WTSP-DWxx-10D(I)

SFP28 25Gb/s DWDM 10km Transceivers

Part Number	Temperature
WTSP-DWxx-10D	0°C~+70°C



1. Product Overview

The WTSP-DWxx-10D (I) Transceiver is intended for 10km (APD)reach service from 24.33Gb/s to 25.78Gb/s DWDM D18~D61 single mode high-speed communications equipment where low-cost, extraordinary performance and reliability are essential. It consumes low power, operates base on 3.3V DC power supply and is offered in the industrial temperature range. They are compliant with SFP28 MSA, SFF-8431 and SFF-8432.

The low jitter and low bit error rate optical assembly features a D18~D61 EML laser transmitter and APD receiver. It utilizes internal clock and data recovery (CDR) units on transmitter and the receiver chains for low jitter compliance. The differential AC coupled Tx and Rx data interfaces are CML compatible. The device is Class I laser safety compliant.

xx is the channel number

Features

- Operating data rate up to 25.78Gbps
- Up to 10km (APD) transmission directly
- Up to 80km (APD) transmission distance external dispersion compensation plus EDFA
- DWDM EML Laser and APD receiver
- LC duplex connector
- Hot pluggable 20pin connector
- Low power consumption
- Commercial <2W
- Industrial <2.3W
- Single +3.3V±5% power supply
- Compliant with SFF-8472
- Fully RoHS Compliant

Applications

- Data Center Interconnect
- 100G Ethernet
- Enterprise networking

2. Ordering Information

Part No.	Bit Rate(Gbps)	Laser	Distance	Fiber Type	Temp
WTSP-DWxx-10D	25.78Gbps	DWDM EML	10km	SMF	0°C~+70°C
WTSP-DWxx-10DI	25.78Gbps	DWDM EML	10km	SMF	-40°C~+85°C

3. Absolute Maximum Ratings

Parameter	Symbol	Unit	Min	Max
Storage Temperature Range	Ts	oC	-40	85
Relative Humidity	RH	%	0	95
Maximum Supply Voltage	Vcc	V	-0.5	4.0

4. Recommended Operating Conditions

Parameter	Symbol	Unit	Min	Typ	Max
Power Supply Voltage	Vcc	V	3.14	3.3	3.46
Bit Rate	BR	Gb/s		25.78	
Bit Error Ratio	BER				5*10-5

5. Optical Parameters

Parameter	Symbol	Unit	Min	Typ	Max	Note
Transmitter	Transmitter	Transmitter	Transmitter	Transmitter	Transmitter	Transmitter
Nominal Wavelength	λC	nm	1528.77~1563.05	1528.77~1563.05	1528.77~1563.05	
Center Wavelength Spacing		GHz	50	50	50	
Wavelength Tolerance		nm	-0.04		0.04	
Average Output Power	Pav	dBm	-2		5	
Spectral Width (-20dB)		nm			1	
Extinction Ratio	ER	dB	6			
Side Mode Suppression Ratio	SMSR	dB	30			
Transmitter and Dispersion Penalty	TDP	dB			4	
Average Launch Power of OFF Transmitter	POFF	dBm			-30	
Relative Intensity Noise	RIN	dB/Hz			-128	
Receiver (APD/TIA)	Receiver (APD/TIA)	Receiver (APD/TIA)	Receiver (APD/TIA)	Receiver (APD/TIA)	Receiver (APD/TIA)	Receiver (APD/TIA)
Center Wavelength	λC	nm	1260		1620	
Receiver Sensitivity (OMA)	RSENSE	dBm			-19	1
Receiver Overload (OMA)	Pmax	dBm	-7			
Optical Return Loss		dB			-26	
LOS Assert	LOSA	dBm	-35			
LOS De-Assert LOS	LOSD	dBm			-24	

Parameter	Symbol	Unit	Min	Typ	Max	Note
LOS Hysteresis		dB	0.5			

6. Electrical Characteristics

Parameter	Symbol	Unit	Min	Typ	Max	Note
Supply Voltage	VCC	V	3.14	3.3	3.46	
Power consumption	P	mW			2300	I-temp
Power consumption	P	mW			2000	C-temp
Transmitter	Transmitter	Transmitter	Transmitter	Transmitter	Transmitter	Transmitter
Input Differential Impedance	RIN	Ω		100		
Single-ended Data Input Swing	VIN	mVp-p	90		450	
Transmit Disable Voltage	VDIS	V	2		VCCHOST	
Transmit Enable Voltage	VEN	V	VEE		VEE+0.8	
Transmit Fault Assert Voltage	VFA	V	2		VCCHOST	
Transmit Fault De-Assert Voltage	VFDA	V	VEE		VEE+0.4	
Receiver	Receiver	Receiver	Receiver	Receiver	Receiver	Receiver
Single-ended Data Output Swing	VOD	mVp-p	200		450	
LOS Fault	VLOSFT	V	2		VCCHOST	
LOS Normal	VLOSNR	V	VEE		VEE+0.4	

