SFPP-XGS-OLT-N1-I-AO

MSA and TAA 10GBase-N1 XGS-PON OLT SFP+ Transceiver (SMF, 1577nmTx/1270nmRx, 20km, SC, DOM, -40 to 85C)

Features

- Dual Wavelength Bidirectional Transceiver
- 1270nm Burst Mode APD/TIA Receiver
- 1577nm CW Mode EML Transmitter
- 2x10 SFP+ Die Cast Housing
- SC/UPC Optical Interface
- Single fiber needed
- Industrial Temperature -40 to 85 Celsius
- 3.3V DC Power Supply
- RoHS compliant and Lead Free

Applications

- XGS-PON OLT
- Access and Enterprise

Product Description

This MSA Compliant SFP+ transceiver provides XGS-N1/C+ throughput up to 20km over single-mode fiber (SMF) using a wavelength of 1577nmTx/1270nmRx via a SC connector. It is built to MSA standards and is uniquely serialized and data-traffic and application tested to ensure that they will integrate into your network seamlessly. Digital optical monitoring (DOM) support is also present to allow access to real-time operating parameters. This transceiver is Trade Agreements Act (TAA) compliant. We stand behind the quality of our products and proudly offer a limited lifetime warranty.

AddOn's transceivers are RoHS compliant and lead-free.

TAA refers to the Trade Agreements Act (19 U.S.C. & 2501-2581), which is intended to foster fair and open international trade. TAA requires that the U.S. Government may acquire only "U.S. – made or designated country end products."

TAA COMPLIANT

Rev. 050323

Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Unit
Maximum Supply Voltage	Vcc	0	3.6	V
Storage Ambient Temperature	Tstg	-40	85	°C
Operating Case Temperature	Tc	-40	85	°C
Relative Humidity - Storage	RHstg	5	90	%
Relative Humidity - Operating	RHop	5	85	%

Note:

Exceeding the Absolute Maximum Ratings may cause irreversible damage to the device. The device is not intended to be operated under the condition of simultaneous Absolute Maximum Ratings, a condition which may cause irreversible damage to the device.

Absolute Maximum Ratings: Control Function Logic Levels

Parameter	Symbol	Min.	Max.	Unit	Notes
Tx_Disable	Tx_Disable	0	Vcc+0.5	V	LVTTL
Transmitter Fault	Tx_Fault	0	Vcc+0.5	V	LVTTL
Burst-Mode Signal Detect	Rx_SD	0	Vcc+0.5	V	LVTTL
Receive Reset	Rx_Reset	0	Vcc+0.5	V	LVTTL
Receive Data Rate Select	Rate_Select	0	Vcc+0.5	V	LVTTL
Digital RSSI Trigger Input	TRI	0	Vcc+0.5	V	LVTTL
2-Wire Serial Interface Data	SDA	0	Vcc+0.5	V	LVTTL
2-Wire Serial Interface Clock	SCL	0	Vcc+0.5	V	LVTTL
SCL Frequency	tSCL		400	KHz	
Data Hold Time	tHD:DAT	120		ns	

Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Power Supply Voltage	Vcc	3.135	3.30	3.465	V	
Power Supply Current	Icc		500	750	mA	
Transmitter						
Tx Differential Input Amplitude	VIN	120		820	mV	
Tx Differential Input Impendence	ZIN	90	100	110	Ω	
Tx_Disable = High (Transmitter Off/Disabled)	VIH	0.7*Vcc3		Vcc3	V	1
Tx_Disable = Low (Transmitter On/Enabled)	VIL	0		0.8	V	1
Tx_Fault = High (Fault)	VOH	2.4		Vcc3	V	2
Tx_Fault = Low (Normal)	VOL	0		0.4	V	2
Receiver						
Rx Differential Output Impendence	ZOUT	90	100	110	Ω	
Rx_Data Differential Output Voltage Amplitude	VOUT	300		800	mV	LVCML
Rx_SD = High	VOH	2.4		Vcc3	V	2
Rx_SD = Low	VOL	0		0.4	V	2
Rx_Reset = High	VIH	2.0		Vcc3	V	1
Rx_Reset = Low	VIL	0		0.8	V	1
Rate_Select = High	VIH	2.0		Vcc3	V	1
Rate_Select = Low	VIL	0		0.8	V	1
TRI = High	VIH	0.7*Vcc		Vcc3	V	1
TRI = Low	VIL	0		0.8	V	1

