WTS10E4Dx

10G SFP+ Transceiver DWDM C-Band SMF 40km LC

Part Number WTS10E4DC	**Wavelength Refer to wavelength selection**	**Reach 40km SMF**
Temperature 0~70 commercial		



1. Product Overview

WTS10E4Dx SFP+ transceiver is designed for use in 10-Gigabit Ethernet links up to 40km over single mode fiber. The module consists of DWDM EML Laser, PIN and Preamplifier in a high-integrated optical sub-assembly. Digital diagnostics functions are available via a 2-wire serial interface, as specified in SFF8472.This module is designed for single mode fiber and operates at a nominal wavelength of 100GHz ITU Grid, C Band DWDM wavelength.

WTS10E4Dx 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 SFP+ MSA defines a 256-byte memory map in EEPROM that is accessible over a 2-wire serial interface at the 8-bit address 1010000X (A0h). The digital diagnostic monitoring interface makes use of the 8-bit address 1010001X (A2h), so the originally defined serial ID memory map remains unchanged.

Features

- Up to 11.3Gb/s data links
- DWDM EML transmitter and PIN receiver
- 100 GHz ITU channel spacing with integrated wavelength locker
- Up to 40km on 9/125μm SMF
- Hot-pluggable SFP+ footprint
- Duplex LC/UPC type pluggable optical interface
- Metal enclosure, for lower EMI
- RoHS compliant and lead-free
- Support Digital Diagnostic Monitoring interface
- Single +3.3V power supply
- Maximum power consumption 1.8W
- Compliant with SFF+MSA and SFF8472

Applications

- 10GBASE-ZR/ZW & 10G Ethernet
- SDH STM64
- SONET OC192
- Other Optical Links

2. Ordering Information

Part Number	Data Rate (Gb/s)	Wavelength(nm)	Transmission Distance(km)	Temperature (oC) (Operating Case)
WTS10E4DC	10.3125	Refer to wavelength selection	40km SMF	0~70 commercial
WTS10E4DE	10.3125	Refer to wavelength selection	40km SMF	-10~80 extended
WTS10E4DI	10.3125	Refer to wavelength selection	40km SMF	-40~85 Industrial

3. Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Unit	Notes
Storage Temperature	TS	-40	85	oC	
Power Supply Voltage	VCC	-0.5	3.6	V	
Relative Humidity (non-condensation)	RH	5	95	%	
Damage Threshold	THd	5		dBm	

4. Recommended Operating Conditions

Parameter	Symbol	Min	Typical	Max	Unit	Notes
Operating Case Temperature	TOP	0		70	oC	commercial
Operating Case Temperature	TOP	-40		85	oC	Industrial
Power Supply Voltage	VCC	3.135	3.3	3.465	V	
Data Rate			10.3125		Gb/s	
Control Input Voltage High		2		Vcc	V	
Control Input Voltage Low		0		0.8	V	
Link Distance (SMF)	D			40	km	9/125um

5. Recommended Operating Conditions

Parameter	Symbol	Min.	Typical	Max	Unit	Notes
Transmitter	Transmitter	Transmitter	Transmitter	Transmitter	Transmitter	Transmitter
Optical Wavelength	λc	λc -0.1		λc +0.1	nm	1
Center Wavelength Spacing			100		GHz	
Optical Spectral Width	Δλ			1	nm	
Side Mode Suppression Ratio	SMSR	30			dB	
Average Optical Power	PAVG	-1		3	dBm	2
Optical Extinction Ratio	ER	6			dB	
Transmitter Dispersion Penalty@1450ps/nm	TDP			3	dB	
Transmitter OFF Output Power	POff			-30	dBm	
Transmitter Eye Mask		Compliant with IEEE802.3ae	Compliant with IEEE802.3ae	Compliant with IEEE802.3ae	Compliant with IEEE802.3ae	
Receiver	Receiver	Receiver	Receiver	Receiver	Receiver	Receiver

