

## 10PU-PXTXR-P3I

Symmetric 10GEPON ONU SFP+ Transceiver

### Features

- Single fiber bi-directional data links Symmetric TX 10.3125Gbps/RX10.3125Gbps application
- -40 to 85°C operating case temperature
- Single 3.3V power supply
- SFP+ package with SC/UPC Receptacle connector
- Hot-pluggable capability
- High power 1270nm 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 for 10PU-PXTXR-P3I



### Applications

- Symmetric 10GEPON PR30 ONU with 15~29dB attenuation range

### Standards

- Complies with SFP+ MSA (SFF-8431)
- Complies with IEEE 802.3av
- Complies with SFF-8472 Rev 10.4
- Complies with FCC 47 CFR Part 15, Class B
- Complies with FDA 21 CFR 1040.10 and 1040.11 except for deviations pursuant to Laser Notice No. 50, dated June 24, 2007

## Absolute Maximum Ratings

Table 1 - Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Unit	Notes
Storage Ambient Temperature	$T_{STG}$	-40	85	°C	
Operating Case Temperature	$T_C$	-40	85	°C	
Operating Humidity	OH	5	95	%	
Power Supply Voltage	$V_{CC}$	-0.5	3.6	V	

## Recommended Operating Environment

Table 2 - Recommended Operating Environment

Parameter	Symbol	Min	Typical	Max	Unit	Notes
Operating Case Temperature	$T_C$	-40		+85	°C	
Power Supply Voltage	VCC	3.13	3.3	3.47	V	
Power Supply Current	ICC			600	mA	
Nominal upstream line rate			10.3125		Gbps	
Nominal downstream line rate			10.3125		Gbps	

## Transmitter Optical Characteristics

Table 3- Transmitter Optical Characteristics

Parameter	Symbol	Min	Typical	Max	Unit	Notes
Average Launch Optical Power	$P_{OUT}$	4		9	dBm	EOL, Over Temperature, Launched into 9/125 $\mu$ m single mode fiber

		5		9	dBm	BOL, Room temperature, Launched into 9/125 $\mu$ m single mode fiber
Extinction Ratio	ER	6			dB	
Centre Wavelength	$\lambda$	1260	1270	1280	nm	
Spectral Width (-20dB)	$\Delta\lambda$			1	nm	
Side Mode Suppression Mode	SMSR	30			dB	
Burst on time	Ton			30	ns	
Burst off time	Toff			30	ns	
Transmitter and dispersion penalty	TDP			1.5	dB	
Eye Diagram	Compliant With IEEE Std IEEE 802.3av					PRBS 2 <sup>31</sup> -1 test pattern @10.3125G bit/s

## Transmitter Electrical Characteristics

Table 4- Transmitter Electrical Characteristics

Parameter	Symbol	Min	Typical	Max	Unit	Notes
Input Differential Impedance	ZIN	90	100	110	$\Omega$	
Data Input Swing Differential	VIN	200		700	mV	
Burst_ENABLE	Burst Enable	2.0		Vcc	V	
	Burst Disable	0		0.8	V	

## Receiver Characteristics

Table 5- Receiver Characteristics

Parameter	Symbol	Min	Typical	Max	Unit	Notes
Optical Center Wavelength	$\lambda_C$	1575		1580	nm	
Receiver Sensitivity	SENS			-28.5	dBm	EOL, Over Temperature, Measured with PRBS $2^{31} - 1$ test pattern @10.3125Gbit/s, BER $\leq 1 \times 10^{-3}$ .
				-29	dBm	BOL, Room temperature, Measured with PRBS $2^{31} - 1$ test pattern @10.3125Gbit/s, BER $\leq 1 \times 10^{-3}$ .
Receiver Overload		-10			dBm	
Receiver reflectance				-12	dB	
Signal-Detected Deassert		-45			dBm	
Signal-Detected Assert Level				-31.5	dBm	
LOS Hysteresis		0.5		6	dB	
Data Output Swing Differential	VOUT	300		850	mV	
LOS	High	2.4		Vcc	V	
	Low	0		0.4	V	

