WTQD400-SR4-100C

QSFPDD 400G SR4 100m DDM / Hot-pluggable QSFP-DD form factor

Part Number WTQD400-SR4-100C	Data Rate 425.0	Wavelength 850



1. Product Overview

Features

- Hot-pluggable QSFP-DD form factor
- Maximum link length of 100m on OM4 fiber with FEC
- +3.3V single power supply
- Power dissipation < 8W
- Operating case temp Commercial: 0°C to +70 °C
- Single MPO-12 APC connector
- RoHS compliant
- Compliant with IEEE 802.3bs standard: 400GAUI-8 electrical interface

Applications

- Application case 1, 400G SR4, 1 of 400G per port point to point connections
- Application case 2, 2x200G SR2, 2 of 200G per channel breakout connections
- Application case 3, 4x100G SR, 4 of 100G per channel breakout connections
- Order Information
- Note:
- 1. 100m for OM4 fiber, 60m for OM3 fiber, with FEC ;
- 2. Case Temperature
- . Absolute Maximum Ratings
- II. Recommended Operating Conditions
- Note: 1. FEC provided by host system
- : 2. FEC required on host system to support maximum distance
- III.Electrical Characteristics

2. Ordering Information

Part No.	Bit Rate (Gbps)	Laser (nm)	Distance note1	Fiber Type	DDMI	Connector	Tempnote2
WTQD400-SR4-100C	425.0	850	100m	MMF	YES	MPO 1x12 APC	0℃~+70℃

3. Absolute Maximum Ratings

Parameter	Symbol	Min.	Typical	Max.	Unit	Notes
Supply Voltage	Vcc3	-0.5	-	+3.6	V	
Storage Temperature	Ts	-40	-	+85	°C	
Operating Humidity	RH	+5	-	+85	%	No condensation
Control Input Voltage	VI	-0.3	-	VCC+0.5	V	

4. Recommended Operating Conditions

Parameter	Symbol	Min.	Typical	Max.	Unit	Notes
Operating Case Temperature	TC	0	-	+70	°C	
Power Supply Voltage	Vcc	3.135	3.3	3.465	V	
Power Dissipation	Pd	-	-	8	W	
Supply Current	Icc	-	-	2550	mA	
Pre-FEC Bit Error Ratio	-	-	-	2.4x10-4	-	
Post-FEC Bit Error Ratio	-	-	-	1x10-12	-	1
Link Distance (OM4)	-	2	-	100	m	2
Link Distance (OM3)	-	2	-	60	m	2

5. Recommended Operating Conditions

Parameter	Symbol	Min.	Max.	Unit	Notes
Temperature monitor absolute error	DMI_Temp	degC	-5	5	1
Supply voltage monitor absolute error	DMI _VCC	V	-0.1	0.1	2
Channel RX power monitor absolute error	DMI_RX_Ch	dB	-3	3	3
Channel Bias current monitor	DMI_Ibias_Ch	mA	-10%	10%	
Channel TX power monitor absolute error	DMI_TX_Ch	dB	-3	3	3

6. Electrical Characteristics

Parameter	Symbol	Unit	Min	Typ	Max	Notes
Transmitter	Transmitter	Transmitter	Transmitter	Transmitter	Transmitter	Transmitter
Differential pk-pk input Voltage tolerance	-	mV	900	-	-	
Differential termination mismatch	-	%	-	-	10	
Single-ended voltage tolerance range	-	V	-0.4	-	3.3	
DC common mode Voltage	-	mV	-350	-	2850	
Receiver	Receiver	Receiver	Receiver	Receiver	Receiver	Receiver
AC common-mode output Voltage (RMS)	-	mV	-	-	17.5	

Parameter	Symbol	Unit	Min	Typ	Max	Notes
Differential output Voltage	-	mV	-	-	900	
Near-end Eye height, differential	-	mV	70	-	-	
Far-end Eye height, differential	-	mV	30	-	-	
Far end pre-cursor ISI ratio	-	%	-4.5	-	2.5	
Differential Termination Mismatch	-	%	-	-	10	
Transition Time (min, 20% to 80%)	-	ps	9.5	-	-	
DC common mode Voltage	-	mV	-350	-	2850	