Notes:

1. LVTTL (Control Input).
2. LVTTL (Monitor Output).

2-Wire Serial Interface Logic

Parameter	Symbol	State	Logic	Min.	Max.	Unit
2-Wire Serial Interface Data	SDA	High	LVTTL	0.7*Vcc	Vcc	V
	SDA	Low	LVTTL	0	0.8	V
2-Wire Serial Interface Clock	SCL	High	LVTTL	0.7*Vcc	Vcc	V
	SCL	Low	LVTTL	0	0.8	V

Optical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Transmitter						
Transmitter Type		CW Mode EML				
Coupling Mode		AC				
Transmitter Signal Rate	Rate	9.953			Gbps	
Average Launch Power	Pavg	2		5	dBm	N1
Tolerance to the Transmitter Incident Light Power		-15			dB	
Optical Center Wavelength	λC	1575	1577	1580	nm	
Spectral Width	Δλ			1	nm	
Side-Mode Suppression Mode	SMSR	30			dB	
Extinction Ratio	ER	8.2			dB	
Receiver						
Receiver Type		Burst-Mode APD/TIA				
Optical Center Wavelength	λC	1260	1270	1280	nm	
Damage Optical Power		-3			dBm	
Receiver Sensitivity	S			-26	dBm	@9.953Gbps, N1
	S			-27.5	dBm	@2.488Gbps, N1
Receiver Optical Overload	PIN(SAT)	-5			dBm	@9.953Gbps, N1
	PIN(SAT)	-7			dBm	@2.488Gbps, N1
Reflectance of Rx	RL			-20	dB	@1260-1360nm
Dynamic Range	DR	15			dB	
Immunity from Continuous Identical Digits	CID	72			Bits	

Notes:

Sensitivity and Overload Test Conditions:

- 1.9.953Gbps: BER@10^{-3}, PRBS 2^{31}-1, and ER=6.0dB.
- 2.2.488Gbps: BER@10^{-4}, PRBS 2^{23}-1, and ER=8.2dB.

