

X2-10GB-ER-OPC

Cisco® X2-10GB-ER Compatible TAA 10GBase-ER X2 Transceiver (SMF, 1550nm, 40km, SC, DOM)

Features

- X2 MSA 2.0 Compliance
- Duplex SC Connector
- Single-mode Fiber
- Commercial Temperature 0 to 70 Celsius
- Hot Pluggable
- Metal with Lower EMI
- Excellent ESD Protection
- RoHS Compliant and Lead Free



Applications:

- 10GBase-ER Ethernet
- 8x/10x Fibre Channel
- Access, Metro and Enterprise

Product Description

This Cisco® X2-10GB-ER compatible X2 transceiver provides 10GBase-ER throughput up to 40km over single-mode fiber (SMF) using a wavelength of 1550nm via an SC connector. It can operate at temperatures between 0 and 70C. Our transceiver is built to meet or exceed OEM specifications and is guaranteed to be 100% compatible with Cisco®. It has been programmed, uniquely serialized, and tested for data-traffic and application to ensure that it will initialize and perform identically. All of our transceivers comply with Multi-Source Agreement (MSA) standards to provide seamless network integration. Additional product features include Digital Optical Monitoring (DOM) support which allows 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.

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

Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Unit
Supply Voltage +5V	Vcc5		6.0	V
Supply Voltage_3.3V	Vcc3		4	V
Supply Voltage APS	Vaps		1.5	V
Storage Temperature	Tst	-20	85	°C
Optical Input Received Power	PIN		-1	dBm

Recommended Operating Conditions

Parameter	Symbol	Min.	Typ.	Max.	Unit
Operating Case Temperature	Tca	0		70	°C
Supply Voltage+5V	Vcc5	4.75	5	5.25	V
Supply Voltage+5V	Icc5			80	mA
Supply Voltage_3.3V	Vcc3	3.14	3.3	3.47	V
Supply Voltage+3.3V	Icc3			400	mA
Supply Voltage APS	Vaps	1.14	1.2	1.26	V
Supply Voltage APS	Iaps			700	mA
Module Power Dissipation	Pm			3.5	W

Signal Specification-Electrical

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
1.2 V CMOS						
Input High Voltage	VIL(MAX)			0.36	V	
Input Low Voltage	VIH(MIN)	0.84		1.25	V	
Capacitance				320	pF	
Pull Up Resistance	Rpull	4.7k	10k	22k	Ohm	
MDIO I/O						
Output Low Voltage	VOL	-0.3		0.2	V	
Output Low Current	IOL			4	mA	
Input High Voltage	VIH	0.84		1.5	V	
Input Low Voltage	VIL	-0.3		0.36	V	
Pull-up Supply Voltage	VPULL	1.14	1.2	1.26		
Input Capacitance	CIN			10	Pf	
Load Capacitance	CLOD			470	Pf	
External Pull-up Resistance	EPULL	200			Ohm	

Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit
Transmitter					
Data Rate (TXLINE0-3)	TX-xaul		3125		Mbps
Differential Impedance	Zo	80	100	120	Ω
Differential Input Amplitude	Vin P-P	160		2000	mVpp
Input Rise/Fall	TR/TF	60		130	ps
Differential Impedance of Zin	Zin		100		ohm
Receiver					
Data Rate (TXLINE0-3)	RX-xaul		3125		Mbps
Supply Voltage	VccRX	3.13	3.3	3.47	V
Differential Output Amplitude	Vout P-P	800		1600	mV
Rise/Fall Time	Tr/Tf	50		90	ps
Differential Impedance of Zout	Zout		100		ohm

Optical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit
Transmitter					
Center Wavelength	λ_c	1528	1550	1565	nm
Optical Transmit Power	Po	-1		2	dBm
Optical Transmit Power (disabled)	Ptx-dis			-40	dBm
Extinction Ratio	ER	8.2			dB
Side Mode Suppression Ratio	SMSR	30			dB
Side Mode Suppression Ratio	IEEE 802.3ae Compliant				
Receiver					
Input Operating Wavelength	λ	1260		1600	nm
Average Receive Power	Pavg	-15.8		-1.0	dBm
Receiver Sensitivity in 10.3Gbps (OMA)	Rsen1			-14.1	dBm
Stressed Receiver Sensitivity in 10.3Gbps (OMA)	Rsen2			-11.3	dBm
Reflectance	Rrx			-26	dB
LOS Asserted	Lsa	-28			dBm
LOS De-Asserted	Lda			-19	dBm
LOS Hysteresis	Lh	0.5			dB

