

Asymmetric 10G EPON ONU SFP+ 1310nm / 1577nm PRX30 Transceiver

P/N: WST-SFP+EPAU2-C



Features:

- Single fiber Bidi data links Asymmetric Tx1.25Gbps/Rx10.3125Gbps application
- 0 to 70°C operating case temperature
- Single 3.3V power supply
- SFP+ package with SC/UPC Receptacle connector
- Hot-pluggable capability
- High power 1310nm 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 compliance

Applications:

- Asymmetric 10GEPON PRX30 ONU

Standards:

- Complies with SFP+ MSA (SFF-8431/8432)
- 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, Class I
- Complies with IEC60825-1 Class 1 laser
- Complies with GR326 in SC/UPC receptacle

Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Units	Notes
Storage Temperature	Tstg	-40	85	°C	
Power Supply Voltage	Vcc	-0.5	3.6	V	
Relative Humidity	OH	5	95	%	
Rx Damage Power	PRdmg		-7	dBm	In average power

Recommended Operating Conditions

Parameter	Symbol	Min	Typ	Max	Units / Notes
Power Supply Voltage	Vcc	3.135	3.3	3.465	V
Operating Case Temperature	Tc	0		70	°C
Power Supply Current	Icc			400	mA
Nominal upstream line rate (Tx)			1.25		Gbps
Nominal downstream line rate (Rx)			10.3125		Gbps

Electrical Characteristics

Parameter	Symbol	Min	Typ	Max	Units	Notes
Transceiver						
Input Differential Impedance	Z _{IN}	90	100	110	Ω	
Data Input Swing Differential	V _{IN}	200		1600	mV	
Burst Enable		2.0		Vcc	V	
Burst Disable		0		0.8	V	
Receiver						
Data Output Swing Differential	V _{OUT}	340		850	mV	
LOS High		2.4		Vcc	V	
LOS Low		0		0.4		

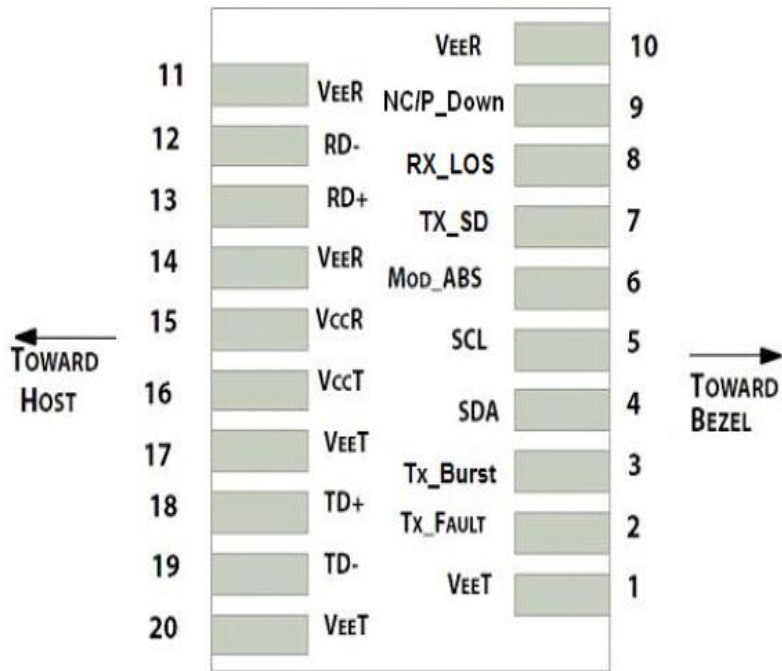
Transmitter Optical Specifications (T_{OP} = Operation Case Temperature Range, V_{CC} = 3.135 to 3.465 Volts)

Parameter	Symbol	Min	Typ	Max	Units	Notes
Average Launch Optical Power	P_{avg}	0.62		5.62	dBm	
Extinction Ratio	ER	9			dB	
Centre Wavelength	λ_t	1290	1310	1330	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	
Transmitter and dispersion penalty	TDP			1.4	dB	
Eye Diagram	Compliant With IEEE Std 802.3av™-2009					PRBS 2 ⁷ -1 test pattern @1.25Gbps