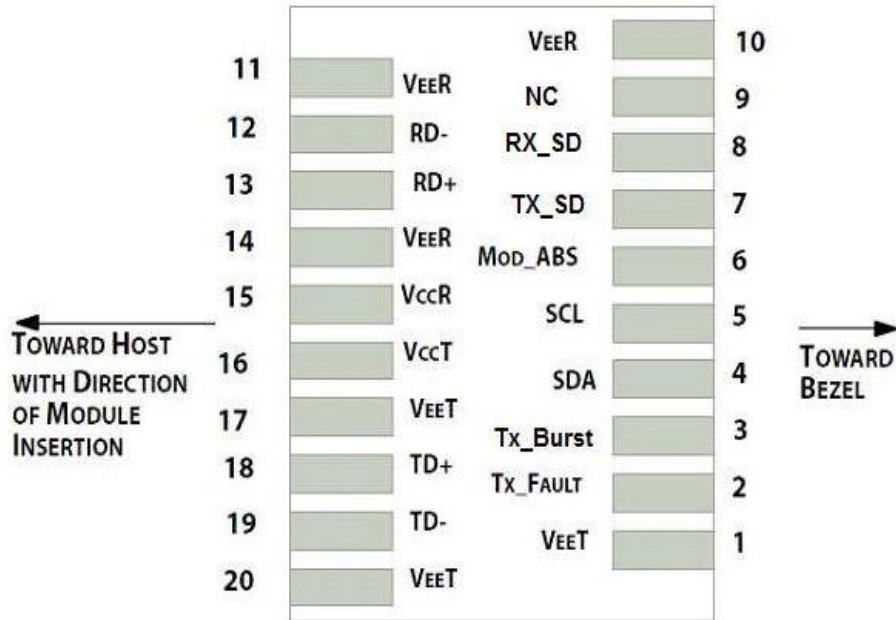
## Pin Descriptions

Table 6-Pin Descriptions

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	2-wire Serial Interface Data Line	Same as MOD-DEF2 in INF-8074i
5	SCL	2-wire Serial Interface Clock	Same as MOD-DEF1 in INF-8074i
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	Signal Indication	High: signal detected; Low: loss of signal
9	NC	NC	
10	VeeR	Module Receiver Ground	
11	VeeR	Module Receiver Ground	
12	RD-	Inverted Received Data Out	CML, AC-coupled
13	RD+	Non-inverted Received Data Out	CML, 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	CML, AC-coupled
19	TD-	Inverted Transmit Data in	CML, AC-coupled
20	VeeT	Module Transmitter Ground	