7. Digital Diagnostics

Parameter	Accuracy	Unit
Internally measured transceiver temperature	+/-3	deg.C
Internally measured transceiver supply voltage	+/-3	%
Measured Tx bias current	+/-10	%
Measured Tx output power	+/-3	dB
Measured Rx received average optical power	+/-3	dB

8. Pin Descriptions

Pin	Symbol	Name	Description
1,17,20	VeeT	Transmitter Signal Ground	Connected to signal ground on the host board.
2	TX Fault	Transmitter Fault Out (OC)	Module transmitter fault output.
3	TX Disable	Transmitter Disable In (LVTTL)	Module transmitter disable control.

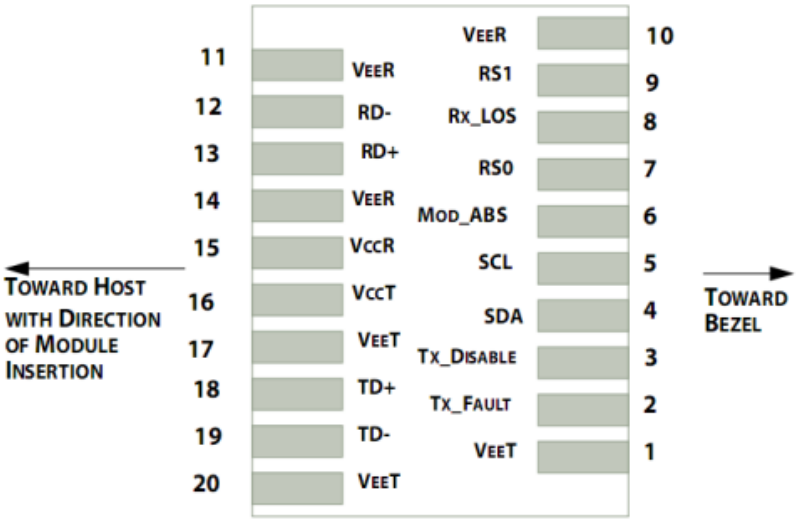
Pin	Symbol	Name	Description
4	SDA	Module Definition Identifiers	Serial ID with SFF 8472 Diagnostics Module Definition pins should be pulled up to Host Vcc with 10 kΩ resistors.
5	SCL	Module Definition Identifiers	Serial ID with SFF 8472 Diagnostics Module Definition pins should be pulled up to Host Vcc with 10 kΩ resistors.
6	MOD-ABS	Module Definition Identifiers	Serial ID with SFF 8472 Diagnostics Module Definition pins should be pulled up to Host Vcc with 10 kΩ resistors.
7	RS0	Receiver Rate Select (LVTTL) Transmitter Rate Select (LVTTL)	Rate select 0(Rx):Low=CDR Bypass; High=CDR Select Rate select 1(Tx):Low=CDR Bypass ; High=CDR Select
9	RS1	Receiver Rate Select (LVTTL) Transmitter Rate Select (LVTTL)	Rate select 0(Rx):Low=CDR Bypass; High=CDR Select Rate select 1(Tx):Low=CDR Bypass ; High=CDR Select
8	LOS	Loss of Signal Out (OC)	Receiver loss of signal.
10,11,14	VeeR	Receiver Signal Ground	Connected to signal ground on the host board.
12	RD-	Receiver Negative DATA Out (CML)	Receiver inverted data output, internally AC coupled and terminated
13	RD+	Receiver Positive DATA Out (CML)	Receiver non-inverted data output, internally AC coupled and terminated.
15	VccR	Receiver Power Supply	Receiver Power 3.3V Supply.
16	VccT	Transmitter Power Supply	Transmitter Power 3.3V Supply.
18	TD+	Transmitter Positive DATA In (CML)	Transmitter non-inverted data input, internally AC coupled and terminated.
19	TD-	Transmitter Negative DATA In (CML)	Transmitter inverted data Input, internally AC coupled and terminated.