Receiver Optical Specifications (T_{OP} = Operation Case Temperature Range, V_{CC} = 3.135 to 3.465 Volts)

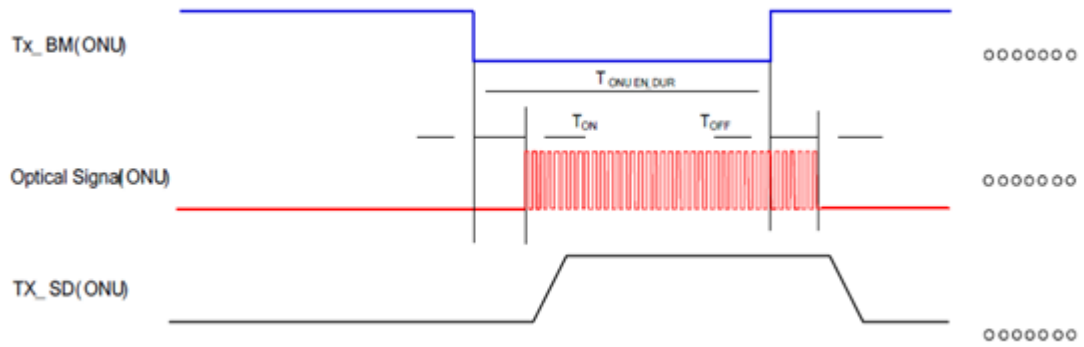
Parameter	Symbol	Min	Typ	Max	Units	Notes
Optical Center Wavelength	λ_r	1575		1580	nm	
Receiver Sensitivity				-28.5	dBm	Measured with PRBS 2 ³¹ -1 test pattern @ 10.3125 Gbps BER $\leq 1 \times 10^{-3}$.
Receiver Overload		-8			dBm	
Receiver reflectance				-12	dB	
LOS De-Assert	LOS_A	-38			dBm	
LOS Assert	LOS_D			-30	dBm	
LOS Hysteresis	LOS_H	0.5		6	dB	

