

178X1010GF30H-AO

ADTRAN® 178X1010GF30H Compatible TAA 10GBase-OLT XFP Transceiver (SMF, 1577nmTx/1270nmRx, 20km, SC, DOM, -40 to 85C)

Features

- XFP package with SC receptacle optical interface compliant
- IEEE 802.3av Compliant
- MSA SFF-8077iv4.5 Compliant
- 10.3125Gbps & 2.5G & 1.25Gbps downstream and 10.3125Gbps & 1.25Gbps upstream
- +3.3V single power supply
- Hot-Pluggable
- RoHS compliant
- Operating Temperature: -40C to 85C



Applications

- PON
- Broadband Access

Product Description

This ADTRAN® 178X1010GF30H compatible XFP transceiver provides 10GBase-OLT throughput up to 20km over single-mode fiber (SMF) using a wavelength of 1577nmTx/1270nmRx via a SC connector. It is guaranteed to be 100% compatible with the equivalent ADTRAN® transceiver. This easy to install, hot swappable transceiver has been programmed, uniquely serialized and data-traffic and application tested to ensure that it will initialize and perform identically. 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."



Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Unit
Maximum Supply Voltage	VCC	0	+3.6	V
Storage Ambient Temperature	T _{stg}	-40	+85	°C
Operating Case Temperature	T _c	-40	+85	°C
Relative Humidity	RH	5	95	%

Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Power Supply Voltage	V _{cc}	3.13	3.3	3.47	V	
Power Supply Current	I _{cc}			1200	mA	
Power Consumption	P			4	W	
LVPECL Single Ended Data Input Swing		100		1200	mV	
LVPECL Single Ended Data Output Swing		200		800	mV	
CML Single Ended Data Input Swing		100		600	mV	
CML Single Ended Data Output Swing		300		500	mV	
Differential Data Input Impedance			100		Ω	
Signal Level (LVTTTL)	VOH	2.4		VCC	V	
	VOL	0		0.8	V	

Optical Characteristics

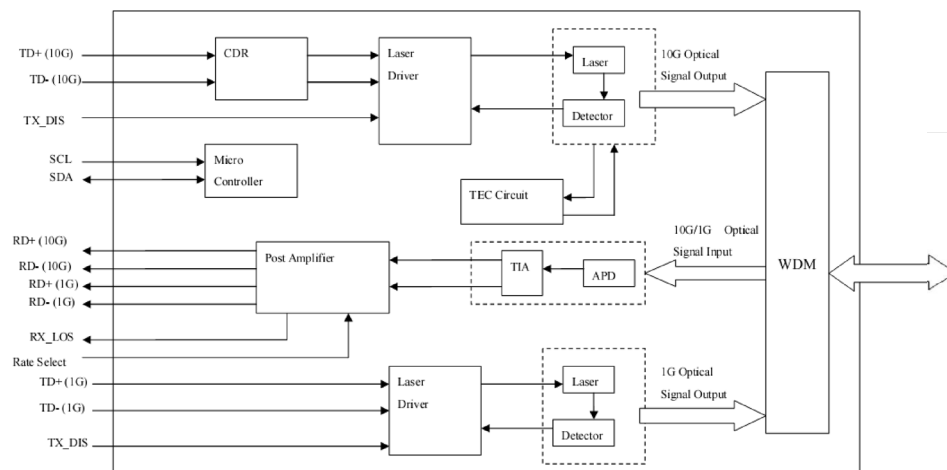
Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Transmitter						
TX 10G Data Rate			10.3125G ±100ppm		Bit/s	
Launch Optical Power -10G	Po	+2		+5	dBm	
Center Wavelength Range -10G	λ_c	1575	1577	1580	nm	
Extinction Ratio -10G	EX	6			dB	
Spectral Width(@-20dB) -10G	$\Delta\lambda$			1	nm	
Side Mode Suppressing Ratio -10G	SMSR	30			dB	
Eye Diagram -10G		Complies with IEEE802.3av				
Dispersion Penalty -10G				1.5	dB	
RIN15 OMA -10G				-128	dB/Hz	
TX 2.5G Data Rate			2.5G± 100ppm			
TX 1G Data Rate			1.25G± 100ppm		Bit/s	
Launch Optical Power - 1G/2.5G	Po	+4.3		+9.3		
Center Wavelength Range -1G/2.5G	λ_c	1480	1490	1500	bit/s	
Extinction Ratio - 2.5G	EX	8.2			dBm	
Extinction Ratio - 1G	EX	9			nm	
Spectral Width(@-20dB) -1G/2.5G	$\Delta\lambda$			1	dB	
Side Mode Suppressing Ratio -1G/2.5G	SMSR	30			dB	
Eye Diagram		Complies with IEEE802.3ah				
Dispersion Penalty-1G/2.5G				1	dB	
RIN15 OMA -1G/2.5G	RIN			-115	dB/Hz	
TX off Optical Power	Poff			-39	dBm	
Optical return loss tolerance				15	dB	
Transmitter reflectance				-10	dB	
Receiver						
Receiver Optical Wavelength	λ_{in}	1260		1360	nm	
Damage Optical Power			10.325G ±100ppm		bit/s	
Receiver Sensitivity – 10G	S			-28	dBm	1
Overload Input Optical Power -10G	Pin	-6			dBm	1
Receiver Settling Time - 10G				800	ns	
RX 1G Data Rate			1.25G± 100ppm			
Receiver Sensitivity - 1G	S			-29.78	dBm	2