Parameter	Symbol	Min.	Typical	Max	Unit	Notes
Center Wavelength	λC	1270		1610	nm	
Receiver Sensitivity (Average Power)	Sen.			-15.8	dBm	3
Input Saturation Power (overload)	Psat	-1			dBm	
LOS Assert	LOSA	-29			dBm	
LOS De-assert	LOSD			-17	dBm	
LOS Hysteresis	LOSH	0.5			dB	

6. Recommended Operating Conditions

Parameter	Symbol	Min.	Max	Unit	Notes
Temperature monitors absolute error	DMI_ Temp	-3	3	degC	Over operating temp
Supply voltage monitor absolute error	DMI _VCC	-0.15	0.15	V	Full operating range
RX power monitor absolute error	DMI_RX	-3	3	dB	
Bias current monitor	DMI_ bias	-10%	10%	mA	
TX power monitor absolute error	DMI_TX	-3	3	dB	

7. Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max	Unit	Notes
Power Consumption	p			1.8	W	
Supply Current	Icc			519	mA	
Transmitter	Transmitter	Transmitter	Transmitter	Transmitter	Transmitter	Transmitter
Single-ended Input Voltage Tolerance	Vcc	-0.3		4.0	V	
AC Common Mode Input Voltage Tolerance (RMS)		15			mV	
Differential Input Voltage Swing	Vin,pp	120		850	mVpp	
Differential Input Impedance	Zin	90	100	110	Ohm	1
Transmit Disable Assert Time				10	us	
Transmit Disable Voltage	Vdis	Vcc-1.3		Vcc	V	
Transmit Enable Voltage	Ven	Vee		Vee +0.8	V	2
Receiver	Receiver	Receiver	Receiver	Receiver	Receiver	Receiver
Differential Output Voltage Swing	Vout,pp	350		850	mVpp	
Differential Output Impedance	Zout	90	100	110	Ohm	3

Parameter	Symbol	Min.	Typ.	Max	Unit	Notes
Data output rise/fall time	Tr/Tf	28			ps	4
LOS Assert Voltage	VlosH	Vcc-1.3		Vcc	V	5
LOS De-assert Voltage	VlosL	Vee		Vee +0.8	V	5
Power Supply Rejection	PSR	100			mVpp	6

8. Pin Descriptions

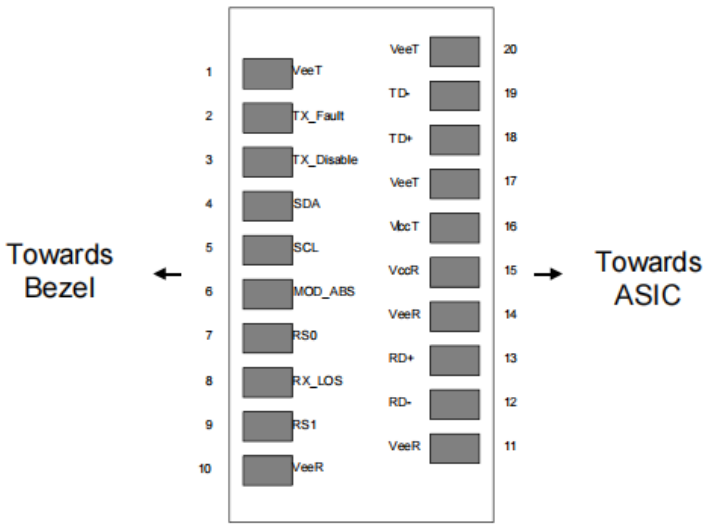
Channel	Wavelength (nm)	Frequency (THZ)	Channel	Wavelength (nm)	Frequency (THZ)
C17	1563.86	191.70	C39	1546.12	193.90
C18	1563.05	191.80	C40	1545.32	194.00
C19	1562.23	191.90	C41	1544.53	194.10
C20	1561.42	192.00	C42	1543.73	194.20
C21	1560.61	192.10	C43	1542.94	194.30
C22	1559.79	192.20	C44	1542.14	194.40
C23	1558.98	192.30	C45	1541.35	194.50
C24	1558.17	192.40	C46	1540.56	194.60
C25	1557.36	192.50	C47	1539.77	194.70
C26	1556.55	192.60	C48	1538.98	194.80
C27	1555.75	192.70	C49	1538.19	194.90
C28	1554.94	192.80	C50	1537.40	195.00
C29	1554.13	192.90	C51	1536.61	195.10
C30	1553.33	193.00	C52	1535.82	195.20
C31	1552.52	193.10	C53	1535.04	195.30
C32	1551.72	193.20	C54	1534.25	195.40
C33	1550.92	193.30	C55	1533.47	195.50
C34	1550.12	193.40	C56	1532.68	195.60
C35	1549.32	193.50	C57	1531.90	195.70
C36	1548.51	193.60	C58	1531.12	195.80
C37	1547.72	193.70	C59	1530.33	195.90
C38	1546.92	193.80	C60	1529.55	196.00
Non-ITU	Peak wavelength between 1528.77nm-1563.86	Peak wavelength between 1528.77nm-1563.86	C61	1528.77	196.10

