

10PT-PXTXR-P3C-R

10GEPON Symmetric OLT PR30 SFP+ Transceiver

FEATURES

- Single fiber bi-directional data links TX 10.3125Gbps, Burst Mode RX 10.3125G/1.25bps application
- 0 to 70°C operating case temperature
- 3.3V power supply
- SFP+ package with SC Receptacle connector
- Hot-pluggable capability
- High power 1577nm EML LD and high sensitivity 1270nm/1310nm APD
- Support 20km transmission distance with SMF
- RX_LOS indication
- Low EMI and excellent ESD protection
- Digital diagnostic monitor interface
- RoHS6 compliance



APPLICATIONS

- Symmetric 10GEPON OLT
- GEAPON PX30 OLT

STANDARDS

- Complies with SFP+ MSA
- Complies with SFF-8472
- Complies with IEEE-802.3av
- Complies with IEEE-802.3ah
- Complies with FCC 47 CFR Part 15, Class B
- Complies with FDA 21 CFR 1040.10 and 1040.11

Absolute Maximum Ratings

Table 1 - Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Unit	Notes
Storage Ambient Temperature	TSTG	-40	85	°C	
Operating Case Temperature	Tc	0	70	°C	
Operating Humidity	OH	5	95	%	
VCC3 Power Supply Voltage	VCC3	-0.5	3.6	V	

Recommended Operating Environment

Table 2 - Recommended Operating Environment

Parameter	Symbol	Min	Typical	Max	Unit	Notes
Operating Case Temperature	Tc	0		70	°C	
Power Supply Voltage	Vcc	3.13	3.3	3.47	V	
Power Supply Consumption	P			2.3	W	
TX Data Rate			10.3125		Gbps	
RX Data Rate			10.3125 1.25		Gbps Gbps	

Transmitter Optical Characteristics

Table 3- Transmitter Optical Characteristics

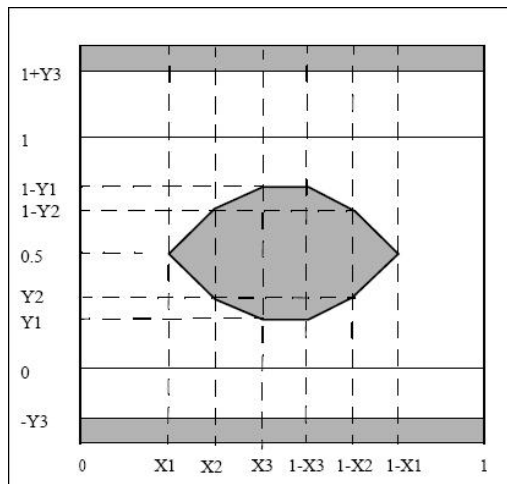
Parameter	Symbol	Min	Typical	Max	Unit	Notes
Optical Center Wavelength	λ_C	1575		1580	nm	
Optical Spectrum Width (-20dB)	$\Delta\lambda$	-	-	1	nm	
Side Mode Suppression Ratio	SMSR	30			dB	
Average Launch Optical Power	AOP	+2		+5	dBm	Launched into SMF

Power-OFF Transmitter Optical Power				-39	dBm	Launched into SMF
Extinction Ratio	ER	6			dB	PRBS231-1 @10.3125 Gbps
Total Jitter	TJ			0.39	UI	PRBS231-1 @10.3125 Gbps
RIN15OMA				-128	dB/Hz	
Transmitter Reflectance				-10	dB	
Transmitter and Dispersion Penalty	TDP			1.5	dB	Transmit on 20km SMF
Optical Waveform Diagram	Compliant with IEEE Std 802.3av					Figure 1, Mask Margin > 5 %

Transmitter Electrical Characteristics

Table 4- Transmitter Electrical Characteristics

Parameter		Symbol	Min	Typical	Max	Unit	Notes
Data Input Differential Swing			180		850	mV	
Input Differential Impedance			85	100	115	Ω	
TX Disable	Disable		2		VCC+0.3	V	
	Enable		-0.3		0.8	V	
TX Fault	Fault		2.4		VCC HOST	V	
	Normal		-0.3		0.4	V	