7. Electrical Characteristics

Parameter	Symbol	Unit	Min	Typ	Max	Notes
Transmitter	Transmitter	Transmitter	Transmitter	Transmitter	Transmitter	Transmitter
Signaling Rate per Lane	SR	GBd	53.125 ± 100 ppm	53.125 ± 100 ppm	53.125 ± 100 ppm	
Modulation format	-	-	PAM4	PAM4	PAM4	
Center wavelength	CW	nm	844	-	863	
RMS Spectral Width	SW	nm	-	-	0.6	1
Average Launch Power per Lane	AOP	dBm	-4.6	-	4.0	
Outer Optical Modulation Amplitude (OMAouter), each lane (min) For max(TECQ,TDECQ)≤1.8dB For 1.8<max(TECQ,TDECQ)≤4.4dB	TxOMA	dBm	-2.6, -4.4+max (TECQ,TDECQ)	-	3.5	
Transmitter and Dispersion Eye Closure for PAM4 (TDECQ), each lane	TDECQ	dB	-	-	4.4	
Overshoot/undershoot	-	%	-	-	29	
Transimitter power excursion,each lane	-	dB	-	-	2.3	
Transition Time	Tt	ps	-	-	17	
Average Launch Power of OFF Transmitter, each lane	TOFF	dBm	-	-	-30	
Extinction Ratio, each lane	ER	dB	2.5	-	-	
Encircled flux	-	%	≥86% at 19 μm ≤30% at 4.5 μm	≥86% at 19 μm ≤30% at 4.5 μm	≥86% at 19 μm ≤30% at 4.5 μm	2
Receiver	Receiver	Receiver	Receiver	Receiver	Receiver	Receiver
Signaling Rate per Lane	SR	GBd	53.125 ± 100 ppm	53.125 ± 100 ppm	53.125 ± 100 ppm	
Modulation format	-	-	PAM4	PAM4	PAM4	
Wavelength	W	nm	842	-	948	
Damage Threshold, average optical power, each lane	DT	dBm	5	-	-	3

Parameter	Symbol	Unit	Min	Typ	Max	Notes
Average Receive Power, each lane	RXPx	dBm	-6.4	-	4	4
Receive Power (OMA) per Lane	RxOMA	dBm	-	-	3.5	
Receiver sensitivity (OMAouter) (max) for TECQ≤1.8 dB for 1.8 ＜TECQ≤4.4 dB	RxSen	dBm	-	-	-4.6 -6.4+TECQ	5
LOS Assert	LOSA	dBm	-15	-	-	
LOS De-assert	LOSD	dBm	-	-	-9.2	
LOS Hysteresis	LOSH	dB	0.5	-	-	
OMAouter of each aggressor lane	-	dBm	-	3.5	-	

8. Pin Descriptions

Pin #	Logic	Symbol	Definition	Pin #	Logic	Symbol	Definition
1		GND	Ground	39		GND	Ground
2	CML-I	Tx2n	Transmitter Inverted Data Input	40	CML-I	Tx6n	Transmitter Inverted Data Input
3	CML-I	Tx2p	Transmitter Non-inverted Data Input	41	CML-I	Tx6p	Transmitter Non-inverted Data Input
4		GND	Ground	42		GND	Ground
5	CML-I	Tx4n	Transmitter Inverted Data Input	43	CML-I	Tx8n	Transmitter Inverted Data Input
6	CML-I	Tx4p	Transmitter Non-inverted Data Input	44	CML-I	Tx8p	Transmitter Non-inverted Data Input
7		GND	Ground	45		GND	Ground
8	LVTTL-I	ModSelL	Module Select	46		Reserved	
9	LVTTL-I	ResetL	Module Reset	47		VS1	Module Vendor Specific 1
10		VccRx	+3.3V Power Supply Receiver	48		VccRx1	3.3V Power Supply
11	LVCMOS-I/O	SCL	2-wire serial interface clock	49		VS2	Module Vendor Specific 2
12	LVCMOS-I/O	SDA	2-wire serial interface data	50		VS3	Module Vendor Specific 3
13		GND	Ground	51		GND	Ground
14	CML-O	Rx3p	Receiver Non-inverted Data Output	52	CML-O	Rx7p	Receiver Non-inverted Data Output
15	CML-O	Rx3n	Receiver Inverted Data Output	53	CML-O	Rx7n	Receiver Inverted Data Output
16		GND	Ground	54		GND	Ground
17	CML-O	Rx1p	Receiver Non-inverted Data Output	55	CML-O	Rx5p	Receiver Non-inverted Data Output
18	CML-O	Rx1n	Receiver Inverted Data Output	56	CML-O	Rx5n	Receiver Inverted Data Output