9. Pin Descriptions

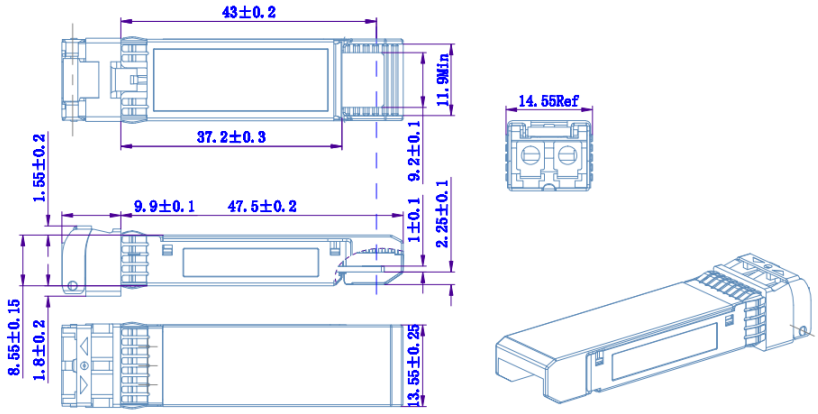
Pin	Symbol	Name/Description	Notes
1	VEET	Transmitter Ground (Common with Receiver Ground)	1
2	TFAULT	Transmitter Fault.	2

Pin	Symbol	Name/Description	Notes
3	TDIS	Transmitter Disable. Laser output disabled on high or open.	3
4	SDA	2-wire Serial Interface Data Line	4
5	SCL	2-wire Serial Interface Clock Line	4
6	MOD_ABS	Module Absent. Grounded within the module	4
7	RS0	Rate Select 0	5
8	LOS	Loss of Signal indication. Logic 0 indicates normal operation.	6
9	RS1	No connection required	
10	VEER	Receiver Ground (Common with Transmitter Ground)	1
11	VEER	Receiver Ground (Common with Transmitter Ground)	1
12	RD-	Receiver Inverted DATA out. AC Coupled	
13	RD+	Receiver Non-inverted DATA out. AC Coupled	
14	VEER	Receiver Ground (Common with Transmitter Ground)	1
15	VCCR	Receiver Power Supply	
16	VCCT	Transmitter Power Supply	
17	VEET	Transmitter Ground (Common with Receiver Ground)	1
18	TD+	Transmitter Non-Inverted DATA in. AC Coupled.	
19	TD-	Transmitter Inverted DATA in. AC Coupled.	
20	VEET	Transmitter Ground (Common with Receiver Ground)	1

10. Technical Figure 1



11. Technical Figure 2



12. Revision History

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