Overload Input Optical Power - 1G	Pin	-9.38			dBm	2
Receiver Settling Time - 1G				400	ns	
LOS Optical Dessert				-30	dBm	
LOS Optical Asset		-45			dBm	
LOS Hysteresis		0.5		6	dB	
Receiver Reflectance				-12	dB	
Burst Mode Receiver Dynamic Range		15			dB	

Notes:

1. Measured with a PRBS $2^{31}-1$ NRZ test pattern, @10.3Gb/s, EX=6dB, BER< 10^{-3} ;
2. Measured with a PRBS 2^7-1 NRZ test pattern, @1.25Gb/s, EX=9dB, BER< 10^{-12} .

Principle Diagram



Pin Descriptions

Pin	Symbol	Name/Descriptions	Engagement Order	Notes
1	GND	Ground	1	
2	TX_1G_P	1G Transmitter non-inverted data input	3	6
3	TX_1G_N	1G Transmitter inverted data input	3	6
4	GND	Ground	1	
5	TX_DIS	Transmitter Disable; Turns off the laser output	3	1
6	VCC5	+5V Power Supply (not required)	2	
7	GND	Ground	1	
8	VCC3_TX	TX +3.3V Power Supply	2	
9	VCC3_RX	RX +3.3V Power Supply	2	
10	SCL	2-Wire Serial Interface Clock	3	
11	SDA	2-Wire Serial Interface Data	3	
12	MOD_ABS	Indicates Module is not present. Grounded in the Module	3	
13	Rate Select	RX 10G (high) / 1G (low) Rate Select Input. (not required)	3	2
14	RX_LOS	RX Loss of Signal.	3	3
15	GND	Ground	1	
16	GND	Ground	1	
17	RD_10G_N	10G Receiver inverted data output.	3	4
18	RD_10G_P	10G Receiver non-inverted data output.	3	4
19	GND	Ground	1	
20	RD_1G_N	1G Receiver inverted data output.	3	4
21	RD_1G_P	1G Receiver non-inverted data output.	3	4
22	VCC1	+1.8V Power Supply. (not required)	2	
23	RX_RSSI_TRIG	RX Power Monitor Trigger	3	5
24	NC	Not Connected	3	
25	NC	Not Connected	3	
26	NC	Not Connected	3	
27	GND	Ground	1	
28	TX_10G_N	10G Transmitter inverted data input	3	6
29	TX_10G_P	10G Transmitter non-inverted data input	3	6
30	GND	Ground	1	