Transmitter Eye Mask Definitions and Test Procedure

X1	X2	X3	Y1	Y2	Y3	Unit
0.25	0.40	0.45	0.25	0.28	0.40	UI

Receiver Optical Characteristics

Table 5-10GEPON Receiver Optical Characteristics

Parameter	Symbol	Min	Typical	Max	Unit	Notes
Operating Wavelength		1260		1280	nm	
Sensitivity	SEN			-28	dBm	PRBS231-1@10.3125Gbps BER $\leq 1 \times 10^{-3}$
Saturation Optical Power	SAT	-6			dBm	PRBS231-1@10.3125Gbps BER $\leq 1 \times 10^{-3}$
Loss of Signal Assert Level		-45			dBm	
Loss of Signal De-assert Level				-29	dBm	
Hysteresis		0.5		6	dB	
Receiver Reflectance				-12	dB	

Receiver Electrical Characteristics

Table 6-10GEPON Receiver Electrical Characteristics

Parameter	Symbol	Min	Typical	Max	Unit	Notes
Receiver Threshold Settling Time	TSETTLIN G			800	ns	Figure 2
Data Output Differential Swing		400		850	mV	CML output, DC coupled
Loss of Signal Assert Time				1	μs	
Loss of Signal De-assert Time				0.5	μs	
Loss of Signal Voltage - Low		0		0.4	V	
Loss of Signal Voltage - High		2.4		VCC	V	

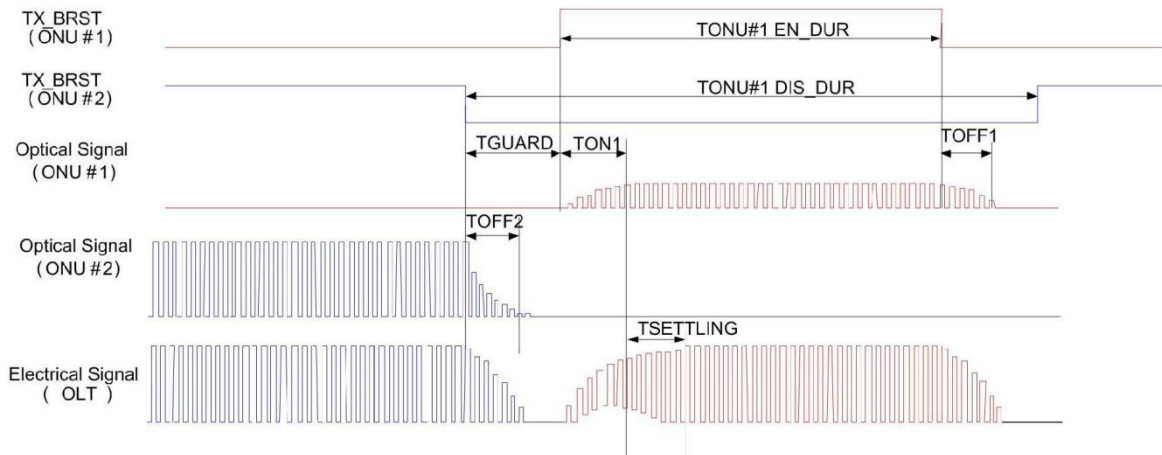
Table 7-GEPON Receiver Optical Characteristics

Parameter	Symbol	Min	Typical	Max	Unit	Notes
Operating Wavelength		1260		1360	nm	
Sensitivity	SEN			-30	dBm	PRBS 27-1@1.25Gbps BER ≤1×10 ⁻¹²
Saturation Optical Power	SAT	-8			dBm	PRBS 27-1@1.25Gbps BER ≤1×10 ⁻¹²
Loss of Signal Assert Level		-45			dBm	
Loss of Signal De-assert Level				-30	dBm	
Hysteresis		0.5		6	dB	
Receiver Reflectance				-12	dB	

Receiver Electrical Characteristics

Table 8-GEPON Receiver Electrical Characteristics

Parameter	Symbol	Min	Typical	Max	Unit	Notes
Receiver Threshold Settling Time	TSETTLIN G			400	ns	Figure 3
Data Output Differential Swing		400		1600	mV	LVPECL output, DC coupled
Loss of Signal Assert Time				1	μs	
Loss of Signal De-assert Time				0.5	μs	
Loss of Signal Voltage - Low		0		0.4	V	
Loss of Signal Voltage - High		2.4		VCC	V	
RSSI Trigger-Low		0		0.8	V	
RSSI Trigger-High		2.0		Vcc	V	