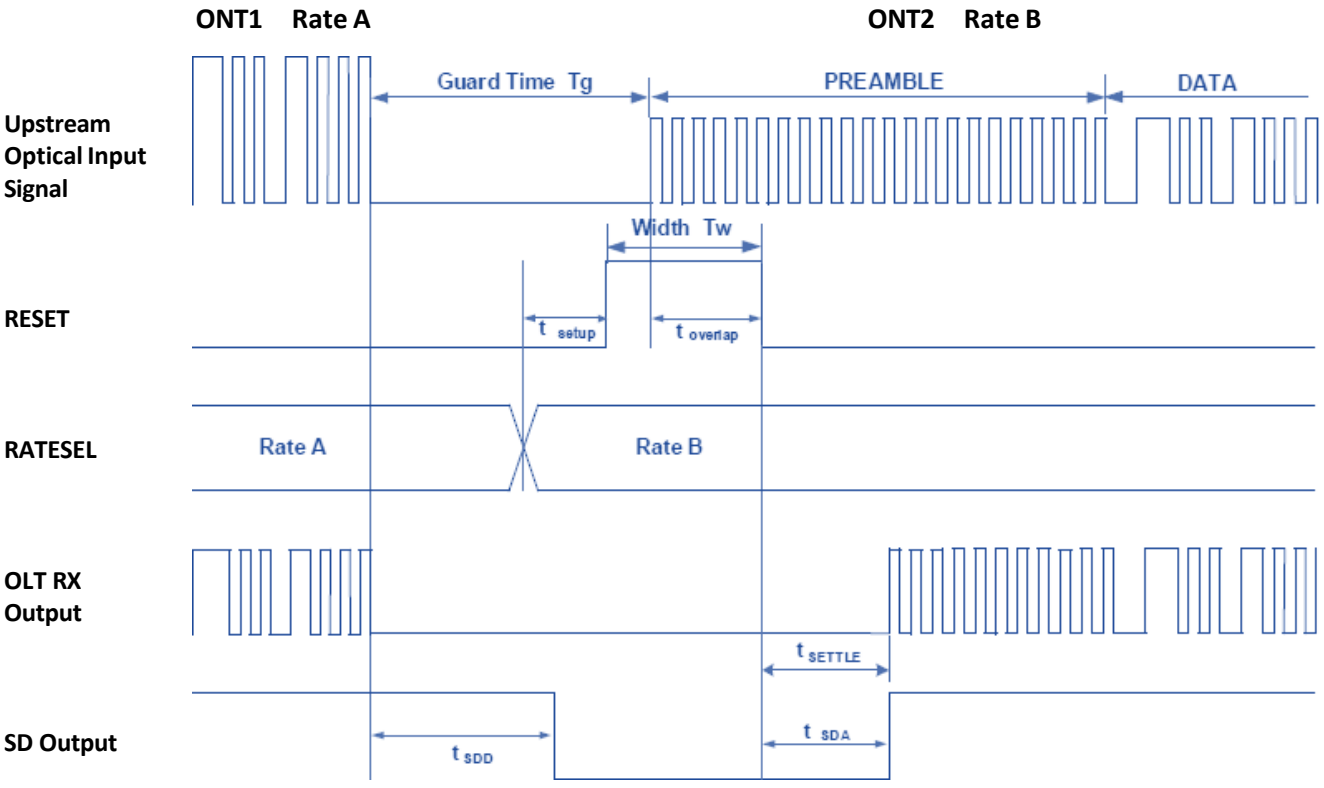
Upstream Timing

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Burst Receiver Settling Time	T_SETTLE			100	ns	
Burst Signal Detect Assert	T_SDA		25	100	ns	
Burst Signal Detect De-Assert	T_SDD		100		ns	1
Guard Time	Tg	51.4			ns	
Reset Pulse Width	Tw	25			ns	
Reset Time Overlapping Preamble	T_overlap	0			ns	2
Setup Time of Rate Level for Following Burst	T_setup	5			ns	

Notes:

1. Auto reset function is applied. Signal detect de-assert time is about 100ns forced by auto reset and will short to about 20ns with external Reset pulse.
2. Reset pulse is required to be partially inside the preamble.

