

Features

- Fully compliant to the latest SFP+ & QSFP MSA (Multi-Source-Agreement)
- Supports all current 10-Gigabit Ethernet and 40-Gigabit Ethernet standards
- Up to 10.3125 Gbps transfer rate per SFP+ channel (40 Gbps aggregate)
- 30 AWG to 26 AWG cable sizes available
- 100 ohm differential impedance system
- Single 3.3V power supply, low power consumption, <0.5W
- Operating case temperature: -40 to 85°C
- All-metal housing for superior EMI performance
- Precision process control for minimization of pair-to-pair skew
- AC coupling of PECL signals
- EEPROM for cable signature & system communications
- Low cross-talk and pair-to-pair skew maintains signal integrity



- Fully RoHS compliant for environmental protection

Applications

- InfiniBand SDR, DDR, QDR
- 40G Ethernet transmission
- Fiber Channel
- Rack-to-Rack, Shelf-to-Shelf Interconnect
- Networking
- Hubs, switches, routers, servers
- Data center interconnect
- High Performance Computing application

1. Recommended Operation Condition

Parameter	Symbol	Min	Max	Unit
Operating Case Temperature	Topc	-40	85	°C
Relative Humidity (non-condensation)	RS	-	85	%
Supply Voltage	VCC3	3.135	3.465	V
Voltage on LVTTTL Input	Vi lvttl	-0.3	VCC3 +0.2	V
Power Supply Current	ICC3	70	-	mA
Total Power Consumption	Pd	-	0.5	W

2. Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Unit
Storage Temperature	Tst	-40	125	°C
Relative Humidity (non-condensation)	RS	-	85	%
Operating Case Temperature	Topc	-40	85	°C
Supply Voltage	VCC3	-0.3	3.6	V
Voltage on LVTTTL Input	Vi lvttl	-0.3	VCC3 +0.2	V

Note: Stress or conditions exceed the above range may cause permanent damage to the device. This is a stress rating only and functional operation of the device at these or any other conditions above those listed in the operational sections of this specification is not applied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

3. QSFP+ Module Electrical Characteristics per SFF-8436

Parameters	Min	Typ	Max	Units
QSFP+ Input electrical characteristics per lane				
Single-ended input voltage tolerance	-0.3		4.0	V
SDD11-Differential input return loss	(note 1)			dB
SCD11 -Differential to common-mode input return loss	(note 2)			dB
QSFP+ Output electrical characteristics per lane				
Single-ended output voltage	-0.3		4.0	V
SDD22 - Differential output return loss	(note 1)			dB
SCC22 - Common-mode output return loss	(note 3)			dB

Notes:

1. SDD11/SDD22 differential return loss is measured at TP1 and TP4 as: $\{-12+2*\text{SQRT}(f) @ 0.01 \text{ to } 4.1\text{GHz} < -6.3 + 13 * \log_{10}(f/5.5), \text{ with } f \text{ in GHz ; } @4.1 \text{ to } 11.1\text{GHz}\}$
2. SCD11 measured at TP1 > 10 dB { 10Mhz to 11.1GHz}
3. SCC22 - Common-mode output return loss at TP4 is defined as: $\{7-1.6f \text{ } 0.01 < f < 2.5, 3 \text{ } 2.5 < f < 11.1 \}$ f is the frequency in GHz

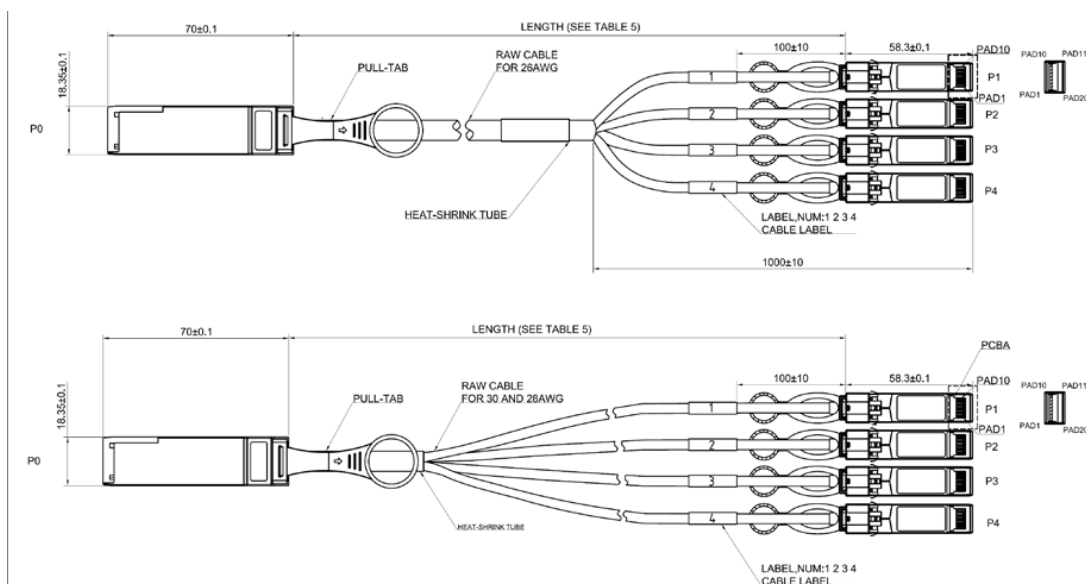
4. SFP+ Module Electrical Characteristics per SFF-8431