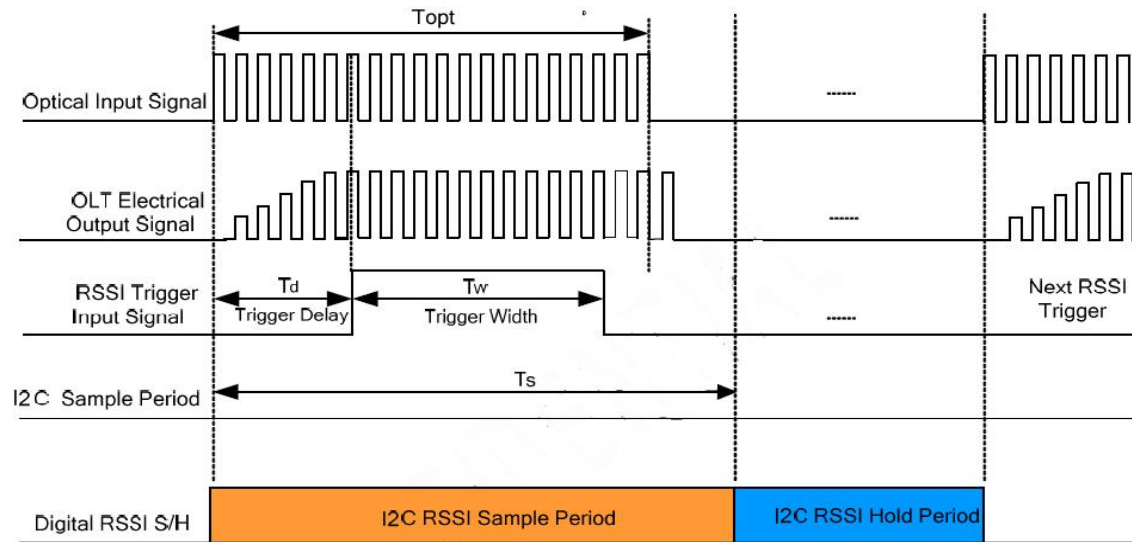
Timing Parameter Definitions in Burst More Sequence

Table 9-RSSI Timing Sequence

Parameter	Symbol	Min.	Typ.	Max.	Unit.	Notes
Optical Signal During Time	Topt	1500			ns	
RSSI Trigger width	TW	450	500	550	ns	
RSSI Trigger Delay	TD	250	300	350	ns	

I2C Access Prohibited Time				500	μ s	
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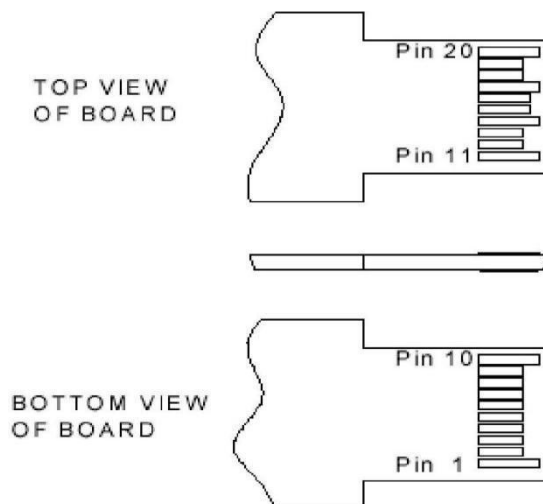
Digital RSSI Sample/Hold Timing Specification