Pin #	Logic	Symbol	Definition	Pin #	Logic	Symbol	Definition
19		GND	Ground	57		GND	Ground
20		GND	Ground	58		GND	Ground
21	CML-O	Rx2n	Receiver Inverted Data Output	59	CML-O	Rx6n	Receiver Inverted Data Output
22	CML-O	Rx2p	Receiver Non-inverted Data Output	60	CML-O	Rx6p	Receiver Non-inverted Data Output
23		GND	Ground	61		GND	Ground
24	CML-O	Rx4n	Receiver Inverted Data Output	62	CML-O	Rx8n	Receiver Inverted Data Output
25	CML-O	Rx4p	Receiver Non-inverted Data Output	63	CML-O	Rx8p	Receiver Non-inverted Data Output
26		GND	Ground	64		GND	Ground
27	LVTTL-O	ModPrsL	Module Present	65		NC	Not connected
28	LVTTL-O	IntL	Interrupt	66		Reserved	
29		VccTx	+3.3V Power Supply Transmitter	67		VccTx1	3.3V Power Supply
30		Vcc1	+3.3V Power Supply	68		Vcc2	3.3V Power Supply
31	LVTTL-I	InitMode	Initialization mode	69		Reserved	
32		GND	Ground	70		GND	Ground
33	CML-I	Tx3p	Transmitter Non-inverted Data Input	71	CML-I	Tx7p	Transmitter Non-inverted Data Input
34	CML-I	Tx3n	Transmitter Inverted Data Input	72	CML-I	Tx7n	Transmitter Inverted Data Input
35		GND	Ground	73		GND	Ground
36	CML-I	Tx1p	Transmitter Non-inverted Data Input	74	CML-I	Tx5p	Transmitter Non-inverted Data Input
37	CML-I	Tx1n	Transmitter Inverted Data Input	75	CML-I	Tx5n	Transmitter Inverted Data Input
38		GND	Ground	76		GND	Ground

9. Revision History

Version	Initiated	Reviewed	Revision	Release Date
A0	Lynn	Luke	New Release	2023-9-17

10. Recommended Host Interface Circuit

Figure 3, Figure 4 and Figure 5 show examples of QSFP-DD host PCB schematics with connections to CDR and control ICs. An 8 wide electrical/optical interface is shown. Note alternate electrical/optical interfaces are supported using optical multiplexing (WDM) or electrical multiplexing.

