

APTICOM | ASX-7600X

## SFP+ 10G CWDM 70km -40-85°C Optical Transceivers

### Features

- Management interface specifications per SFF-8431 and SFF-8472
- Supports up to 10.3Gbps bit rate
- Class 1 Laser Safety Certified
- CWDM EML Transmitter
- APD Receiver
- Up to 70km on Single Mode Fiber (SMF)
- Operating Temperature -40 to 85°C
- Power dissipation < 1.8W
- Single 3.3V power supply



### Applications

- 10 Gigabit Ethernet
- 10G CWDM Networks

### Description

The ASX-7600x series are high-performance transceivers for up to 10.3Gbps CWDM 70km links over dual single mode fiber. It is compliant with the Small Form-factor Pluggable (SFP+) Multisource Agreement (MSA) and hot pluggable.

The transceiver module is RoHS-6 compliant per Directive 2011/65/EU.

**CAUTION!** Optical input power in excess of the maximum recommended value could cause irreparable damage to the APD receiver.

**CAUTION!** The transceiver is a static-sensitive device. Always use an ESD wrist strap or similar individual grounding device when handling transceiver modules or coming into contact with modules.

### Order Information

Part Number	Wavelength	Protocol	Tx Output Power	Rx Sensitivity [1]	Reach [2]	Temp.
ASX-7600x	ITU CWDM	10GBASE	0 to 4dBm	≤-24dBm	≤70km	-40-85°C

**1.** Measured with 10.3125Gbps PRBS 2<sup>31</sup>-1, BER≤10<sup>-12</sup> **2.** On standard single-mode fibre (SMF, G.652)

## Channel Guide (ITU-T CWDM)

Part Number	Wavelength [nm]	Part Number	Wavelength [nm]
ASX-76002	1471	ASX-76006	1551
ASX-76003	1491	ASX-76007	1571
ASX-76004	1511	ASX-76008	1591
ASX-76005	1531	ASX-76009	1611

## Absolute Maximum Ratings

Stresses in excess of the absolute maximum ratings can cause permanent damage to the device. Exposure to absolute maximum ratings for extended periods can adversely affect device reliability.

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Parameter	Min	Typ	Max	Unit
Storage Temperature	-40		85	°C
Relative Humidity	5		95	%
Supply Voltage	-0.5		4.0	V

## Recommended Operating Conditions

Parameter	Min	Typ	Max	Unit
Operating Case Temperature	-40		85	°C
Supply Voltage	3.135	3.3	3.465	V
Data Rate, Optical Lane		10.3125		Gbps

## Transceiver Electrical Parameters

EOL, over the full temperature range, Vcc = 3.135 to 3.465V.

Parameter	Min	Typ	Max	Unit
Supply Current			550	mA
Power Dissipation			1.8	W
<b>Transmitter</b>				
Input Differential Impedance		100		$\Omega$
Differential Data Input Swing	180		700	mVpp
Tx_Fault (fault condition) [1]	2.0		Vcc	V
Tx_Fault (normal operation) [1]	0		0.8	V
Tx_Disable (transmitter disable)	2.0		Vcc	V
Tx_Disable (normal operation)	0		0.8	V
<b>Receiver</b>				
Output Differential Impedance		100		$\Omega$
Differential Output Data Swing [2]	300		850	mVpp
Data Output Rise/Fall Time (20/80%)	28			ps
Rx_LOS (loss of signal) [1]	2.0		Vcc	V
Rx_LOS (normal operation) [1]	0		0.8	V

**1.** Open collector, to be pulled up with 4.7kohm **2.** Internally AC-coupled, to be terminated with 100ohm differential load

## Transmitter Optical Specification

EOL, over the full temperature range, Vcc = 3.135 to 3.465V.

Parameter	Min	Typ	Max	Unit
Launched Optical Power, Average [1]	0		4	dBm
Centre Wavelength Range	1464.5		1617.5	nm
Centre Wavelength [2]	$\lambda-6.5$	$\lambda$	$\lambda+6.5$	nm
Extinction Ratio [3]	9			dB
Spectral Width (-20dB)			1	nm
Transmitter and Dispersion Penalty, TDP			3	dB

**1.** Coupled into 9/125um SMF **2.**  $\lambda$  according to ITU-T G.694.2 CWDM 20nm grid **3.** Measured with 10.3125Gbps PRBS 2<sup>31</sup>-1

## Receiver Optical Specification

EOL, over the full temperature range, Vcc = 3.135 to 3.465V.

Parameter	Min	Typ	Max	Unit
Operating Wavelength	1464.5		1617.5	nm
Receiver Sensitivity, Average Power [1]			-24	dBm
Receiver Sensitivity, OMA			-14.1	dBm
Receiver Overload	-7			dBm

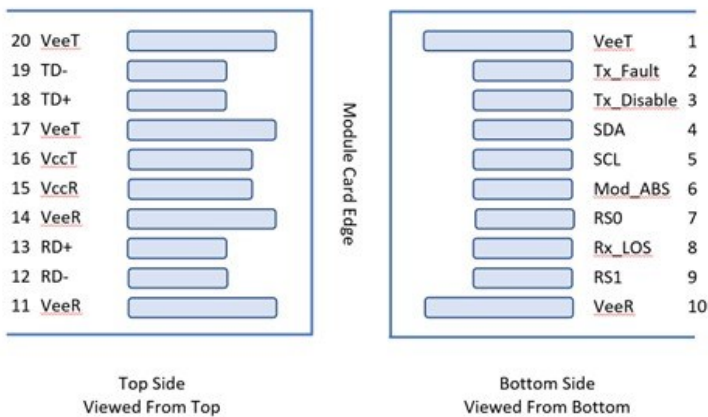
1. Measured with 10.3125Gbps PRBS 2<sup>31</sup>-1, BER $\leq$ 10<sup>-12</sup>

## Transceiver Pins

Pin #	Name	Description	Pin #	Name	Description
1	VeeT	Module Transmitter Ground	11	VeeR	Module Receiver Ground
2	Tx_Fault	Module Transmitter Fault	12	RD-	Receiver Inverted Data Output
3	Tx_Disable	Transmitter Disable	13	RD+	Receiver Non-Inverted Data Output
4	SDA	2-wire Serial Interface Data Line	14	VeeR	Module Receiver Ground
5	SCL	2-wire Serial Interface Clock	15	VccR	Module Receiver 3.3 V Supply
6	Mod_ABS	Module Absent	16	VccT	Module Transmitter 3.3 V Supply
7	RS0	Not Used	17	VeeT	Module Transmitter Ground
8	Rx_LOS	Receiver Loss of Signal Indication	18	TD+	Transmitter Non-Inverted Data Input
9	RS1	Not Used	19	TD-	Transmitter Inverted Data Input
10	VeeR	Module Receiver Ground	20	VeeT	Module Transmitter Ground

## Transceiver Pad Layout

SFP+-compliant 20-pin connector as per SFF-8431.



## Regulatory Compliance

The ASX-7600x series of transceivers are Class 1 Laser Products and certified per the following standards:

Item	Agency	Standard
Laser Eye Safety	TÜV	EN 60825-1:2014 EN 60825-2:2004+A1+A2
Electrical Safety	TÜV	EN 60950-1:2006+A11+A1+A12+A2

## Revision Information

Revision	Date	Description
A	2022-11-07	Initial release

## For more information

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