Pin Definition

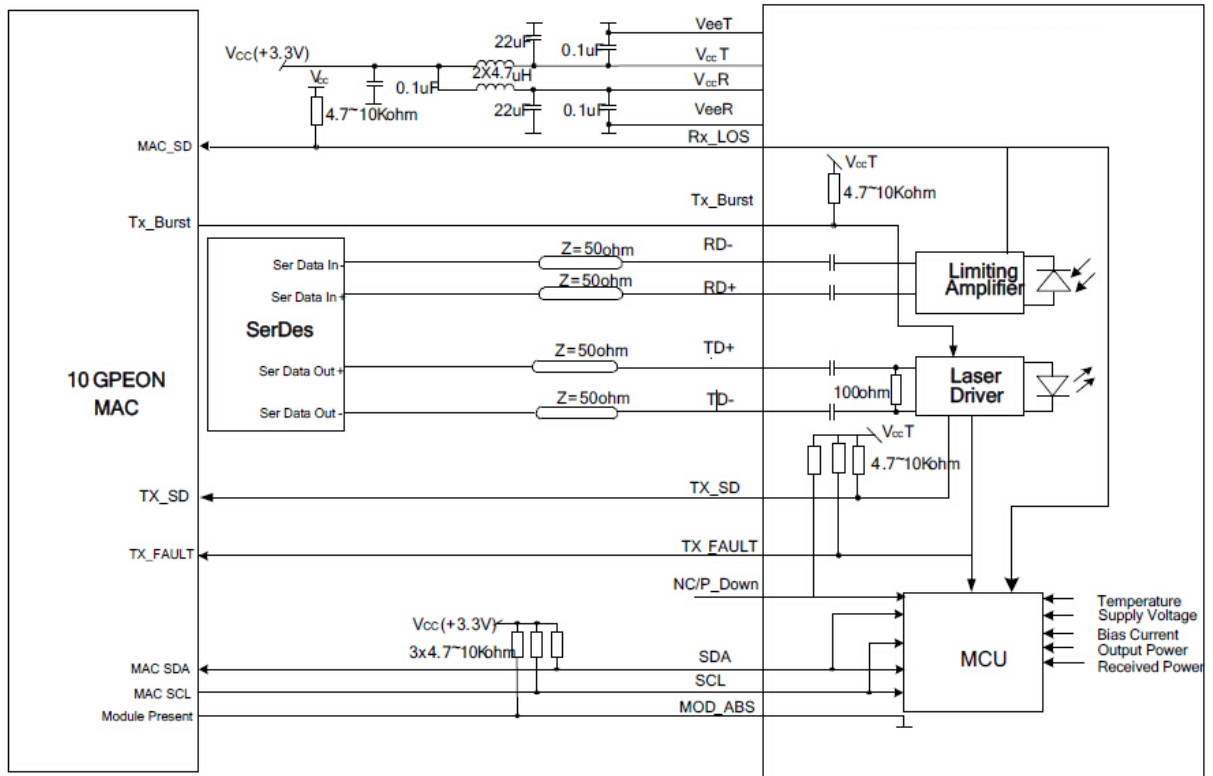


Pin	Name	Description	Notes
1	VeeT	Module Transmitter Ground	
2	TX Fault	Module Transmitter Fault	Low: normal; High: abnormal
3	TX BURST	Transmitter Burst Enable	LVTTTL Input, Low: transmitter on, Internal pull up
4	SDA	2-wire Serial Interface Data Line	Same as MOD-DEF2 in INF-8074i
5	SCL	2-wire Serial 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_LOS	Loss of Signal	Low: signal detected; High: loss of signal
9	NC/P_Down	NC/ Module power down, Putting the module in the power saving mode	Active Low, default in 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	
19	TD-	Inverted Transmit Data in	
20	VeeT	Module Transmitter Ground	

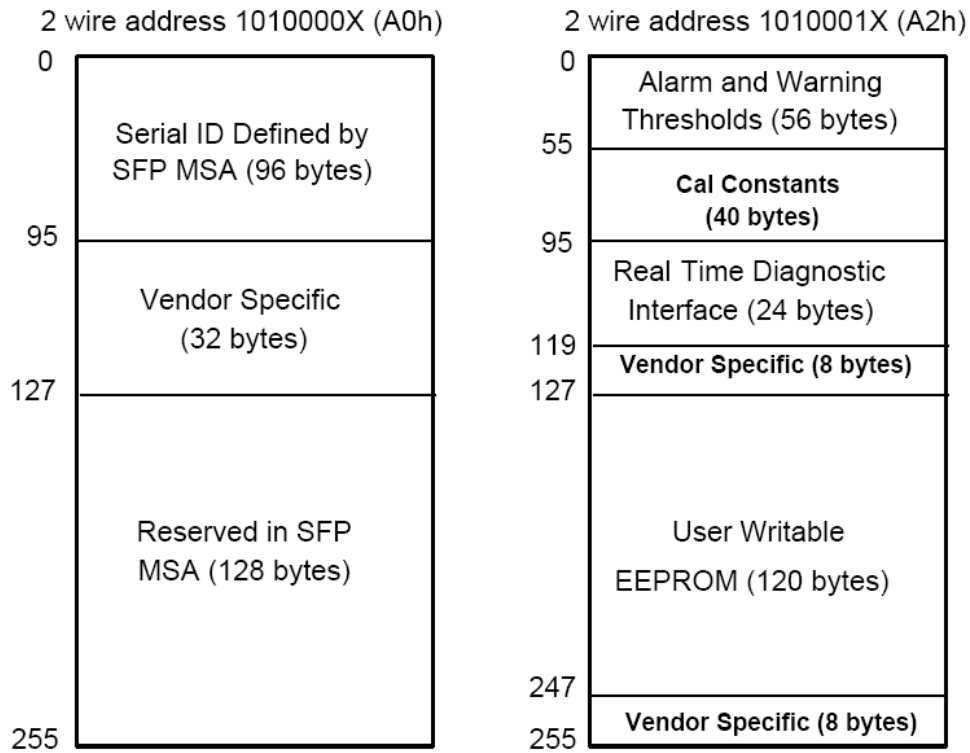
Typical ONU Timing Sequence



Recommended Circuit Schematic



EEPROM Series ID Memory Contents (Address A0h)

