WTOS800-2DR4-500C

OSFP 800Gb/s 2xDR4 500m Transceiver / PRODUCT FEATURES

Part Number
WTOS800-2DR4-500C



1. Product Overview

Features

- Hot-pluggable OSFP form factor
- EML transmitter and PIN PD receiver
- Support 850Gb/s aggregate bit rate
- Support both Ethernet and InfiniBand NDR
- Compliant with IEEE 802.3cu-2021:
- 8x100GBASE-DR optical interface
- Compliant with IEEE 802.3ck-2022:
- 8x100GAUI-1 C2M electrical interface
- Compliant with InfiniBand Trade Association (IBTA) Specification 1.6
- InfiniBand NDR electrical and optical interface
- Compliant with OSFP MSA Specification Rev 5.0 Type 2 housing with Dual MPO-12/APC receptacle
- Compliant with CMIS Rev 5.0

Applications

- InfiniBand NDR
- 8 x 100GbE breakout application

2. Ordering Information

Part No.	Description
WTOS800-2DR4-500C	OSFP 800Gb/s 2xDR4 500m Transceiver, 0 to 70 ºC

3. Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Unit	Notes
Storage Temperature	TS	-40	85	ºC	
Supply Voltage	VCC	-0.5	3.6	V	
Relative Humidity (non-condensing)	RH	5	95	%	
Data Input Voltage Differential	IVDIP-VDINI	-	1	V	
Control Input Voltage	VI	-0.3	VCC+0.5	V	
Control Output Current	IO	-20	20	mA	

4. Recommended Operating Conditions

Parameter	Symbol	Min.	Typical	Max.	Unit	Notes
Operating Case Temperature	TOPR	0	-	70	ºC	1
Power Supply Voltage	VCC	3.135	3.3	3.465	V	
Instantaneous peak current at hot plug	ICC_IP	-	-	6600	mA	
Sustained peak current at hot plug	ICC_SP	-	-	5494.5	mA	
Maximum Power Dissipation	PD	-	-	16.5	W	
Maximum Power Dissipation, Low Power Mode	PDLP	-	-	2	W	
Signalling Speed per Lane	DRL	-	53.125	-	GBd	
Control Input Voltage High	VIH	VCC*0.7	-	VCC+0.3	V	
Control Input Voltage Low	VIL	-0.3	-	VCC*0.3	V	
Two Wire Serial Interface Clock Rate	-	-	-	400	kHz	
Power Supply Noise 1 kHz - 1 MHz (p-p)	-	-	-	66	mVpp	
Operating Distance	-	2	-	500	m	

5. Recommended Operating Conditions

Parameter	Symbol	Min.	Typical	Max.	Unit	Notes
Transmitter	Transmitter	Transmitter	Transmitter	Transmitter	Transmitter	Transmitter
Wavelength	λC	1304.5	1311	1317.5	nm	
Side Mode Suppression Ratio	SMSR	30	-	-	dB	
Average Launch Power, each lane	AOPL	-2.9	-	4.0	dBm	1
Outer Optical Modulation Amplitude (OMAouter),each Lane	TOMA	-0.8	-	4.2	dBm	
Launch power in OMAouter minus TDECQ, each lane for extinction ratio >= 5 dB for extinction ratio < 5 dB	TOMA-TDECQ	-2.2 -1.9	-	-	dBm	
Transmitter and Dispersion Eye Closure for PAM4 (TDECQ), each lane	TDECQ	-	-	3.4	dB	

Parameter	Symbol	Min.	Typical	Max.	Unit	Notes
TDECQ – 10log10(Ceq), each lane	Ceq	-	-	3.4	dB	
Average Launch Power of OFF Transmitter, each lane	TOFF	-	-	-15	dBm	
Extinction Ratio	ER	3.5	-	-	dB	
Transmitter transition time	Tr			17	ps	
RIN15.5OMA	RIN	-	-	-136	dB/Hz	
Optical return loss tolerance	ORL	-	-	15.5	dB	
Transmitter Reflectance	TR	-	-	-26	dB	2
Receiver	Receiver	Receiver	Receiver	Receiver	Receiver	Receiver
Wavelength	λC0	1304.5	1311	1317.5	nm	
Damage Threshold, each Lane	AOPD	5	-	-	dBm	
Average Receive Power, each Lane	AOPR	-5.9	-	4	dBm	
Receive Power (OMAouter), each Lane	OMAR	-	-	4.2	dBm	
Receiver Reflectance	RR	-	-	-26	dB	
Receiver Sensitivity (OMAouter), each Lane	SOMA	-	-	Max(–3.9, SECQ – 5.3)	dBm	3
Stressed Receiver Sensitivity (OMAouter), each Lane	SRS	-	-	-1.9	dBm	4
Conditions of stressed receiver sensitivity test						
Stressed eye closure for PAM4 (SECQ), lane under test	SECQ	-	3.4	-	dB	
SECQ – 10log10(Ceq), lane under test	Ceq	-	-	3.4	dB	

