WTS10E4CxN1-CWDM

10G CWDM SFP+ Transceiver ITU-T G.694.2 SMF 40km LC

Part Number WTS10E4CCN1	Reach 40km SMF	Temperature 0~70 Commercial



1. Product Overview

WTS10E4CxN1 SFP+ transceiver is designed for use in 10-Gigabit Ethernet links up to 40km over single mode fiber. The module consists of CWDM 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 SFF-8472.

WTS10E4CxN1 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
- CWDM EML transmitter and PIN receiver
- 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
- Case operating temperature

Applications

- 10GBASE-ER/EW 10G Ethernet
- SDH STM64
- SONET OC192
- 8Gb/s Fibre Channel

2. Ordering Information

Part Number	Data Rate (Gb/s)	Wavelength (nm)	Transmission Distance(km)	Temperature (oC) (Operating Case)
WTS10E4CCN1	10.3125	Refer to wavelength selection	40km SMF	0~70 Commercial
WTS10E4CEN1	10.3125	Refer to wavelength selection	40km SMF	-10~80 Extended
WTS10E4CHN1	10.3125	Refer to wavelength selection	40km SMF	-40~85 Industrial

3. Absolute Maximum Ratings

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

4. Recommended Operating Conditions

Parameter	Symbol	Min	Typical	Max	Unit	Notes
Operating Case Temperature	TOP	0		70	oC	Commercial
Operating Case Temperature	TOP	-10		80	oC	Extended
Operating Case Temperature	TOP	-40		85	oC	Industrial
Power Supply Voltage	VCC	-0.5		3.6	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.	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	

6. Optical Parameters

Parameter	Symbol	Min.	Typical	Max	Unit	Notes
Transmitter	Transmitter	Transmitter	Transmitter	Transmitter	Transmitter	Transmitter

Parameter	Symbol	Min.	Typical	Max	Unit	Notes
Center Wavelength	λ	λ -6.5		λ +6.5	nm	1
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 and Dispersion Penalty	TDP			3.0	dB	
Relative Intensity Noise	RIN			-128	dB/Hz	
Transmitter Eye Mask	Compliant with IEEE802.3ae	Compliant with IEEE802.3ae	Compliant with IEEE802.3ae	Compliant with IEEE802.3ae	Compliant with IEEE802.3ae	
Receiver	Receiver	Receiver	Receiver	Receiver	Receiver	Receiver
Center Wavelength	λ	1270		1610	nm	
Receiver Sensitivity (Average Power)	Sen.			-15.8	dBm	3
Input Saturation Power (overload)	Psat	0.5			dBm	
LOS Assert	LOSA	-30			dBm	
LOS De-assert	LOSD			-17	dBm	
LOS Hysteresis	LOSH	0.5			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	180		1200	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	300		850	mVpp	

Parameter	Symbol	Min.	Typ.	Max	Unit	Notes
Differential Output Impedance	Zout	90	100	110	Ohm	3
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

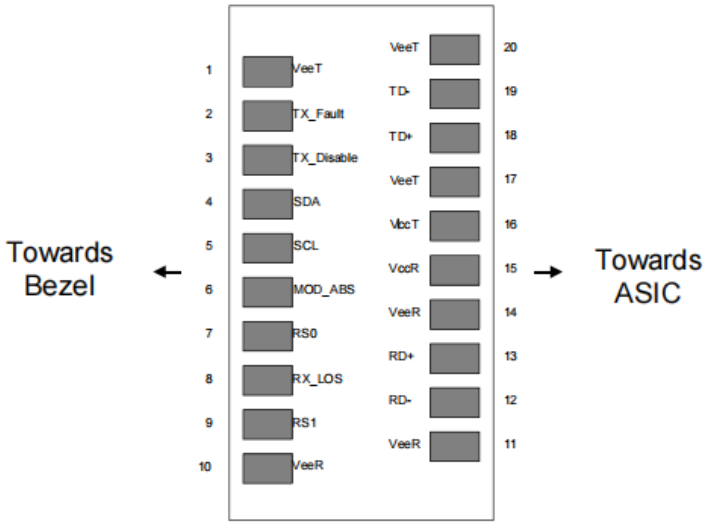
Wavelength	xx	Clasp Color Code	Wavelength	xx	Clasp Color Code
1470 nm	47	Gray	1550 nm	55	Yellow
1490 nm	49	Purple	1570 nm	57	Orange
1510 nm	51	Blue	1590 nm	59	Red
1530 nm	53	Green	1610 nm	61	Brown

9. Pin Descriptions

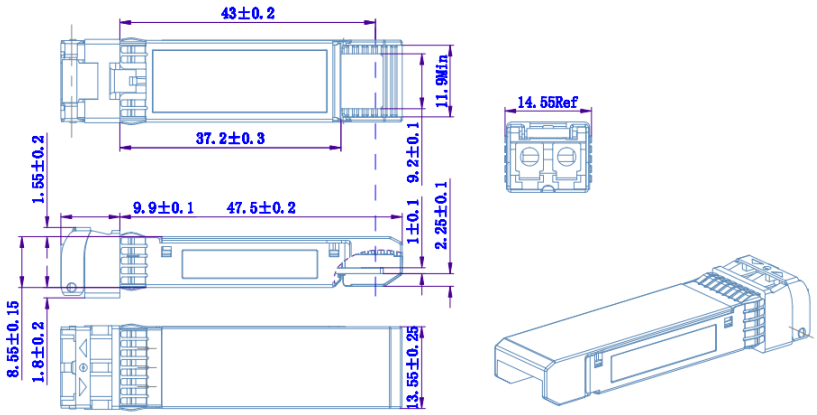
Pin	Symbol	Name/Description	Notes
1	VEET	Transmitter Ground (Common with Receiver Ground)	1
2	TFAULT	Transmitter Fault.	2
3	TDIS	Transmitter Disable. Laser output disabled on high or open.	3
4	SDA	2-wire Serial Interface Data Line	4
5	SCL	2-wire Serial Interface Clock Line	4
6	MOD_ABS	Module Absent. 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	

Pin	Symbol	Name/Description	Notes
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