Pin Descriptions

Pin	Symbol	Name/Descriptions	Ref.
1	GND	Electrical Ground.	1
2	GND	Electrical Ground.	1
3	GND	Electrical Ground.	1
4	5.0V	Power	2
5	3.3V	Power	2
6	3.3V	Power	2
7	APS =1.2V	Adaptive Power Supply.	2
8	APS =1.2V	Adaptive Power Supply.	2
9	LASI	Open Drain Compatible 10K-22K pull up on host. Logic High: Normal Operation Logic Low: LASI Asserted	3
10	RESET	Open Drain compatible. 10-22K pull-up on transceiver Logic high = Normal operation Logic low = Reset Minimum reset assert time 1 ms	3
11	VEND SPECIFIC	Vendor Specific Pin. Leave unconnected when not in use.	6
12	TX ON/OFF	Open Drain compatible. 10-22K pull-up on transceiver Logic high = Transmitter On (capable) Logic low = Transmitter Off (always)	3
13	RESERVED	Reserved	
14	MODE DETECT	Pulled low inside module through 1k	3
15	VEND SPECIFIC	Vendor Specific Pin. Leave unconnected when not in use.	6
16	VEND SPECIFIC	Vendor Specific Pin. Leave unconnected when not in use.	6
17	MDIO	Management Data IO	3,4
18	MDC	Management Data Clock	3,4
19	PRTAD4	Port Address Bit 4 (Low = 0)	3
20	PRTAD3	Port Address Bit 3 (Low = 0)	3
21	PRTAD2	Port Address Bit 2 (Low = 0)	3
22	PRTAD1	Port Address Bit 1 (Low = 0)	3
23	PRTAD0	Port Address Bit 0 (Low = 0)	3
24	VEND SPECIFIC	Vendor Specific Pin. Leave unconnected when not in use.	6
25	APS SET	Feedback input for APS	

26	RESERVED	Reserved for Avalanche Photodiode use.	6
27	APS SENSE	APS Sense Connection	
28	APS =1.2V	Adaptive Power Supply	2
29	APS =1.2V	Adaptive Power Supply	2
30	3.3V	Power	2
31	3.3V	Power	2
32	5.0V	Power	2
33	GND	Electrical Ground	1
34	GND	Electrical Ground	1
35	GND	Electrical Ground	1
36	GND	Electrical Ground	1
37	GND	Electrical Ground	1
38	RESERVED	Reserved	
39	RESERVED	Reserved	
40	GND	Electrical Ground	1
41	RX LANE0+	Module XAUI Output Lane 0+	5
42	RX LANE0-	Module XAUI Output Lane 0-	5
43	GND	Electrical Ground	1
44	RX LANE1+	Module XAUI Output Lane 1+	5
45	RX LANE1-	Module XAUI Output Lane 1-	5
46	GND	Electrical Ground	1
47	RX LANE2+	Module XAUI Output Lane 2+	5
48	RX LANE2-	Module XAUI Output Lane 2-	5
49	GND	Electrical Ground	1
50	RX LANE3+	Module XAUI Output Lane 3+	5
51	RX LANE3-	Module XAUI Output Lane 3-	5
52	GND	Electrical Ground	1
53	GND	Electrical Ground	1
54	GND	Electrical Ground	1
55	TX LANE0+	Module XAUI Input Lane 0+	5
56	TX LANE0-	Module XAUI Input Lane 0-	5
57	GND	Electrical Ground	1
58	TX LANE1+	Module XAUI Input Lane 1+	5
59	TX LANE1-	Module XAUI Input Lane 1-	5
60	GND	Electrical Ground	1