6. Optical Parameters

Parameter	Symbol	Min.	Typical	Max.	Unit	Notes
Transmitter (Module Input, TP1)	Transmitter (Module Input, TP1)	Transmitter (Module Input, TP1)	Transmitter (Module Input, TP1)	Transmitter (Module Input, TP1)	Transmitter (Module Input, TP1)	Transmitter (Module Input, TP1)
Differential pk-pk input Voltage tolerance (TP1a)	-	750	-	-	mV	

Parameter	Symbol	Min.	Typical	Max.	Unit	Notes
Peak-to-peak AC common-mode voltage tolerance Low-frequency, VCMLF Full-band, VCMFB	-	-	-	32 80	mV	
Differential-mode to common-mode return loss	RLcd	802.3ck 120G-2	802.3ck 120G-2	802.3ck 120G-2	dB	
Effective return loss	ERL	8.5	-	-	dB	
Differential termination mismatch	-	-	-	10	%	
Single-ended voltage tolerance range	-	-0.4	-	3.3	V	
DC common-mode voltage tolerance	-	-0.35	-	2.85	V	
Receiver (Module Output, TP4)	Receiver (Module Output, TP4)	Receiver (Module Output, TP4)	Receiver (Module Output, TP4)	Receiver (Module Output, TP4)	Receiver (Module Output, TP4)	Receiver (Module Output, TP4)
Peak-to-peak AC common-mode voltage Low-frequency, VCMLF Full-band, VCMFB	-	-	-	32 80	mV	
Differential peak-to-peak output voltage Short mode Long mode	-	-	-	600 845	mV	
Eye height	EH	15	-	-	mV	
Vertical eye closure	VEC	-	-	12	dB	
Common-mode to differential-mode return loss	RLDc		802.3ck 120G-1		dB	
Effective return loss	ERL	8.5	-	-	dB	
Differential termination mismatch	-	-	-	10	%	
Transition time	-	8.5	-	-	ps	
DC common-mode voltage tolerance	-	-0.35	-	2.85	V	

7. Digital Diagnostics

Parameter	Range	Accuracy	Unit	Calibration
Temperature	0 to 70	±3	ºC	Internal
Voltage	3.135 to 3.465	±3%	V	Internal
Tx Bias Current (Each Lane)	0 to 100	10%	mA	Internal
Tx Output Power (Each Lane)	-2.9 to +4	±3	dB	Internal
Rx Receive Power (Each Lane)	-5.9 to +4	±3	dB	Internal

