WTS10Z8DTx

10G C-Band DWDM SFP+ Transceiver
SMF 80km LC

Part Number **WTS10Z8DTC**	**Wavelength** **DWDM-ITU ch.**	**Reach 80km SMF**
Temperature **0°C~+70°C**		



1. Product Overview

WTS10Z8DTx transceivers support the 2-wire serial communication protocol as defined in the SFP+ MSA.

The standard SFP serial ID provides access to identification information that describes the transceiver's capabilities, standard interfaces, manufacturer, and other information.

Additionally, the transceivers provide a unique enhanced digital diagnostic monitoring interface, which allows real-time access to device operating parameters such as transceiver temperature, laser bias current, transmitted optical power, received optical power and transceiver supply voltage. It also defines a sophisticated system of alarm and warning flags, which alerts end-users when particular operating parameters are outside of a factory set normal range.

The optical transmitter utilizes ILMZ chip to provide a high performance, low cost 10Gbps transceiver. Channel tuning is supported on the ITU-T 50 GHz grid across full C band with ±2.5 GHz stability. Wavelength and frequency tuning modes are supported in accordance with SFF-8690.

The receive path comprises an APD receiver with limiting amplifier. Mechanical dimensions, connecters and footprint conform to SFP+ MSA. The module size is 56.5 mm L x 13.9 mm W x 11.85 mm H with 20-pin electrical connector.

Features

- 1550nm ITU-T C-band 50 GHz spacing tunable DWDM SFP+ transceiver
- Data rate 9.95-11.3Gbps
- Supports 80 km link distances
- Negative chirp transmitter with ILMZ (integrated laser Mach Zehnder) TOSA
- APD receiver with limiting amplifier
- Positive power supply lines: 3.3 V
- Operating case temperature range: up to industrial temperature
- Compact size (56.5 mm L x 13.9 mm W x 11.85 mm H)
- Compliance
- SFF-8431 – Enhanced 8.5 and 10 Gigabit Small Form Factor Pluggable Module (SFP+)
- SFF-8432 - Improved Pluggable Form factor
- SFF-8690 - Tunable SFP+ Memory Map for ITU Frequencies

Applications

- 10G Ethernet
- Data center and Fiber channel

2. Ordering Information

Part Number	Data Rate (Gb/s)	Wavelength(nm)	Transmission Distance(km)	Temperature (oC) (Operating Case)
WTS10Z8DTC	10.3	DWDM-ITU ch.	80km SMF	0°C~+70°C
WTS10Z8DTE	10.3	DWDM-ITU ch.	80km SMF	-5°C~+85°C
WTS10Z8DTI	10.3	DWDM-ITU ch.	80km SMF	-40°C~+85°C

3. Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Unit	Notes
Supply voltage	VCCT	0	+3.6	V	+3.3 V
Supply voltage	VCCR	0	+3.6	V	+3.3 V
Optical receiver input	PIMAX		+5	dBm	Average
Storage temperature	TSTR	-40	+85	°C	
ESD SFI pins	ESD1		1	kV	HBM
ESD except for SFI pins	ESD2		2	kV	HBM

4. Recommended Operating Conditions

Parameter	Symbol	Minimum	Typical	Maximum	Unit	Remarks
Supply voltage	VCCT	3.135	3.300	3.465	V	+3.3 V
Supply voltage	VCCR	3.135	3.300	3.465	V	+3.3 V
Operating case temperature	TC	0		+70	°C	C-temp
Operating case temperature	TC	-5		+85	°C	E-temp
Operating case temperature	TC	-40		+85	°C	I-temp

5. Optical Parameters

Parameter	Symbol	Minimum	Typical	Maximum	Unit	Remarks
Transmitter	Transmitter	Transmitter	Transmitter	Transmitter	Transmitter	Transmitter
Data rate		9.95		11.3	Gbps	NRZ
Frequency range		191.35		196.10	THz	50 GHz grid, 96 channels
Frequency accuracy		-2.5		+2.5	GHz	EOL
Optical transmit power	Po	-1.0		+3.0	dBm	EOL
Shuttered output power				-35	dBm	
Optical power stability	ΔPo	-1.0		+1.0	dB	All channels, SOL
Side mode suppression	SMSR	35			dB	±2.5 nm, modulated
Spectral width	Δλ		0.3	0.5	nm	-20 dB, modulated
Extinction ratio	ER	9.0			dB	Filtered, 10.709 Gbps
Eye diagram compliance		GR-253, ITU-T G.691	GR-253, ITU-T G.691	GR-253, ITU-T G.691	GR-253, ITU-T G.691	
Mask margin		10			%	
Tuning speed				10	s	Warmed-up, from any CH to any other CH