Notes:

- TX Disable input is used to shut down both the 10G laser and 1G laser (if module has 1G transmitter) output per the state table below. It is pulled up within the module with a 4.7 – 10K resistor.
Low (<0.8V): Transmitter on
High (>2.0 V): Transmitter Disabled
Open : Transmitter Disabled
- Rate Select is used to select the output of receiver. It is pulled down within the module with a 51K

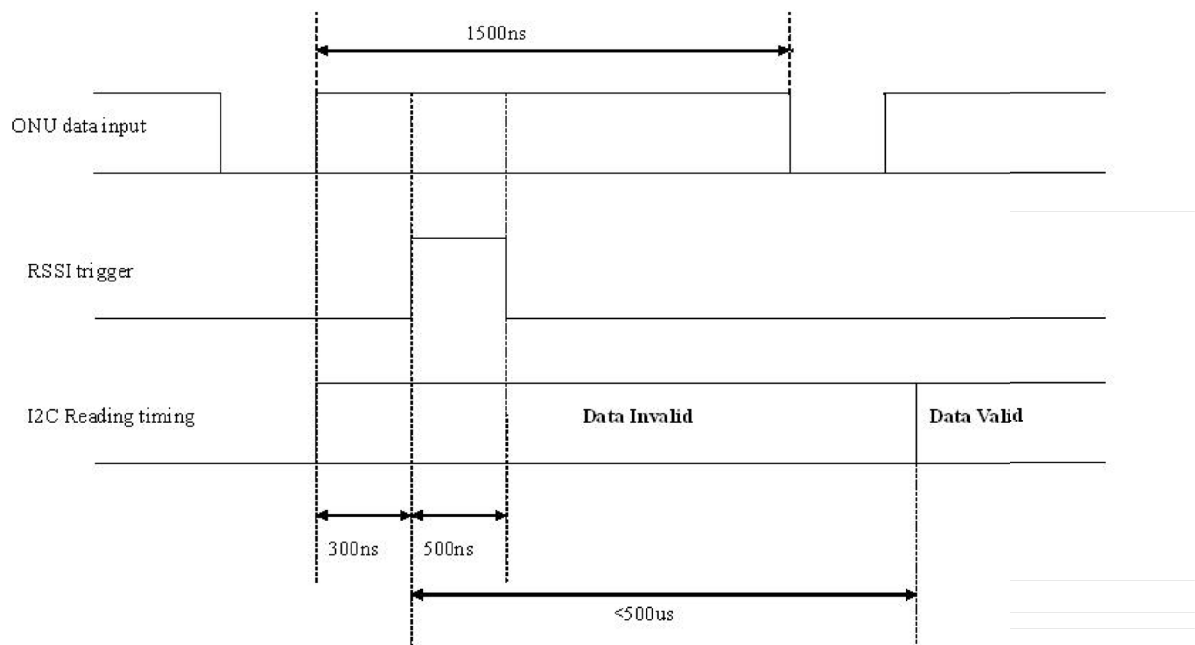
resistor.