Parameters	Min	Typ	Max	Units
SFP+ Input electrical characteristics per module				
Single-ended input voltage tolerance	-0.3		4.0	V
Signaling rate/channel, NRZ			10.5	Gbit/s
SDD11 – differential input return loss	(note 1)			dB
SCD11- reflected differential to common mode input return loss	(note 2)			dB
SFP+ Output electrical characteristics per module				
Single-ended output voltage tolerance	-0.3		4	V
AC common mode output voltage			7.5	mV rms
SDD22 – differential output return loss	(note 1)			
SCC22 – Common-mode output return loss	(note 3)			dB

Notes:

1. SDD11/SDD22 differential return loss is measured at TP1 and TP4 as: $\{-12+2*\text{SQRT}(f) @ 0.01 \text{ to } 4.1\text{GHz} < -6.3 + 13 * \log_{10}(f/5.5), \text{ with } f \text{ in GHz ; } @4.1 \text{ to } 11.1\text{GHz}\}$
2. SCD11 measured at TP1 $> 10 \text{ dB } \{ 10\text{Mhz to } 11.1\text{GHz}\}$
3. SCC22 – Common-mode output return loss at TP4 is defined as: $\{ 7-1.6f 0.01 < f < 2.5, 3 2.5 < f < 11.1 \}$ f is the frequency in GHz

5. Mechanical Diagram



Note: External physical characteristics are subject to variation. This may include, but is not limited to, external case designs, pull tab colors and/or shapes, removal latch styles or colors, and label sizes and placement. These variations do not affect the function or characteristics of the transceivers.

6. Ordering Information

SAMPLE: QSFP40-BO-XX Approved Networks: QSFP40-BO-A U.S. Critical: QSFP40-BO-US Champion ONE: QSFP40-BO-C1			
	XX= -A	XX= -US	XX= -C1

OEM	Part Numbers	Length	OEM	Part Numbers	Length
Amphenol	610640000-XX	0.5m	Amphenol	610640001-XX	1m
Amphenol	610640008-XX	1.5m	Amphenol	610640002-XX	2m
Amphenol	610640007-XX	2.5m	Amphenol	610640003-XX	3m
Amphenol	610640004-XX	4m	Amphenol	610640005-XX	5m
Arista	CAB-Q-S-0.5M-XX	0.5m	Arista	CAB-Q-S-1M-XX	1m
Arista	CAB-Q-S-1.5M-XX	1.5m	Arista	CAB-Q-S-2M-XX	2m
Arista	CAB-Q-S-2.5M-XX	2.5m	Arista	CAB-Q-S-3M-XX	3m
Arista	CAB-Q-S-4M-XX	4m	Arista	CAB-Q-S-5M-XX	5m
Cisco	QSFP-4SFP10G-CU50CM-XX	0.5 m	Brocade	40G-QSFP-4SFP-C-0105-XX	0.5m
Cisco	QSFP-4SFP10G-CU1M-XX	1m	Brocade	40G-QSFP-4SFP-C-0101-XX	1m
Cisco	QSFP-4SFP10G-CU1.5M-XX	1.5m	Brocade	NA-1.5M-40G-QSFP-4SFP-C-0101-XX	1.5m
Cisco	QSFP-4SFP10G-CU2M-XX	2m	Brocade	40G-QSFP-4SFP-C-0201-XX	2m
Cisco	QSFP-4SFP10G-CU2.5M-XX	2.5m	Brocade	NA-2.5M-40G-QSFP-4SFP-C-0201-XX	2.5m
Cisco	QSFP-4SFP10G-CU3M-XX	3m	Brocade	40G-QSFP-4SFP-C-0301-XX	3m
Cisco	QSFP-4SFP10G-CU4M-XX	4m	Brocade	NA-4M-40G-QSFP-4SFP-C-0301-XX	4m
Cisco	QSFP-4SFP10G-CU5M-XX	5m	Brocade	40G-QSFP-4SFP-C-0501-XX	5m
Dell	462-3638-XX	0.5m	Dell	DAC-QSFP-4SFP-10G-0.5M-XX	0.5m
Dell	331-8149 -XX	1m	Dell	DAC-QSFP-4SFP-10G-1M-XX	1m
Dell	NA-1.5M-331-8149-XX	1.5m	Dell	DAC-QSFP-4SFP-10G-1.5M-XX	1.5m
Dell	NA-2M-331-8149-XX	2m	Dell	DAC-QSFP-4SFP-10G-2M-XX	2m
Dell	NA-2.5M-331-8149-XX	2.5m	Dell	DAC-QSFP-4SFP-10G-2.5M-XX	2.5m
Dell	331-8151-XX	3m	Dell	DAC-QSFP-4SFP-10G-3M-XX	3m
Dell	NA-4M-331-8149-XX	4m	Dell	DAC-QSFP-4SFP-10G-4M-XX	4m
Dell	462-3633-XX	5m	Dell	DAC-QSFP-4SFP-10G-5M-XX	5m
Edgecore	ET6402-10DAC-50CM-XX	0.5m	Edgecore	ET6402-10DAC-1M-XX	1m
Edgecore	ET6402-10DAC-1.5M-XX	1.5m	Edgecore	ET6402-10DAC-2M-XX	2m
Edgecore	ET6402-10DAC-2.5M-XX	2.5m	Edgecore	ET6402-10DAC-3M-XX	3m
Edgecore	ET6402-10DAC-4M-XX	4m	Edgecore	ET6402-10DAC-5M-XX	5m
Extreme	10202-50CM-XX	0.5m	Extreme	10202-XX	1m
Extreme	10202-1.5M-XX	1.5m	Extreme	10203-XX	2m
Extreme	10203-2.5M-XX	2.5m	Extreme	10321-XX	3m