8. Digital Diagnostics

Version No.	Date	Description
1.0	May 17, 2024	Specification datasheet

9. Pin Descriptions

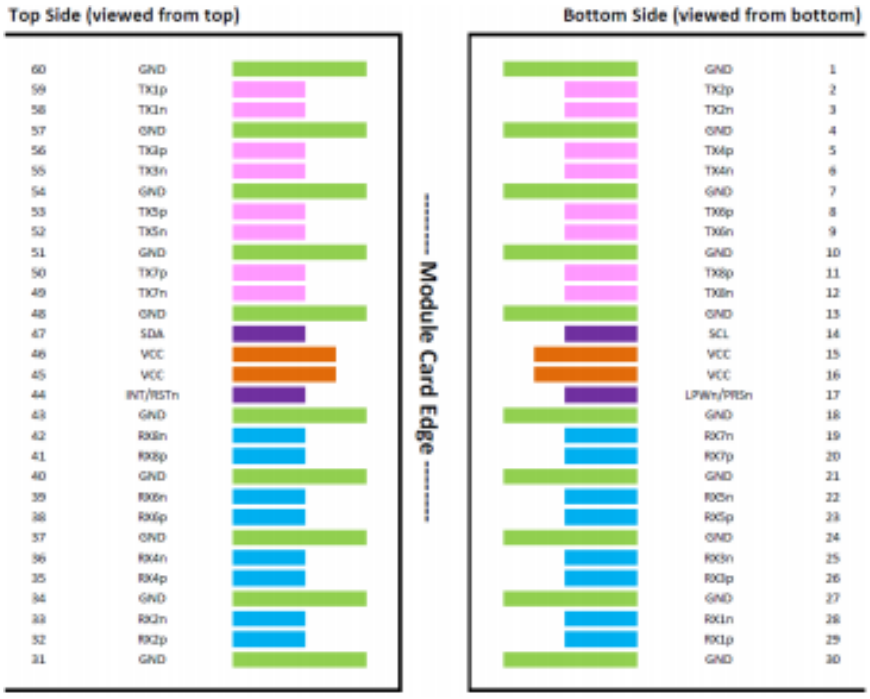
Pin #	Symbol	Description	Logic	Pin #	Symbol	Description	Logic
1	GND	Ground		31	GND	Ground	
2	TX2p	Transmitter Data Non-Inverted	CML-I	32	RX2p	Receiver Data Non-Inverted	CML-O
3	TX2n	Transmitter Data Inverted	CML-I	33	RX2n	Receiver Data Inverted	CML-O
4	GND	Ground		34	GND	Ground	
5	TX4p	Transmitter Data Non-Inverted	CML-I	35	RX4p	Receiver Data Non-Inverted	CML-O
6	TX4n	Transmitter Data Inverted	CML-I	36	RX4n	Receiver Data Inverted	CML-O
7	GND	Ground		37	GND	Ground	
8	TX6p	Transmitter Data Non-Inverted	CML-I	38	RX6p	Receiver Data Non-Inverted	CML-O
9	TX6n	Transmitter Data Inverted	CML-I	39	RX6n	Receiver Data Inverted	CML-O
10	GND	Ground		40	GND	Ground	
11	TX8p	Transmitter Data Non-Inverted	CML-I	41	RX8p	Receiver Data Non-Inverted	CML-O
12	TX8n	Transmitter Data Inverted	CML-I	42	RX8n	Receiver Data Inverted	CML-O
13	GND	Ground		43	GND	Ground	
14	SCL	2-wire Serial interface clock	LVCMOS- I/O	44	INT/RST n	Module Interrupt / Module Reset	Multi- Level
15	VCC	+3.3V Power		45	VCC	+3.3V Power	
16	VCC	+3.3V Power		46	VCC	+3.3V Power	
17	LPWn/P RSn	Low-Power Mode / Module Present	Multi-Level	47	SDA	2-wire Serial interface data	LVCM OS-I/O
18	GND	Ground		48	GND	Ground	
19	RX7n	Receiver Data Inverted	CML-O	49	TX7n	Transmitter Data Inverted	CML-I
20	RX7p	Receiver Data Non-Inverted	CML-O	50	TX7p	Transmitter Data Non-Inverted	CML-I
21	GND	Ground		51	GND	Ground	
22	RX5n	Receiver Data Inverted		52	TX5n	Transmitter Data Inverted	CML-I
23	RX5p	Receiver Data Non-Inverted	CML-O	53	TX5p	Transmitter Data Non-Inverted	CML-I
24	GND	Ground		54	GND	Ground	
25	RX3n	Receiver Data Inverted	CML-O	55	TX3n	Transmitter Data Inverted	CML-I
26	RX3p	Receiver Data Non-Inverted	CML-O	56	TX3p	Transmitter Data Non-Inverted	CML-I

Pin #	Symbol	Description	Logic	Pin #	Symbol	Description	Logic
27	GND	Ground		57	GND	Ground	
28	RX1n	Receiver Data Inverted	CML-O	58	TX1n	Transmitter Data Inverted	CML-I
29	RX1p	Receiver Data Non-Inverted	CML-O	59	TX1p	Transmitter Data Non-Inverted	CML-I
30	GND	Ground		60	GND	Ground	