Low (<0.8V): 1.25Gbps receiver bandwidth, and shut down 10G receiver

High (>2.0 V): 10.3Gbps receiver bandwidth, and shut down 1G receiver

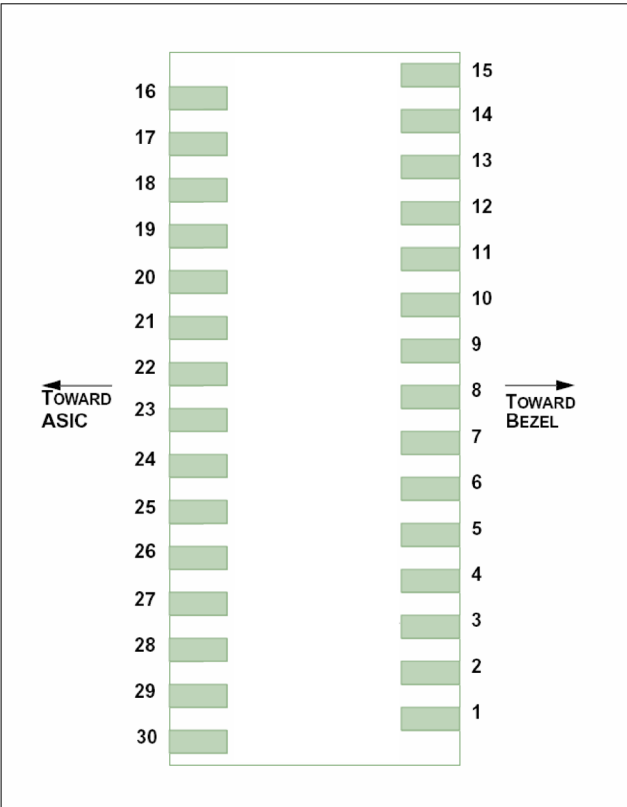
If this function is not used, both 1.25Gbps and 10.3Gbps receiver will not shutdown.

3. LOS (Loss of signal) is an open collector/drain output which should be pulled up externally with a 4.7 – 10K resistor on the host board to supply <VccT+0.3V or VccR+0.3V. When high, this output indicates the received optical power is below the worst case receiver sensitivity (as defined by the standard in use). Low indicates normal operation. In the low state, the output will be pulled to <0.8V.
4. RD-/+ : These are the differential receiver outputs. They are DC coupled in the module.
5. RX_RSSI_TRIG is used to start a RX Power Monitoring. It is pulled high to trigger a A/D sample start. The timing is shown as below:

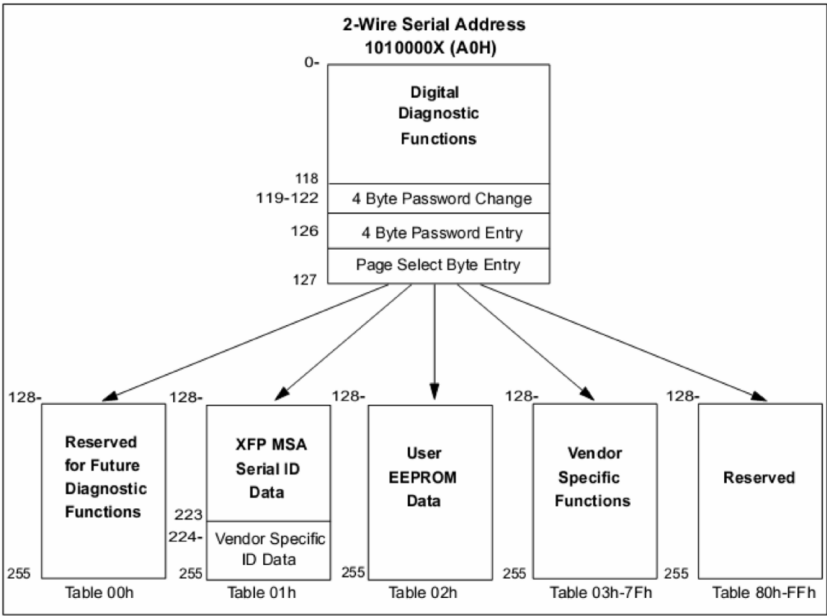


6. TD-/+ : These are the differential transmitter inputs. They are AC coupled in the module.

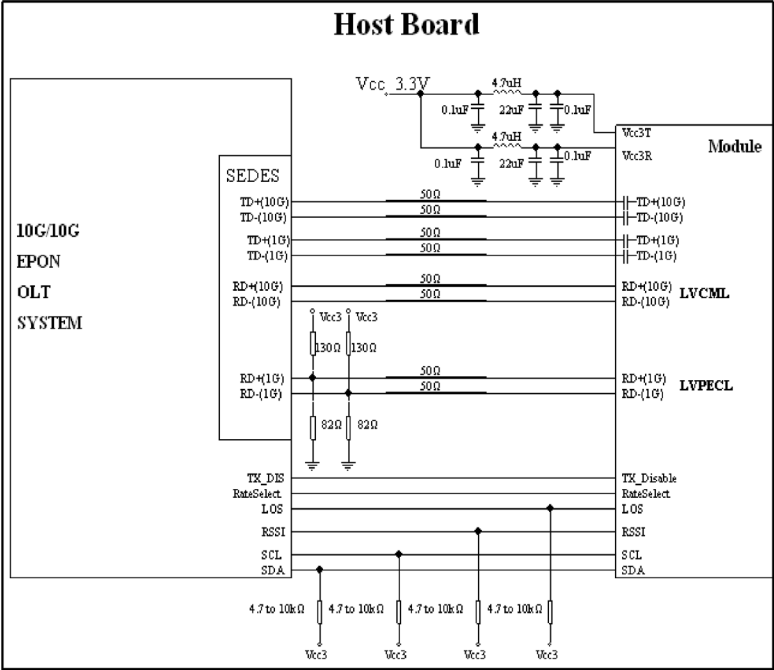
Electrical Ports Definition



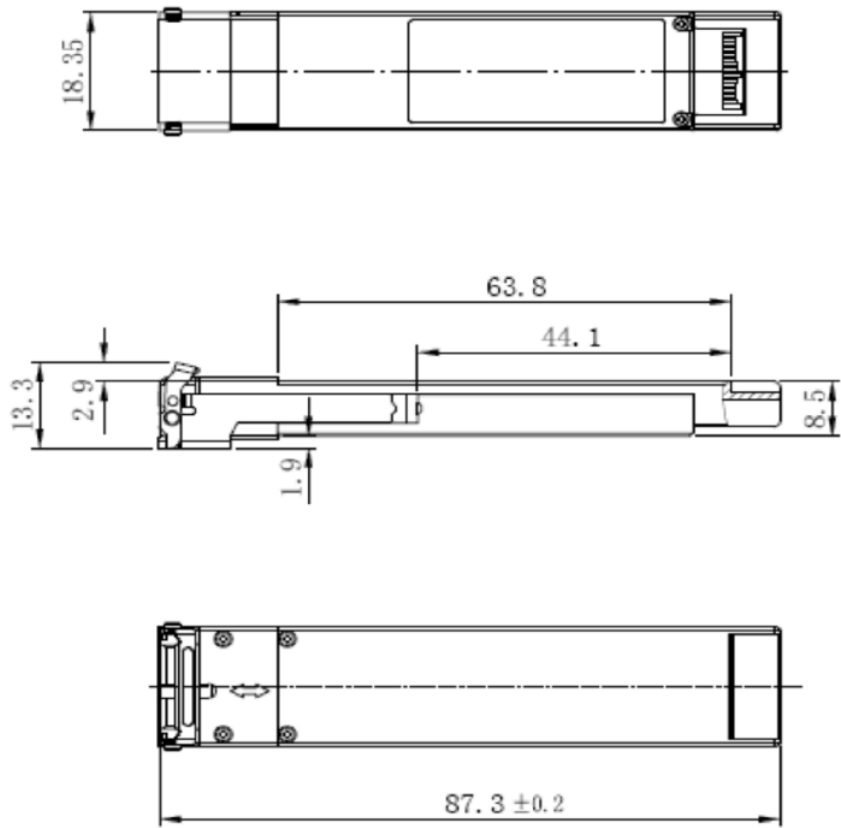
Digital Diagnostic Memory Map



Typical Application Circuit



Mechanical Specifications



Unit: mm
Unspecified
Tolerance: ± 0.1 mm

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 ingrained 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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