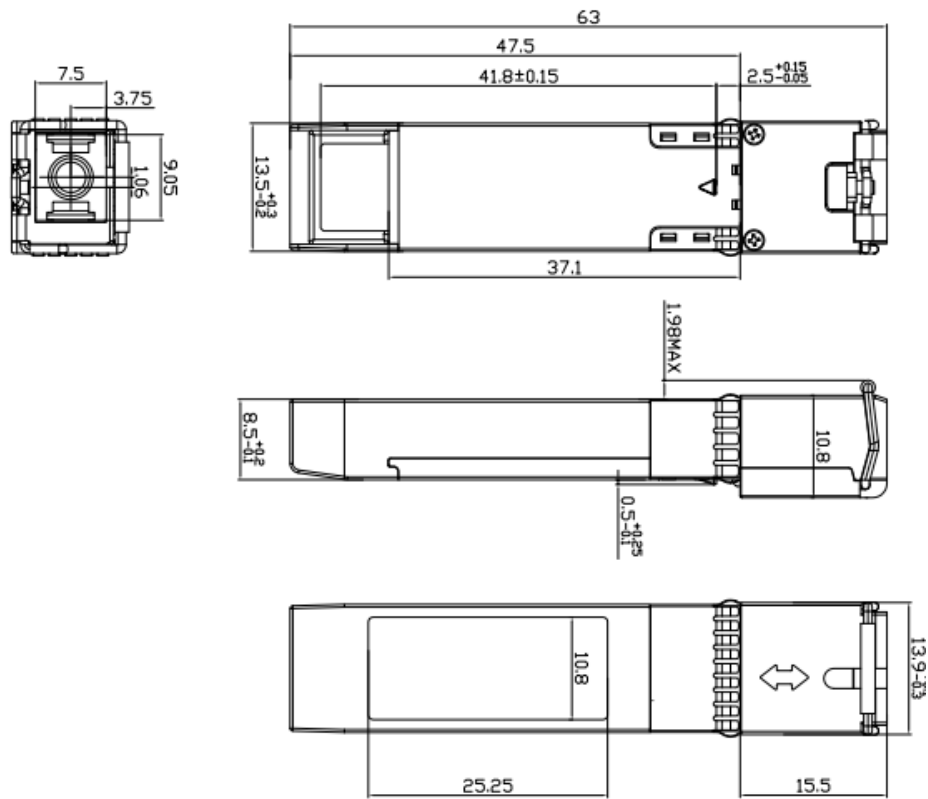


Digital Diagnostic Specifications

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

Parameter	Range	Accuracy	Calibration
Temperature	0 to 70°C	±3°C	Internal
Voltage	3 to 3.65V	±3%	Internal
Bias Current	0 to 100mA	±10%	Internal
TX Power	0.62 to 5.62dBm	±3dB	Internal
RX Power monitor	-29 to -8dBm	±3dB	Internal

Mechanical drawing



Unit in mm

Ordering Information

P/N	Package	Data rate	Laser	Optical Power	Detector	Max. Rx Sensitivity	Case Temp.	Distance	others	Application
WST-SFP+EPAU2-C	SFP+ SC/UPC Receptacle	1.25 Tx / 10.3125 Rx Gbps	1310nm burst mode DFB laser	0.62 ~ 5.62 dBm	1577nm APD	-28.5 dBm	0 to 70 °C	20 km	RoHS DDM	Asymmetric 10G EPON PRX30 ONU

Modification History

Revision	Date	Description	Originator	Review	Approved
V1.0	28-Sep-2023	New Issue	Ken Cheng	Tom Tang	Wayne Liao



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