Extreme	10321-4M-XX	4m	Extreme	10322-XX	5m
HPE	NA-50CM-JG330A-XX	0.5m	HPE	JG329A-XX	1m
HPE	NA-1.5M-JG330A-XX	1.5m	HPE	NA-2M-JG330A-XX	2m
HPE	NA-2.5M-JG330A-XX	2.5m	HPE	JG330A-XX	3m
HPE	NA-4M-JG330A-XX	4m	HPE	JG331A-XX	5m
Intel	X4DACBL50-XX	0.5m	Intel	X4DACBL1-XX	1m
Intel	X4DACBL1.5-XX	1.5m	Intel	X4DACBL2-XX	2m
Intel	X4DACBL2.5M-XX	2.5m	Intel	X4DACBL3-XX	3m
Intel	X4DACBL4-XX	4m	Intel	X4DACBL5-XX	5m
Juniper	QFX-QSFP-DACBO-0.5M-XX	0.5m	Juniper	QFX-QSFP-DACBO-1M-XX	1m
Juniper	QFX-QSFP-DACBO-1.5M-XX	1.5m	Juniper	QFX-QSFP-DACBO-2M-XX	2m
Juniper	QFX-QSFP-DACBO-2.5M-XX	2.5m	Juniper	QFX-QSFP-DACBO-3M-XX	3m
Juniper	QFX-QSFP-DACBO-4M-XX	4m	Juniper	QFX-QSFP-DACBO-5M-XX	5m
Mellanox	MC2609130-050-XX	0.5m	Mellanox	MC2609130-001-XX	1m
Mellanox	MC2609130-001.5-XX	1.5m	Mellanox	MC2609130-002-XX	2m
Mellanox	MC2609130-002.5-XX	2.5m	Mellanox	MC2609130-003-XX	3m
Mellanox	NA-4M-MC2609130-003-XX	4m	Mellanox	MC2609125-005-XX	5m
Molex	747641051-XX	0.5m	Molex	747641101-XX	1m
Molex	747641101.5M-XX	1.5m	Molex	747641201-XX	2m
Molex	747641202.5M-XX	2.5m	Molex	747641301-XX	3m
Molex	NA-4M-747641301-XX	4m	Molex	NA-5M-747641301-XX	5m
MSA	XX-Q40S10-P-50CM	0.5m	MSA	XX-Q40S10-P-1M	1m
MSA	XX-Q40S10-P-1.5M	1.5m	MSA	XX-Q40S10-P-2M	2m
MSA	XX-Q40S10-P-2.5M	2.5m	MSA	XX-Q40S10-P-3M	3m
MSA	XX-Q40S10-P-4M	4m	MSA	XX-Q40S10-P-5M	5m
Siemon	SFPPQSFP30-00.5-XX	0.5m	Siemon	SFPPQSFP30-01-XX	1m
Siemon	SFPPQSFP30-01.5-XX	1.5m	Siemon	SFPPQSFP30-02-XX	2m
Siemon	SFPPQSFP30-02.5-XX	2.5m	Siemon	SFPPQSFP30-03-XX	3m
Siemon	NA-4M-SFPPQSFP30-03-XX	4m	Siemon	SFPPQSFP30-05-XX	5m

7. Contact Information

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