Upstream Timing Diagram

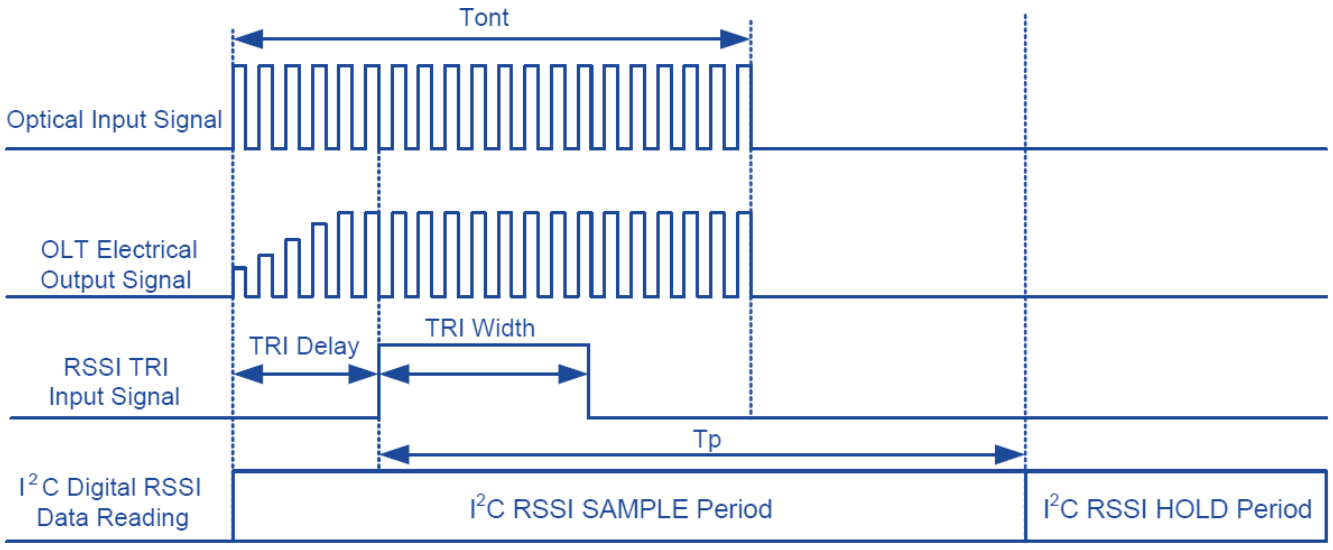


Digital RSSI Sample/Hold Timing

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
I²C Read Time	T_p	500			µs	
Optical Input Signal Width	Tont	300			ns	
RSSI Monitor Range	Pmon	-30		-7	dBm	
RSSI Precision	Prssi	-3	+/-2	3	dB	
RSSI Trigger Delay	T_{tri} (TRI Delay)	0	300		ns	
RSSI Trigger Width	T_{I2C} (TRI Width)	500		T_{ont}-T_{tri}	ns	

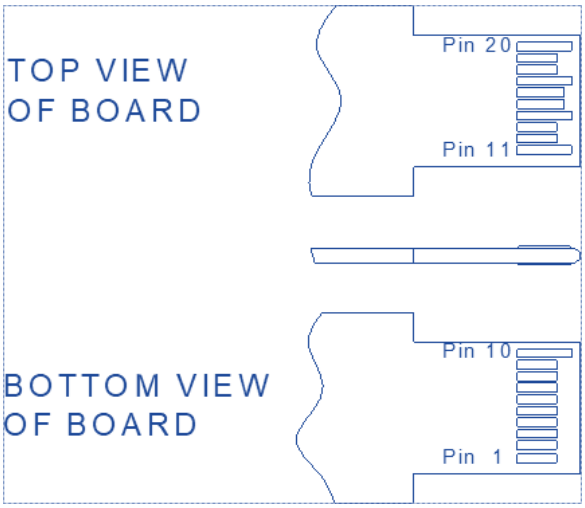
Note: $T_{tri}+T_{i2c}<T_{ont}$.