61	TX LANE2+	Module XAUI Input Lane 2+	5
62	TX LANE2-	Module XAUI Input Lane 2-	5
63	GND	Electrical Ground	1
64	TX LANE3+	Module XAUI Input Lane 3+	5
65	TX LANE3	Module XAUI Input Lane 3	5
66	GND	Electrical Ground	1
67	RESERVED	Reserved	
68	RESERVED	Reserved	
69	GND	Electrical Ground	1
70	GND	Electrical Ground	1

Notes:

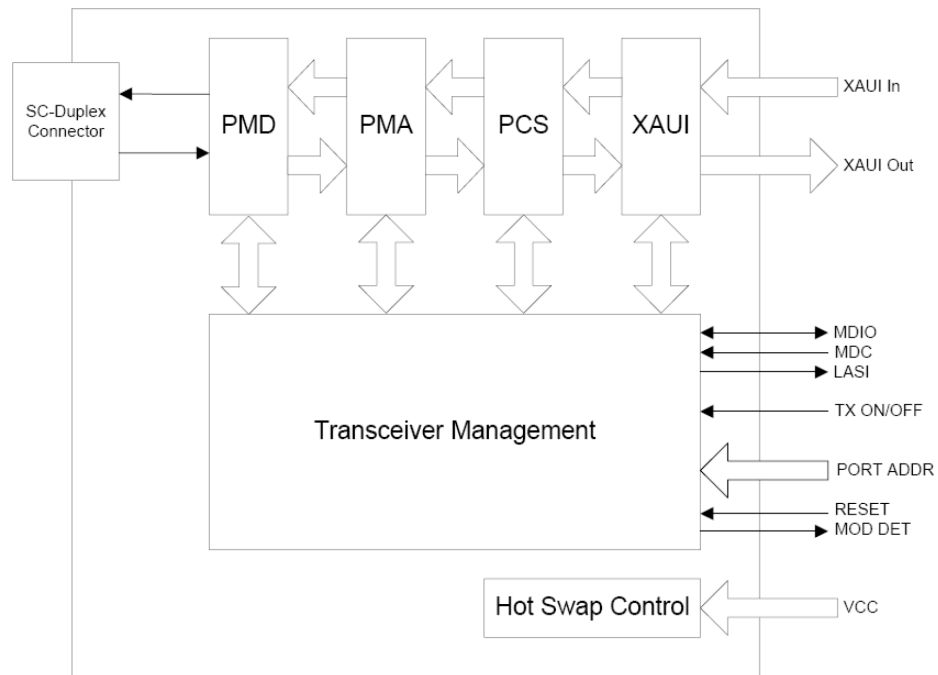
1. Ground connections are common for TX and RX.
2. All connector contacts are rated at 0.5A nominal.
3. 1.2V CMOS compatible.
4. MDIO and MDC timing must comply with IEEE802.3ae, Clause 45.3.
5. XAUI output characteristics should comply with IEEE802.3ae Clause 47.
6. Transceivers will be MSA compliant when no signals are present on the vendor specific pins.