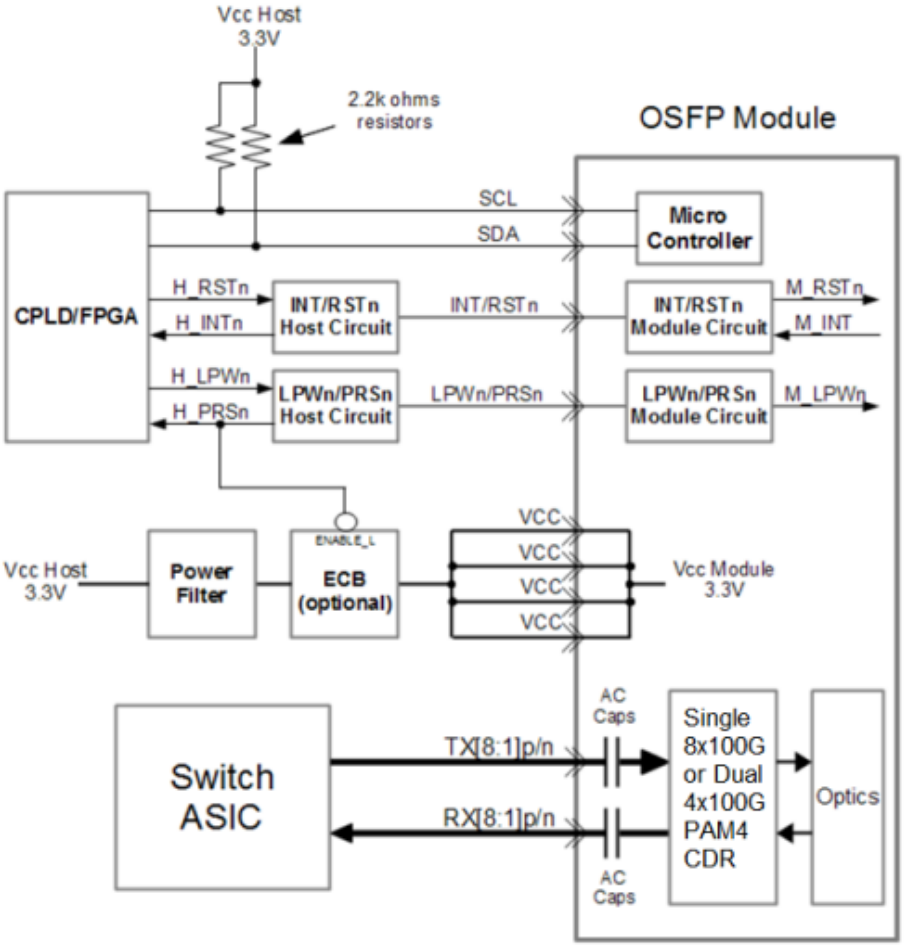
10. Management Interface Timing

Parameter	Symbol	Min.	Max.	Unit	Condition
Module output SCL and SDA	VOL	0	0.4	V	
Module Input SCL and SDA	VIL	-0.3	VCC*0.3	V	
Module Input SCL and SDA	VIH	VCC*0.7	VCC+0.5	V	
INT/RSTn	Comply with OSFP MSA 5.0 Table 13-4	Comply with OSFP MSA 5.0 Table 13-4	Comply with OSFP MSA 5.0 Table 13-4	Comply with OSFP MSA 5.0 Table 13-4	

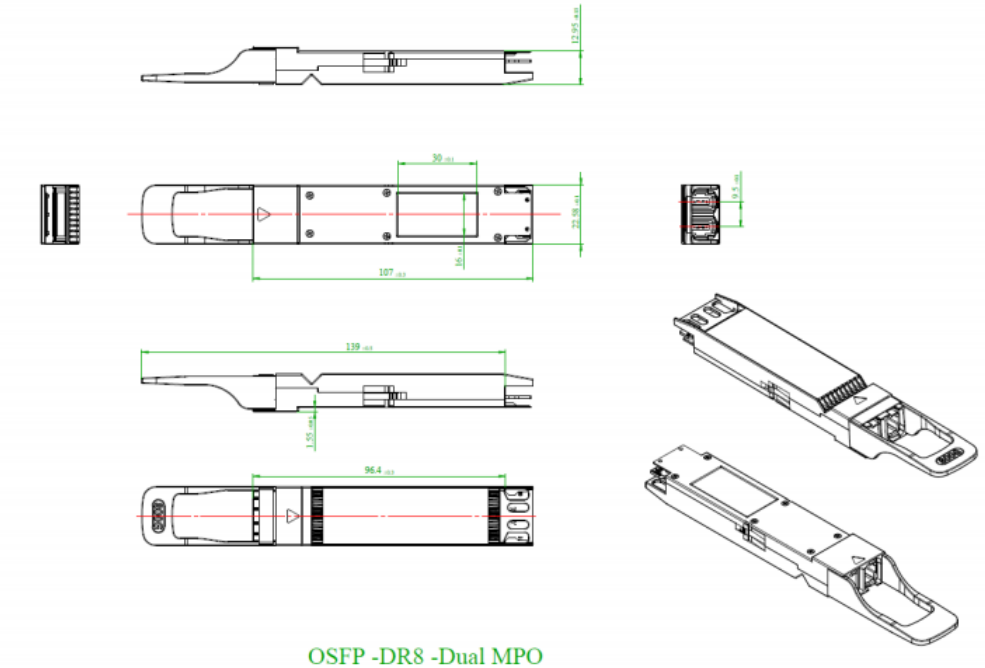
11. Pin Assignment



12. Recommended Interface Circuit



13. Mechanical Specifications



OSFP -DR8 -Dual MPO

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