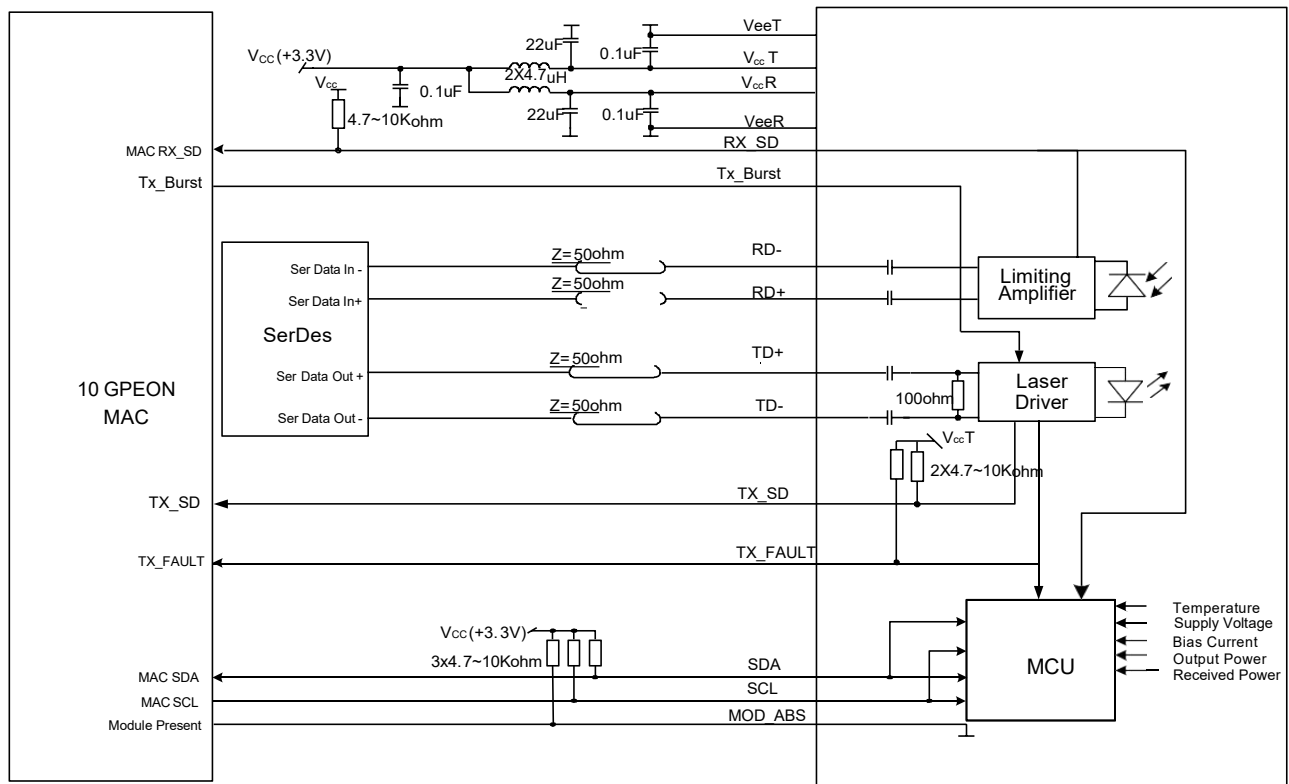
## Pin Assignment

### Pin Out Drawing



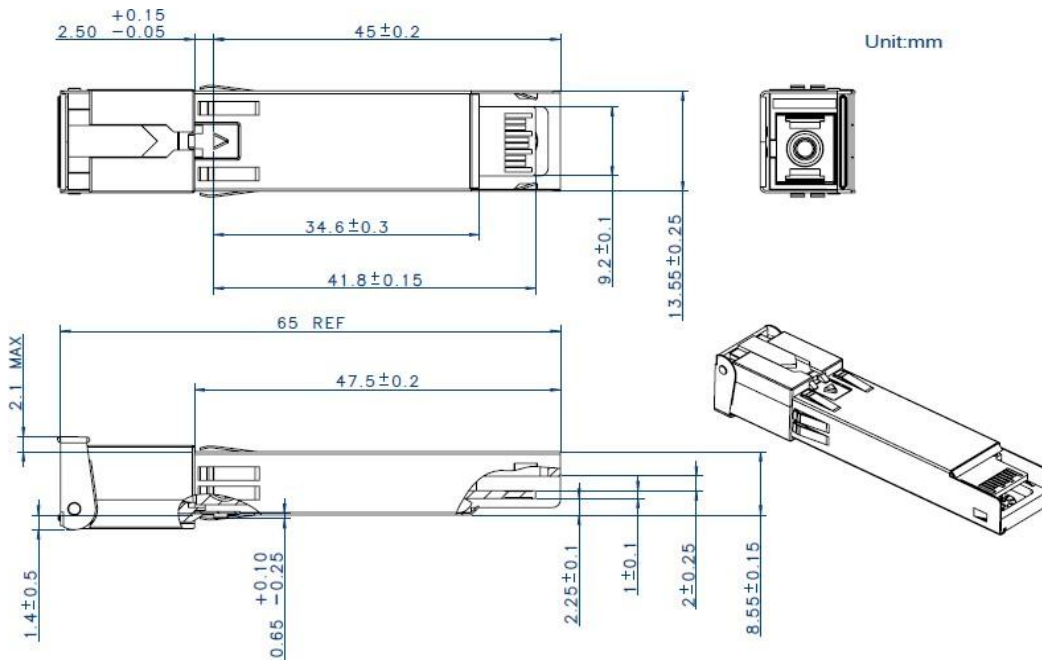
Pin Out Drawing

## Typical Interface Circuit



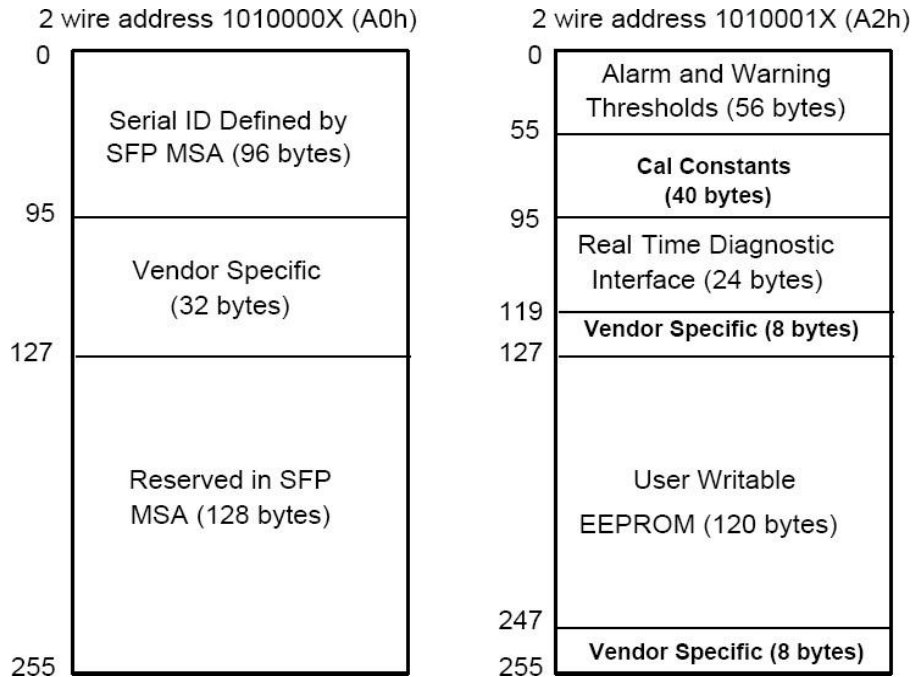
## Package Outline

Unit:mm



## Package Outline

## EEPROM Information



## EEPROM Memory Map Specific Data Field Descriptions

## Digital Diagnostic Monitoring

**Table 7- Digital Diagnostic Monitoring**

Five transceiver parameter values are monitored. The following table defines the monitored parameter's accuracy.

Parameter	Range	Accuracy	Calibration	Notes
Temperature	-40 to 85°C	±3°C	Internal	Temperature
Voltage	3.0 to 3.6V	±3%	Internal	Voltage
Bias Current	0 to 131mA	±10%	Internal	Bias Current
TX Power	2 to 9dBm	±3dB	Internal	TX Power
RX Power monitor	-30 to -8dBm	±3dB	Internal	RX Power monitor

## Ordering information

**Table 8- Ordering information**

Part Number	Product Description
10PU-PXTXR-P3I	Symmetric 10GE PON ONU SFP+, I temp., .SC, PR30, 1270T/1577R, 0 ~ +70°C, with DDM

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