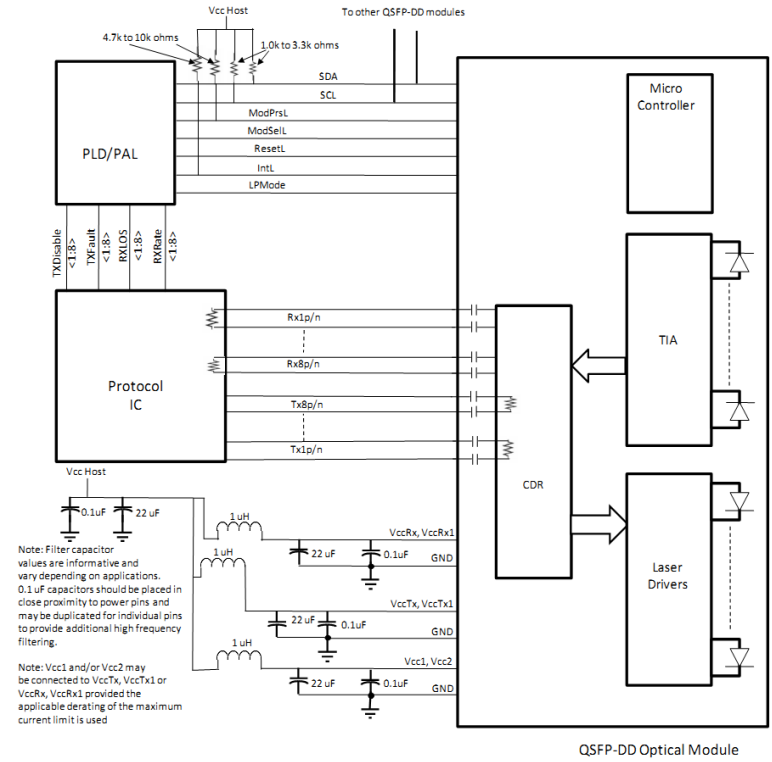
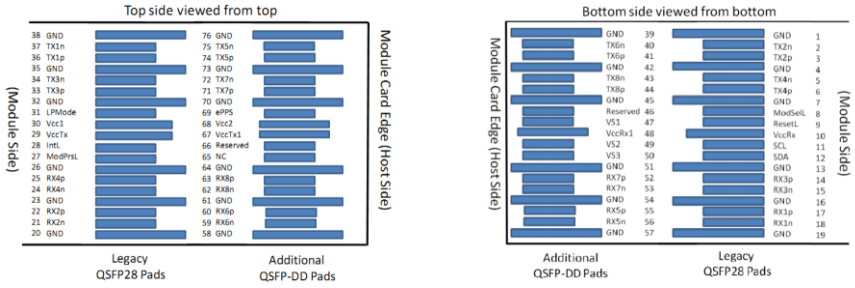
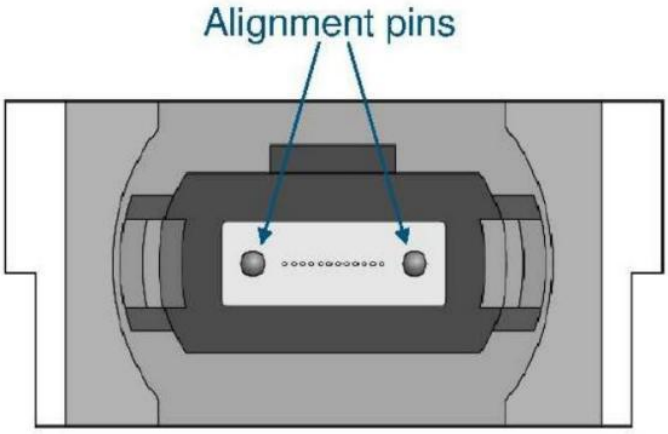


Figure 3: Example QSFP-DD Host Board Schematic For Optical Modules

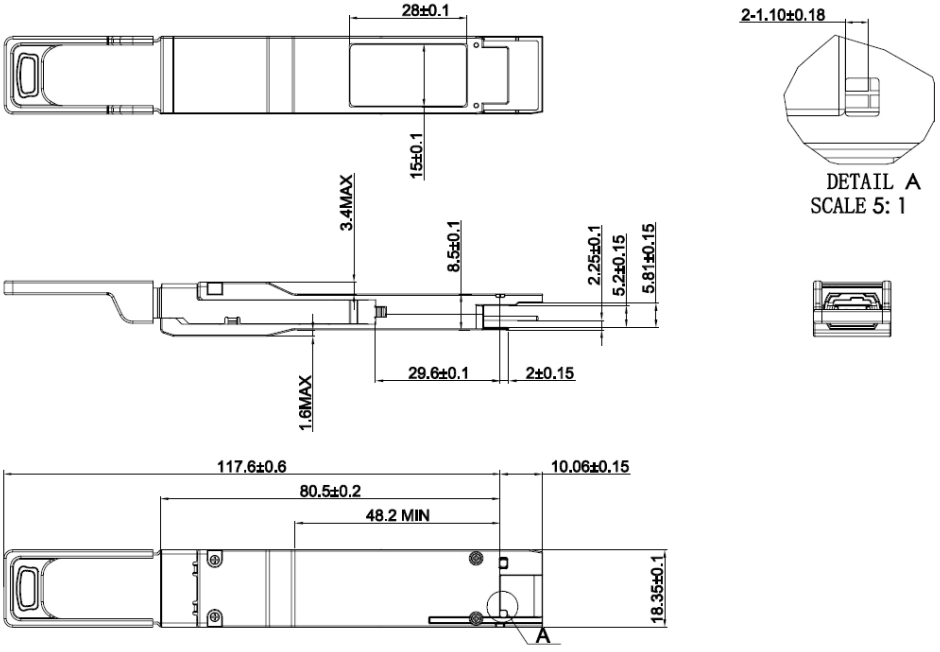
11. Pin Assignment



12. Optical Lane Assignment



13. Mechanical Specifications



14. Revision History

Version	Date	Description	Prepared by
V6	2025	Unified WincoTek datasheet format	WincoTek
V6.1	2026-10-23	Engineering and format review	WincoTek