

400G QSFP-DD Active Optical Cable

FEATURES

- Eight-channel full duplex active optical cable
- Up to 53.125 Gbps data rate per channel by PAM 4 modulation
- Low power consumption: < 8 W per cable end
- Single 3.3 V power supply
- Maximum link length of 70m on OM3 or 100m on OM4
- Management interface compliant with CMIS 4.0
- Hot pluggable QSFP-DD form factor
- Commercial operating case temperature range: 0 to 70°C
- RoHS compliant



APPLICATION

- 400G Ethernet

PRODUCT SELECTION

Parameter	Length (m)
2368652-1	1
2368652-2	2
2368652-3	3
2368652-4	5
2368652-5	10
2368652-6	15
2368652-7	20
2368652-8	30

Note: For availability of additional cable lengths, please contact TE.

1. ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Min	Max	Unit
Power Supply Voltage	Vcc	-0.5	3.6	V
Storage Temperature	Tst	-40	85	°C
Case Operating Temperature	Top	0	70	°C
Relative Humidity (non-condensing)	RH	0	85	%

2. RECOMMENDED OPERATING CONDITIONS

Parameter	Symbol	Min	Typ	Max	Unit	Note
Power Supply Voltage	VCC	3.135	3.3	3.465	V	
Power Supply Current	ICC	-	-	2.56	A	per cable end
Power Dissipation	P	-	-	8	W	per cable end
Bit Rate	BR	-	26.5625	-	Gbd	each channel

3. GENERAL PRODUCT CHARACTERISTICS

Parameter	Value	Notes
Module Form Factor	QSFP-DD	
Number of Lanes	8 Tx and 8 Rx	
Maximum Aggregate Data Rate	425 Gbps	
Maximum Data Rate per Lane	26.5625 Gbd	
Bit Error Ratio, Pre-FEC	2.4×10^{-4}	Tested with PRBS31
Standard Cable Lengths	1, 2, 3, 5, 10, 15, 20, 30	Other lengths may be available upon request
Electrical Interface and Pin-out	76-pin edge connector	Pin-out as defined by QSFP-DD MSA Hardware Specification
Standard Optical Cable Type	Multimode round fiber cable, OFNR and Low Smoke Zero Halogen (LSZH)	OFNP rated cable may be available upon request
Maximum Power Consumption per Cable End	8 W	
Management Interface	Serial, I2C-based, 400kHz maximum frequency	As defined by CMIS 4.0

4. ELECTRICAL CHARACTERISTICS

Low speed electrical specifications are compliant with QSFP-DD MSA Hardware Specification.

High speed electrical specifications are compliant with QSFP-DD MSA Hardware Specification and IEEE802.3bs Annex 120E over operating case temperature 0 to 70°C and VCC 3.3 ± 5% Volts.

Parameter	Min	Max	Unit	Note
Module Electrical Input				
Differential pk-pk input voltage tolerance	900	-	mV	1
Differential input return loss	IEEE802.3bm Equation (83E-5)		dB	
Differential-to-common-mode input return loss	IEEE802.3bm Equation (83E-6)		dB	
Differential termination mismatch	-	10	%	
Module stressed input test	IEEE802.3bs 120E.3.4.1			2
Single-ended voltage tolerance range				
DC common-mode voltage	-350	2850	mV	3
Module Electrical Output				
AC common-mode output voltage (RMS)	-	17.5	mV	
Differential peak-to-peak output voltage	-	900	mV	
Near-end ESMW (Eye symmetry mask width)	0.265	-	UI	
Near-end Eye height, differential	70	-	mV	
Far-end ESMW (Eye symmetry mask width)	0.2		UI	
Far-end Eye height, differential	30		mV	
Far-end pre-cursor ISI ratio	-4.5	2.5	%	
Differential output return loss	IEEE802.3bm Equation (83E-2)		dB	
Common-to-differential-mode output return loss	IEEE802.3bm Equation (83E-3)		dB	
Differential termination mismatch		10	10%	
Transition time (20% to 80%)	9.5		ps	
DC common-mode voltage	-350	2850	mV	3
Notes:				
1. The pattern is PRBS31Q or scrambled idle				
2. Meets specified BER				
3. DC common-mode voltage generated by the host. Specification includes effects of ground offset voltage				

5. PIN ASSIGNMENT

Pin assignment is compliant with QSFP-DD MSA Hardware Specification.

6. MEMORY MAP

The memory map is compatible with CMIS 4.0, and customization can be supported.

7. MECHANICAL SPECIFICATIONS

The mechanical design is compatible with the QSFP-DD Type 2 Specification.

Unit: mm