Parameter	Symbol	Minimum	Typical	Maximum	Unit	Remarks
Receiver	Receiver	Receiver	Receiver	Receiver	Receiver	Receiver
Data rate		9.95		11.3	Gbps	NRZ
Input operating wavelength		1525		1575	nm	
Minimum receiver sensitivity (back-to-back)	Prmin			-24	dBm	10.709 Gbps, 1E-12, OSNR>35 dB
Minimum receiver Sensitivity (-300~+1400 ps/nm)	Prmin	0		-21	dBm	10.709 Gbps, 1E-12, OSNR>35 dB
Maximum input power (overload)	Pro	-7			dBm	10.709 Gbps, 1E-12, OSNR>35 dB
Receiver Reflectance	RL			-27	dB	
LOS assert				-27	dBm	Note 1
LOS de-assert				-25	dBm	Note 1
LOS hysteresis		0.5		4.0	dB	Note 1
LOS assert time				100	us	
LOS de-assert time				100	us	

6. Electrical Characteristics

Parameter @ B''	Symbol	Minimum	Maximum	Units
Eye mask	X1		0.12	UI
Eye mask	X2		0.33	UI
Eye mask	Y1	95		mV
Eye mask	Y2		350	mV

7. Electrical Characteristics

Parameter @ C'	Symbol	Minimum	Maximum	Units
Eye Mask	X1		0.35	UI
Eye Mask	Y1	150		mV
Eye Mask	Y2	-	425	mV

8. Pin Descriptions

Pin	Logic	Symbol	Power Sequence Order	Name/Description	Notes
1		VeeT	1st	Module Transmitter Ground	1
2	LVTTL-O	TX_Fault	3rd	Module Transmitter Fault	2

Pin	Logic	Symbol	Power Sequence Order	Name/Description	Notes
3	LVTTL-I	TX_Disable	3rd	Transmitter Disable; Turn off laser output	3
4	LVTTL-I/O	SDA	3rd	2-Wire Serial Interface Data Line	4
5	LVTTL-I/O	SCL	3rd	2-Wire Serial Interface Clock	4
6		Mod_Abs	3rd	Module Absent, connected to VeeT or VeeR in the module	5
7	LVTTL-I	RS0	3rd	NA. 30kohm pull down inside the module	
8	LVTTL-O	RX_LOS	3rd	Receiver Loss of Signal Indicator	2
9	LVTTL-I	RS1	3rd	NA. 30kohm pull down inside the module	
10		VeeR	1st	Module Receiver Ground	1
11		VeeR	1st	Module Receiver Ground	1
12	CML-O	RD-	3rd	Receiver Inverted Data Output (SFI)	
13	CML-O	RD+	3rd	Receiver Non-Inverted Data Output (SFI)	
14		VeeR	1st	Module Receiver Ground	1
15		VccR	2nd	Module Receiver 3.3V Supply	6
16		VccT	2nd	Module Transmitter 3.3V Supply	6
17		VeeT	1st	Module Transmitter Ground	1
18	CML-I	TD+	3rd	Transmitter Non-Inverted Data Output (SFI)	
19	CML-I	TD-	3rd	Transmitter Inverted Data Output (SFI)	
20		VeeT	1st	Module Transmitter Ground	1

9. Additional Specifications

Parameter	Symbol	Minimum	Maximum	Unit	Conditions
Host VCCRange	Host_VCC	3.14	3.47	V	with ± 5% variation
TX_Fault, RX_LOS	VOL	0.0	0.40	V	Note 1
TX_Fault, RX_LOS	VOH	Host_VCC – 0.5	Host_VCC + 0.3	V	Note 1
TX_Disable	VIL	-0.3	0.8	V	Pulled up with 10k ohms to VccT in the module.
TX_Disable	VIH	2.0	VCCT + 0.3	V	Pulled up with 10k ohms to VccT in the module.

10. Additional Specifications

Parameter	Symbol	Min.	Max.	Unit	Conditions
Host VCC range	Host_VCC	3.14	3.47	V	
SCL and SDA	VOL	0.0	0.40	V	Rpullup1 pulled to Host_VCC. IOL(max) = 3 mA
SCL and SDA	VOH	Host_VCC – 0.5	Host_VCC + 0.3	V	Rpullup1 pulled to Host_VCC
SCL and SDA	VIL	-0.3	VCCT *0.3T	V	
SCL and SDA	VIH	VCCT * 0.7	VCCT + 0.5	V	
Input current on SCL and SDA pins	IL	-10	10	µA	
Capacitance on SCL and SDA pins	Ci2		14	pF	
Total bus capacitance for SCL and SDA	Cb3		100	pF	At 400 kHz, Rp (max) = 3.0 kΩ At 100 kHz, Rp (max) = 8.0 kΩ
Total bus capacitance for SCL and SDA	Cb3		290	pF	At 400 kHz, Rp (max) = 1.1 kΩ At 100 kHz, Rp (max) = 2.75 kΩ

11. Additional Specifications

Parameter	Symbol	Minimum	Maximum	Unit	Conditions
Clock frequency	fSCL	100	400	kHz	
Clock pulse width low	tLOW	1.3		µs	
Clock pulse width high	tHIGH	0.6		µs	
Time bus free before new transaction can start	tBUF	20		µs	Between STOP and START
START hold time	tHD, STA	0.6		µs	
START set-up time	tSU, STA	0.6		µs	
Data in hold time	tHD, DAT	0		µs	
Data in set-up time	tSU, DAT	0.1		µs	
Input rise time (100 kHz)	tR,100		1000	ns	Note 1
Input rise time (400 kHz)	tR,400		300	ns	Note 1
Input fall time (100 kHz)	tF,100		300	ns	Note 1
Input fall time (400 kHz)	tF,400		300	ns	Note 1
STOP set-ip time	tSU, ST O	0.6		µs	