Digital RSSI Sample/Hold Timing Diagram

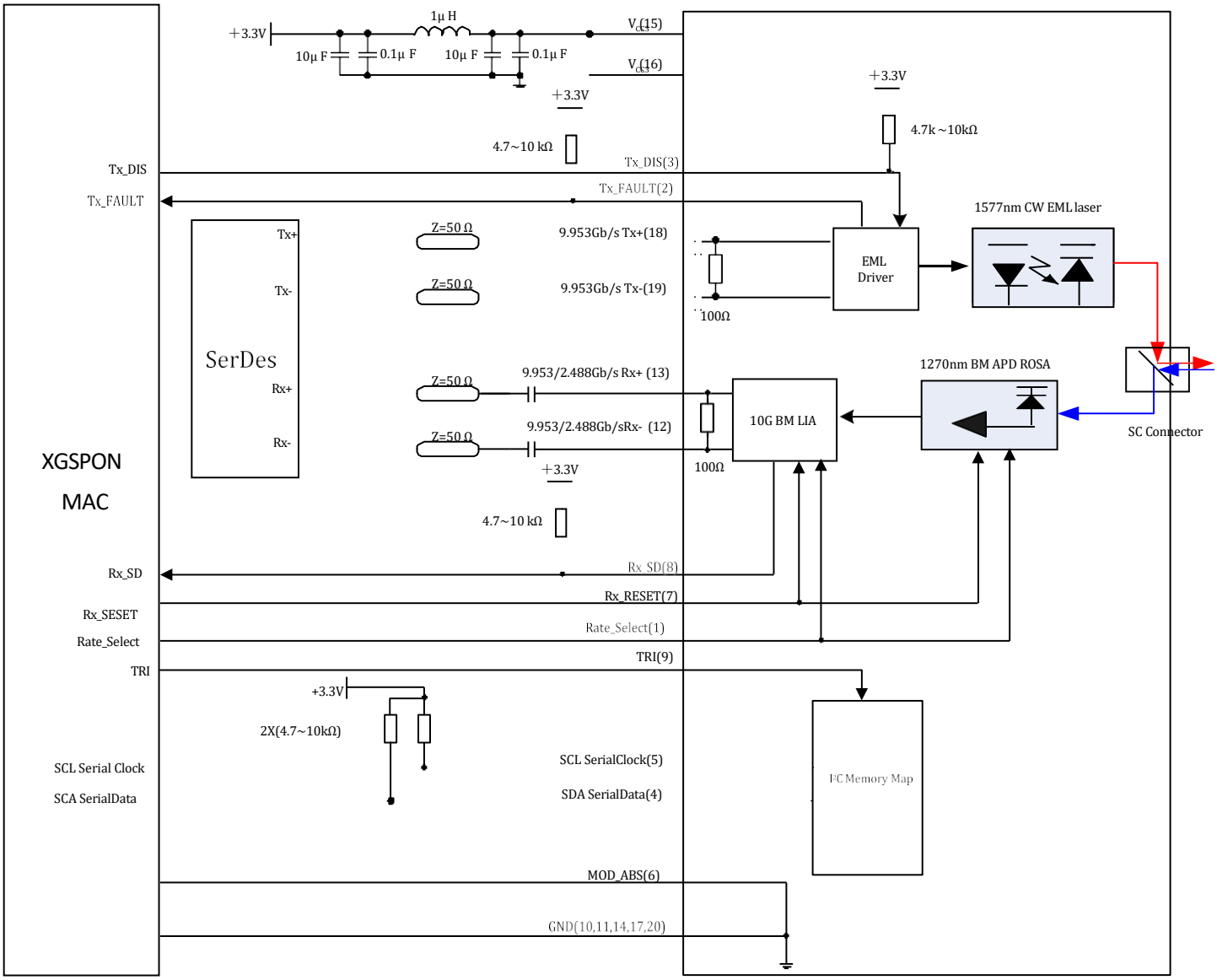


Pin Descriptions

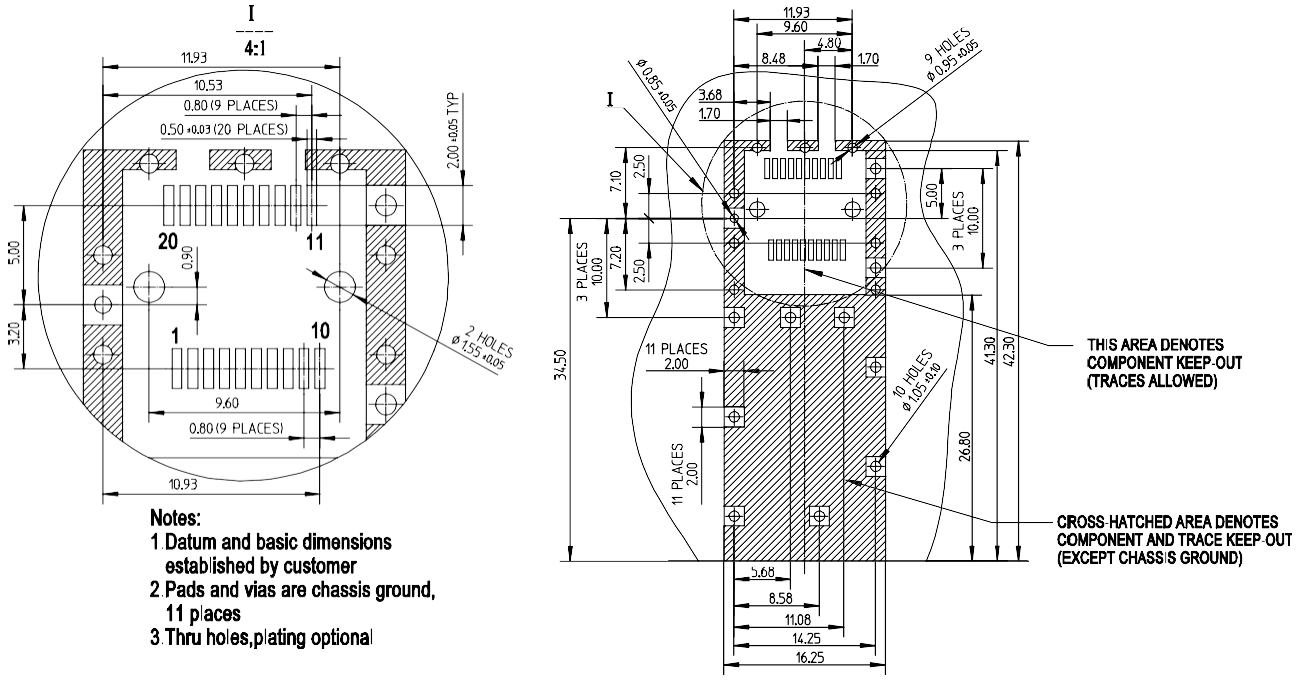
Pin	Symbol	Name/Description	Note
1	Rate_Select	Rate Select. Dedicated upstream speed indication. High=10G. Low=2.5G.	
2	Tx_Fault	Transmitter Fault. Low = Normal Operation. High = Fault Indication.	
3	Tx_Disable	Transmit Disable. Low = Normal Operation. High = Disables Module.	
4	SDA	2-Wire Serial Interface Data.	
5	SCL	2-Wire Serial Interface Clock.	
6	MOD_ABS	Module Absent pin. Grounded inside the module.	
7	Rx_Reset	Rx_Reset Pulse Input for TIA/LIA.	
8	Rx_SD	Rx Signal Detect. Assert “high” when Burst Packet is coming.	
9	RSSI_Trigger	Receiver Signal Strength Indication Trigger Input.	
10	GND	Module Ground.	
11	GND	Module Ground.	
12	RD-	Receiver Inverted. 9.953Gbps and 2.488Gbps Data Output. DC coupled inside the module.	
13	RD+	Receiver Non-Inverted 9.953Gbps and 2.488Gbps Data Output. DC coupled inside the module.	
14	GND	Module Ground.	
15	Vcc	+3.3V DC Power Supply Input.	
16	Vcc	+3.3V DC Power Supply Input.	
17	GND	Module Ground.	
18	TD+	Transmitter Non-Inverted 9.953Gbps Data Input.	
19	TD-	Transmitter Inverted 9.953Gbps Data Input.	
20	GND	Module Ground.	



