

APTICOM | ASX-760[21-65] SFP+ 10G DWDM 40km 0-70°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
- DWDM 100GHz EML Transmitter
- PIN Receiver
- Up to 40km on Single Mode Fiber (SMF)
- Operating Temperature 0 to 70°C
- Power dissipation $\leq 1.5W$
- Single 3.3V power supply



Applications

- 10 Gigabit Ethernet
- 10G DWDM Networks

Description

The ASX-760[21-65] series are high-performance transceivers for up to 10 Gigabit Ethernet 100GHz DWDM 40km 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 2 compliant per Directive 2011/65/EU.

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-760[21-65]	ITU DWDM 100GHz	10GBASE	-1 to 2dBm	$\leq -15.8\text{dBm}$	$\leq 40\text{km}$	0-70°C

1. Measured with 10.3125Gbps PRBS 2³¹-1, BER $\leq 10^{-12}$ **2.** On standard single-mode fibre (SMF, G.652)

Channel Guide (ITU-T 100GHz)

Ch.	Part Number	Freq. [THz]	Wavelength [nm]	Ch.	Part Number	Freq. [THz]	Wavelength [nm]
17	ASX-76021	191.7	1563.86	40	ASX-76044	194.0	1545.32
18	ASX-76022	191.8	1563.05	41	ASX-76045	194.1	1544.53
19	ASX-76023	191.9	1562.23	42	ASX-76046	194.2	1543.73
20	ASX-76024	192.0	1561.42	43	ASX-76047	194.3	1542.94
21	ASX-76025	192.1	1560.61	44	ASX-76048	194.4	1542.14
22	ASX-76026	192.2	1559.79	45	ASX-76049	194.5	1541.35
23	ASX-76027	192.3	1558.98	46	ASX-76050	194.6	1540.56
24	ASX-76028	192.4	1558.17	47	ASX-76051	194.7	1539.77
25	ASX-76029	192.5	1557.36	48	ASX-76052	194.8	1538.98
26	ASX-76030	192.6	1556.55	49	ASX-76053	194.9	1538.19
27	ASX-76031	192.7	1555.75	50	ASX-76054	195.0	1537.40
28	ASX-76032	192.8	1554.94	51	ASX-76055	195.1	1536.61
29	ASX-76033	192.9	1554.13	52	ASX-76056	195.2	1535.82
30	ASX-76034	193.0	1553.33	53	ASX-76057	195.3	1535.04
31	ASX-76035	193.1	1552.52	54	ASX-76058	195.4	1534.25
32	ASX-76036	193.2	1551.72	55	ASX-76059	195.5	1533.47
33	ASX-76037	193.3	1550.92	56	ASX-76060	195.6	1532.68
34	ASX-76038	193.4	1550.12	57	ASX-76061	195.7	1531.90
35	ASX-76039	193.5	1549.32	58	ASX-76062	195.8	1531.12
36	ASX-76040	193.6	1548.51	59	ASX-76063	195.9	1530.33
37	ASX-76041	193.7	1547.72	60	ASX-76064	196.0	1529.55
38	ASX-76042	193.8	1546.92	61	ASX-76065	196.1	1528.77
39	ASX-76043	193.9	1546.12				

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.

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	0		70	°C
Supply Voltage	3.135	3.3	3.465	V
Data Rate		10.3125		Gbps

Transceiver Electrical Parameters

EOL, over the full temperature range, V_{cc} = 3.135 to 3.465V.

Parameter	Min	Typ	Max	Unit
Supply Voltage	3.135	3.3	3.465	V
Supply Current			450	mA
Power Dissipation			1.5	W
Transmitter				
Input Differential Impedance		100		Ω
Differential Data Input Swing	180		700	mVpp
Tx_Fault (fault condition)	2.0		V _{cc}	V
Tx_Fault (normal operation)	0		0.8	V
Tx_Disable (transmitter disable)	2.0		V _{cc}	V
Tx_Disable (normal operation)	0		0.8	V
Receiver				
Output Differential Impedance		100		Ω
Differential Output Data Swing [1]	300		850	mVpp
Data Output Rise/Fall Time (20/80%)	28			ps
Rx_LOS (loss of signal) [2]	2.0		V _{cc}	V
Rx_LOS (normal operation) [2]	0		0.8	V

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

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]	-1		2	dBm
Centre Wavelength Range	1528.77		1563.86	nm
Centre Wavelength [2]	$\lambda - 0.1$	λ	$\lambda + 0.1$	nm
Spectral Width (-20dB)			1	nm
Extinction Ratio [3]	8.2			dB
Transmitter and Dispersion Penalty, TDP			2	dB

1. Coupled into 9/125um SMF **2.** λ according to ITU-T G.694.1 DWDM 100GHz grid **3.** Measured with 10.3125Gbps PRBS 2³¹-1

Receiver Optical Specification

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

Parameter	Min	Typ	Max	Unit
Centre Wavelength	1528		1565	nm
Receiver Sensitivity, Average Power [1]			-15.8	dBm
Receiver Overload	-1			dBm

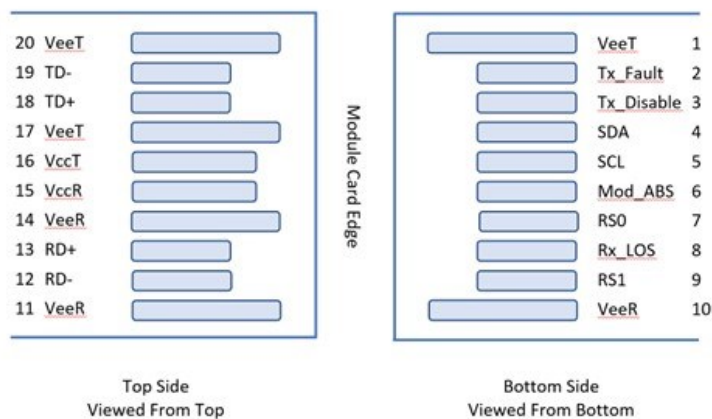
1. Measured with 10.3125Gbps PRBS 2³¹-1, BER $\leq 10^{-12}$

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-760[21-65] series of transceivers are Class 1 Laser Product 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	2023-02-14	Initial release

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