Parameter	Symbol	Minimum	Maximum	Unit	Conditions
Serial interface clock holdoff “clock stretching”	T_clock _hold		500	µs	Maximum time the SFP+ may hold the SCL line low before continuing R or W operation
Complete single or sequential write	tWR		40	ms	Complete (up to) 8 Byte write
Endurance (write cycles)		10 k		Cycles	@ Max operating temperature

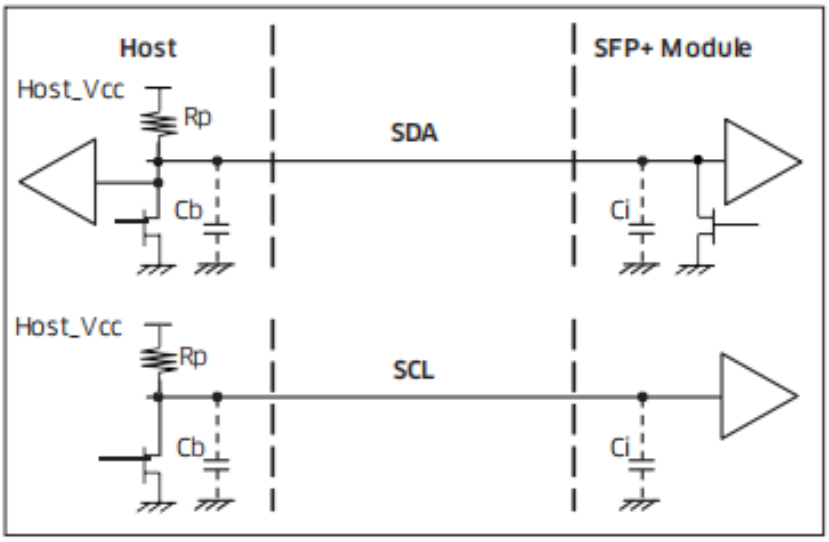
12. Additional Specifications

Parameter	Symbol	Min imum	Maximum	Unit	Conditions
TX_disable assert time	t_off		100	µs	Rising edge of TX_Disable to fall of output signal below 10% of nominal.
TX_disable negate time	T_on		2	ms	Falling edge of TX_Disable to rise of output signal above 90% of nominal. This only applies in normal operation, not during start up or fault recovery.
Time to initialize 2-wire interface	t_2w_ start_up		300	ms	From power on or hot plug after the supply meeting Table 9.
Time to initialize cooled module and time to power up a cooled module to Power Level II	t_start_ up_c ooled		90	sec	From power supplies meeting Table 9 or hot plug, or Tx disable negated during power up or Tx_Fault recovery, until cooled power level II part during fault recovery is fully operational. Also, from stop bit low-to-high SDA transition enabling Power Level II until cooled module is fully operational
Tx_fault assert for cooled module	Tx_fault_ on_cooled		1	ms	From occurence of fault to assertion of TX_Fault
Tx_fault_reset	t_reset	10		µs	Time TX_disable must be held high to reset TX_Fault.
RX_LOS assert delay	t_los_on		100	µs	From occurrence of loss of signal to assertion of RX_LOS.
RX_LOS negate delay	t_los_off		100	µs	From occurrence of presence of signal to negation of RX_LOS.

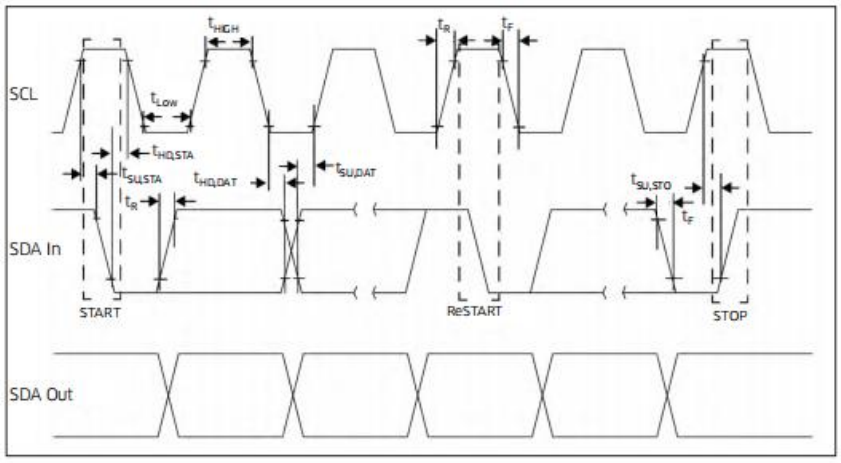
13. Additional Specifications

Parameter	Symbol	Minimum	Maximum	Unit	Remarks
Icc instantaneous peak current			600	mA	Note 1, 2
Icc sustained peak current			500	mA	Note 1, 2

14. Technical Figure 1



15. Technical Figure 2



16. Revision History

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