Timing Parameter Definitions in RSSI Trigger

Pin Assignment

Pin Out Drawing

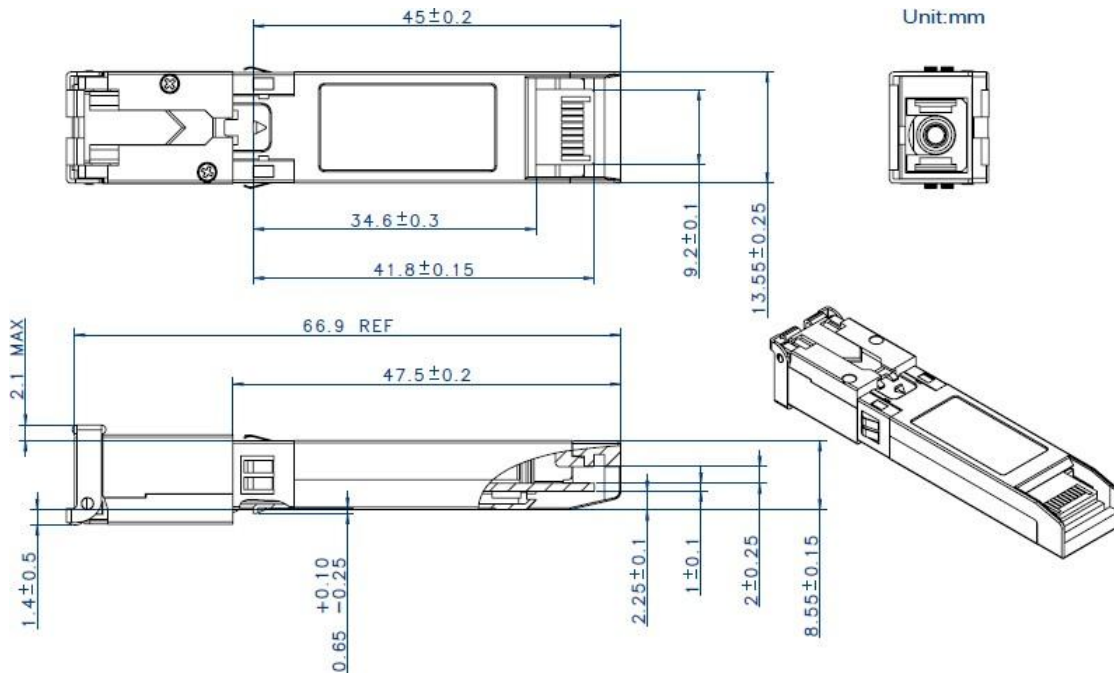


Pin Descriptions

Table 10-Pin Descriptions

Pin	Name	Description	Note
1	GND	Module Ground	
2	TX_FAULT	Transmitter Fault	Low : normal; High: abnormal
3	TX-DIS	Transmitter Disable	Low : transmitter on; High: transmitter off
4	SDA	2-Wire Serial Interface Data	The data line of two wire serial interface
5	SCL	2-Wire Serial Interface Clock	The clock line of two wire serial interface
6	RD+_1G	Positive differential 1.25Gb/s output	DC coupled inside the module, LVPECL
7	RD-_1G	Negative differential 1.25Gb/s output	DC coupled inside the module, LVPECL
8	RX_LOS	Receive Loss of Signal Indicator	Low : signal detected; High: loss of signal
9	TRI	Receiver Signal Strength Indicator Trigger Input	
10	GND	Module Ground	
11	GND	Module Ground	
12	RD-_10G	Negative differential 10Gb/s input	DC coupled inside the module, CML
13	RD+_10G	Positive differential 10Gb/s input	DC coupled inside the module, CML
14	GND	Module Ground	
15	VCC3	3.3V DC Power Input	
16	VCC3	3.3V DC Power Input	
17	GND	Module Ground	
18	TD+	Positive differential 10Gb/s input	AC coupled inside the module, CML
19	TD-	Negative differential 10Gb/s input	AC coupled inside the module, CML
20	GND	Module Ground	

PACKAGE OUTLINE



Package Outline

Note: The SFP+ 10GEPON Symmetric OLT package is preliminary version.

EEPROM Information

Mechanical Specifications

Parameter	Range	Accuracy	Calibration	NOT ES
Temperature	0 to 70°C	±3°C	Internal	LSB: 1/256C
Voltage	2.97 to 3.63V	±10%	Internal	LSB: 0.1mV
Bias Current	0 to 120mA	±10%	Internal	LSB: 2uA
TX Power	1 to 6dBm	±3dB	Internal	LSB: 0.1uW
RX Power	-30 to -6dBm	±3dB	Internal	LSB: 0.1uW

Ordering information**Table 10- Ordering information**

Part Number	Product Description
10PT-PXTXR-P3C-R	Symmetric 10GEPON OLT SFP+, with 1G RX, without 1G TX,PR30 0 to 70° C,with DDM

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