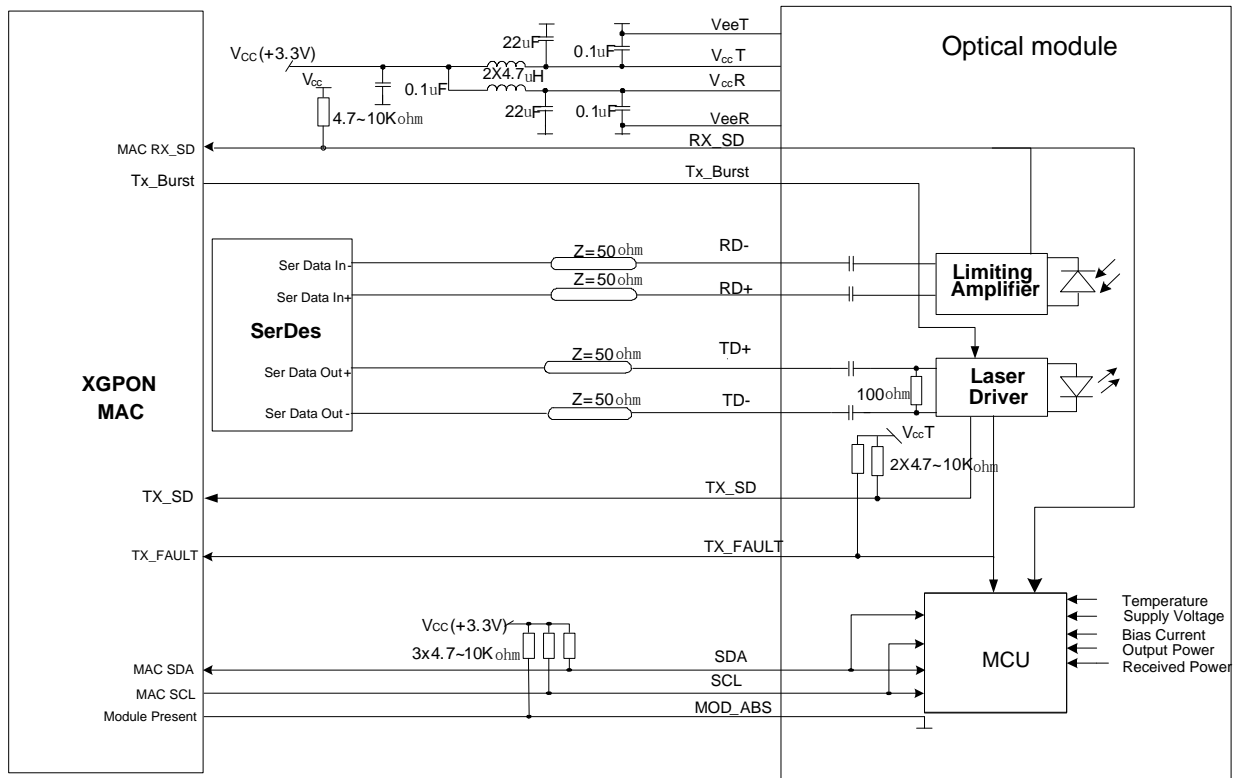


Figure 2 Typical Interface Circuit

PACKAGE OUTLINE

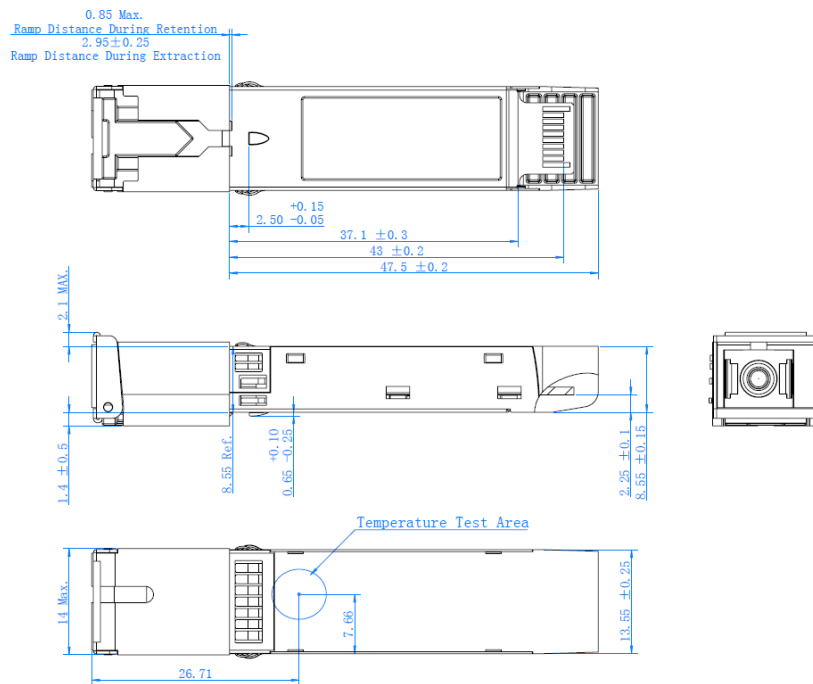
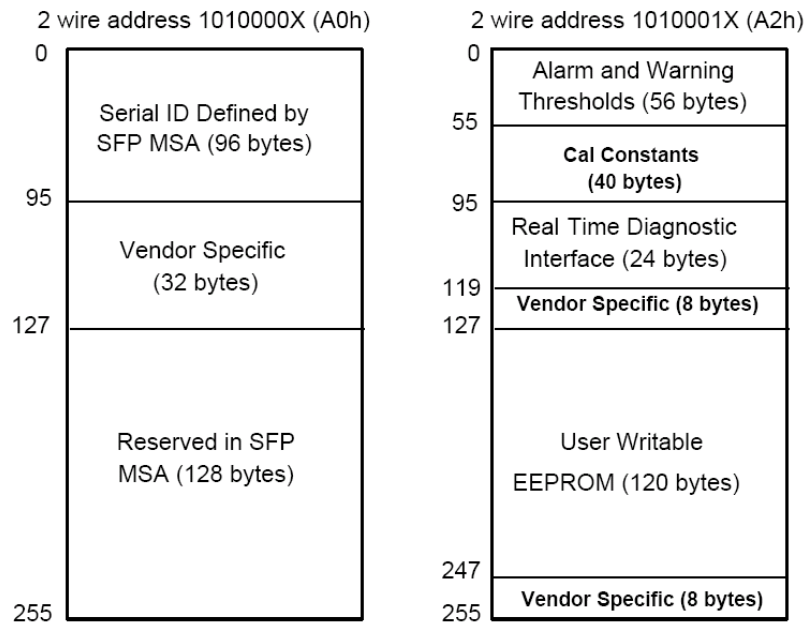


Figure 3 Package Outline

EEPROM INFORMATION

Figure 4 EEPROM Memory Map Specific Data Field Descriptions
DIGITAL DIAGNOSTIC MONITORING INTERFACE

Parameter	Range	Accuracy	Calibration	Notes
Temperature	0 to 70°C	±3°C	Internal	1LSB = 1/256°C
Voltage	3 to 3.6V	±3%	Internal	1LSB = 0.1mV
Bias Current	0 to 131mA	±10%	Internal	1LSB = 4uA
TX Power	2 to 11dBm	±2dB	Internal	1LSB = 0.2uW
RX Power monitor	-30 to -7dBm	±2dB	Internal	1LSB = 0.1uW

ORDERING INFORMATION

PN	Temperature Rating	Unit
SOGX2699-PSGA	0 ~ 70	°C
SOGX2699-PSIGA	-40 ~ 85	°C

WARNINGS

- Handling Precautions: This device is susceptible to damage as a result of electrostatic discharge (ESD). A static free environment is highly recommended. Follow guidelines according to proper ESD procedures.
- Laser Safety: Radiation emitted by laser devices can be dangerous to human eyes. Avoid eye exposure to direct or indirect radiation.

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