Electrical Pin-out Details

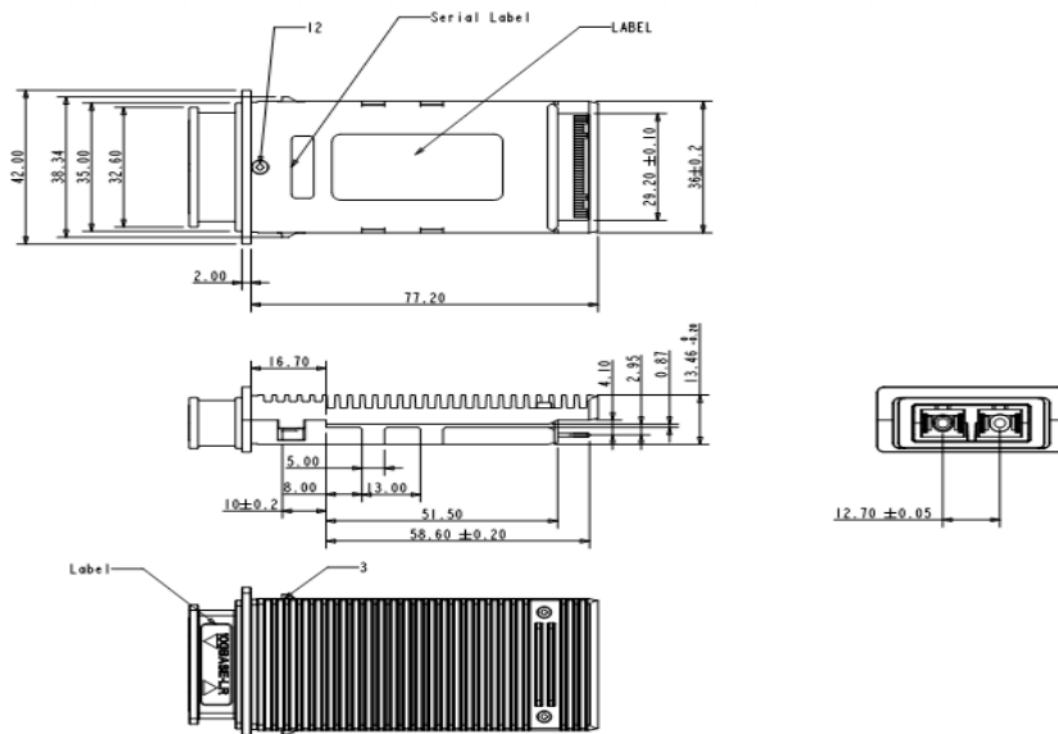
70	GND	1	GND
69	GND	2	GND
68	RESERVED	3	GND
67	RESERVED	4	5.0V
66	GND	5	3.3V
65	TX LANE3-	6	3.3V
64	TX LANE3+	7	APS
63	GND	8	APS
62	TX LANE2-	9	LASI
61	TX LANE2+	10	RESET
60	GND	11	VEND SPECIFIC
59	TX LANE1-	12	TX ON/OFF
58	TX LANE1+	13	RESERVED
57	GND	14	MOD DETECT
56	TX LANE0-	15	VEND SPECIFIC
55	TX LANE0+	16	VEND SPECIFIC
54	GND	17	MDIO
53	GND	18	MDC
52	GND	19	PRTAD4
51	RX LANE3-	20	PRTAD3
50	RX LANE3+	21	PRTAD2
49	GND	22	PRTAD1
48	RX LANE2-	23	PRTAD0
47	RX LANE2+	24	VEND SPECIFIC
46	GND	25	APS SET
45	RX LANE1-	26	RESERVED
44	RX LANE1+	27	APS SENSE
43	GND	28	APS
42	RX LANE0-	29	APS
41	RX LANE0+	30	3.3V
40	GND	31	3.3V
39	RESERVED	32	5.0V
38	RESERVED	33	GND
37	GND	34	GND
36	GND	35	GND

Toward Bezel

Functional Diagram



Mechanical Specifications



Dimensions in mm

OptioConnect

Innovation for the Future of High-Speed Networking

Who We Are

OptioConnect is reshaping the landscape of communication and high-speed networking through intelligent technology. With a core focus on cutting edge technology, we deliver smarter fiber optic solutions for enterprise networks, data centers, and next-gen telecom infrastructures.

What We Do

At OptioConnect, we fuse advanced engineering with intelligent automation to drive the future of networking. Our AI-integrated solutions are designed to optimize performance and streamline operations with:

- Superior Performance
- Network and traffic optimization
- Intelligent energy management
- Seamless OEM compatibility
- Scalable cost-efficiency

Smarter Networks by Design

Innovation isn't just a goal—it's our process. We embed AI and machine learning across our R&D and product lines, enabling adaptive performance, automated tuning, and faster deployment cycles. The result? Networks that don't just work—they learn, evolve, and outperform.

Our Team

Our engineers, data scientists, and network architects bring decades of experience and a future-focused mindset. We provide hands-on support with intelligent insights that turn complex challenges into simple solutions.

Our Mission

To deliver AI-enhanced connectivity that reduces cost, increases speed, and maximizes efficiency—empowering our partners to operate at the forefront of a rapidly evolving digital world.

Let's Connect

Discover how OptioConnect's intelligent infrastructure solutions can power your network's next leap forward.

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