Electrical Interface

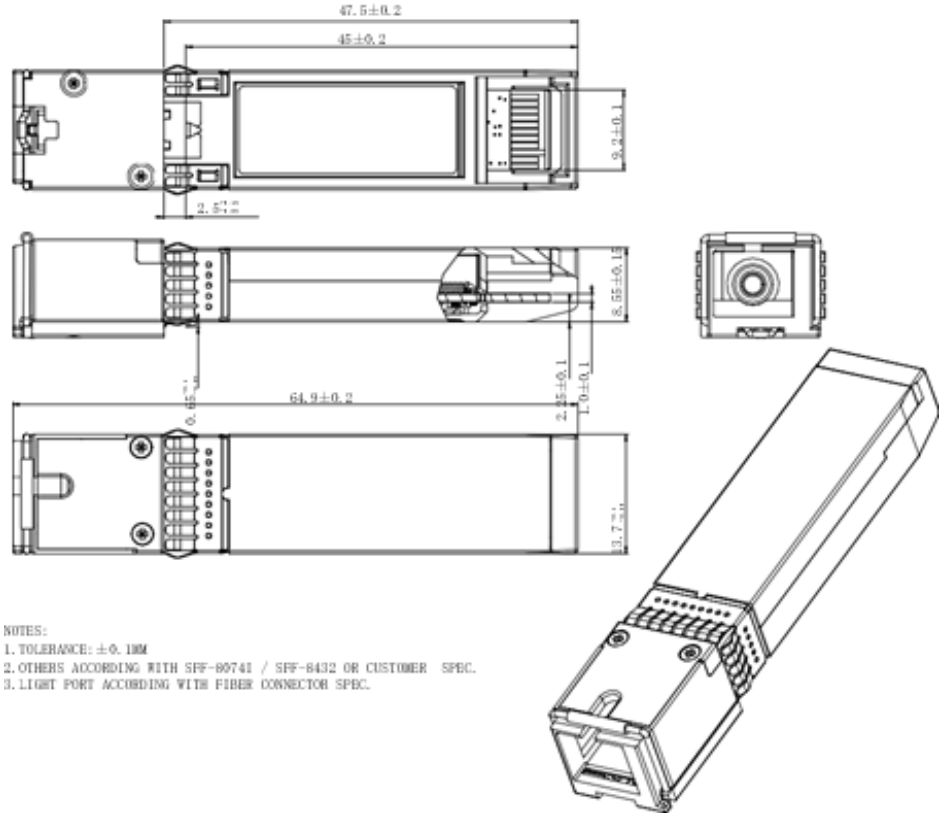


SFP+ Connector Dimensions



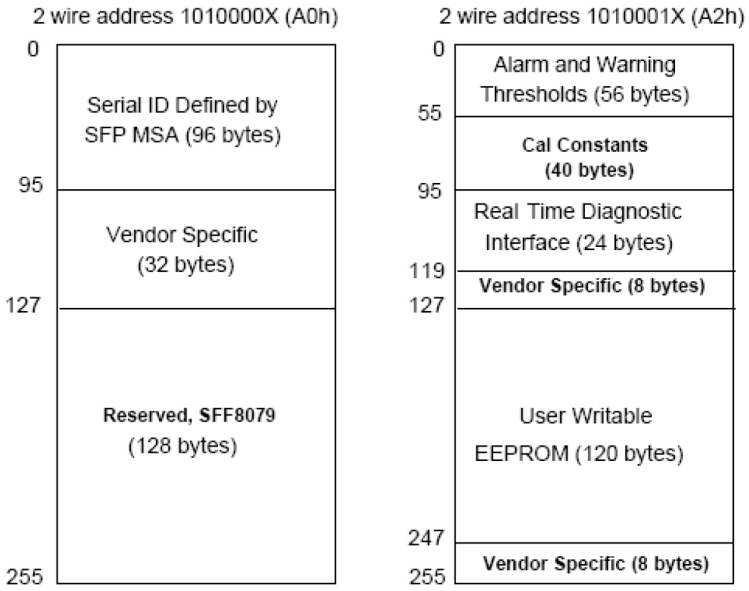
Notes:
1. Datum and basic dimensions established by customer
2. Pads and vias are chassis ground, 11 places
3. Thru holes, plating optional

Mechanical Specifications



EEPROM Information

EEPROM memory map-specific data field description is as below:



About AddOn Networks

In 1999, AddOn Networks entered the market with a single product. Our founders fulfilled a severe shortage for compatible, cost-effective optical transceivers that compete at the same performance levels as leading OEM manufacturers. Adhering to the idea of redefining service and product quality not previously had in the fiber optic networking industry, AddOn invested resources in solution design, production, fulfillment, and global support.

Combining one of the most extensive and stringent testing processes in the industry, an exceptional free tech support center, and a consistent roll-out of innovative technologies, AddOn has continually set industry standards of quality and reliability throughout its history.

Reliability is the cornerstone of any optical fiber network and is in engrained in AddOn's DNA. It has played a key role in nurturing the long-term relationships developed over the years with customers. AddOn remains committed to exceeding industry standards with certifications from ranging from NEBS Level 3 to ISO 9001:2005 with every new development while maintaining the signature reliability of its products.

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