9. Additional Specifications

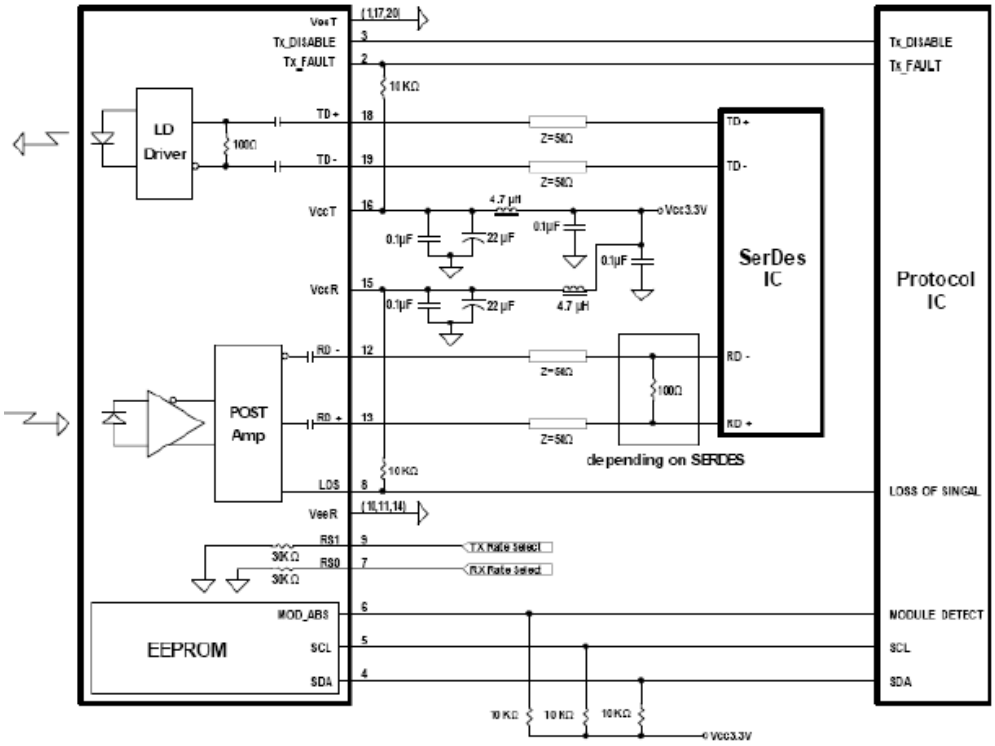
Channel	Wavelength (nm)	Frequency(THZ)	Channel	Wavelength (nm)	Frequency (THZ)
D18	1563.05	191.8	D40	1545.32	194
DH18	1562.64	191.85	DH40	1544.92	194.05
D19	1562.23	191.9	D41	1544.53	194.1
DH19	1561.83	191.95	DH41	1544.13	194.15
D20	1561.42	192	D42	1543.73	194.2
DH20	1561.01	192.05	DH42	1543.33	194.25
D21	1560.61	192.1	D43	1542.94	194.3
DH21	1560.2	192.15	DH43	1542.54	194.35
D22	1559.79	192.2	D44	1542.14	194.4
DH22	1559.39	192.25	DH44	1541.75	194.45

Channel	Wavelength (nm)	Frequency(THZ)	Channel	Wavelength (nm)	Frequency (THZ)
D23	1558.98	192.3	D45	1541.35	194.5
DH23	1558.58	192.35	DH45	1540.95	194.55
D24	1558.17	192.4	D46	1540.56	194.6
DH24	1557.77	192.45	DH46	1540.16	194.65
D25	1557.36	192.5	D47	1539.77	194.7
DH25	1556.96	192.55	DH47	1539.37	194.75
D26	1556.55	192.6	D48	1538.98	194.8
DH26	1556.15	192.65	DH48	1538.58	194.85
D27	1555.75	192.7	D49	1538.19	194.9
DH27	1555.34	192.75	DH49	1537.79	194.95
D28	1554.94	192.8	D50	1537.4	195
DH28	1554.54	192.85	DH50	1537	195.05
D29	1554.13	192.9	D51	1536.61	195.1
DH29	1553.73	192.95	DH51	1536.22	195.15
D30	1553.33	193	D52	1535.82	195.2
DH30	1552.93	193.05	DH52	1535.43	195.25
D31	1552.52	193.1	D53	1535.04	195.3
DH31	1552.12	193.15	DH53	1534.64	195.35
D32	1551.72	193.2	D54	1534.25	195.4
DH32	1551.32	193.25	DH54	1533.86	195.45
D33	1550.92	193.3	D55	1533.47	195.5
DH33	1550.52	193.35	DH55	1533.07	195.55
D34	1550.12	193.4	D56	1532.68	195.6
DH34	1549.72	193.45	DH56	1532.29	195.65
D35	1549.32	193.5	D57	1531.9	195.7
DH35	1548.91	193.55	DH57	1531.51	195.75
D36	1548.51	193.6	D58	1531.12	195.8
DH36	1548.11	193.65	DH58	1530.72	195.85
D37	1547.72	193.7	D59	1530.33	195.9
DH37	1547.32	193.75	DH59	1529.94	195.95
D38	1546.92	193.8	D60	1529.55	196
DH38	1546.52	193.85	DH60	1529.16	196.05
D39	1546.12	193.9	D61	1528.77	196.1
DH39	1545.72	193.95			

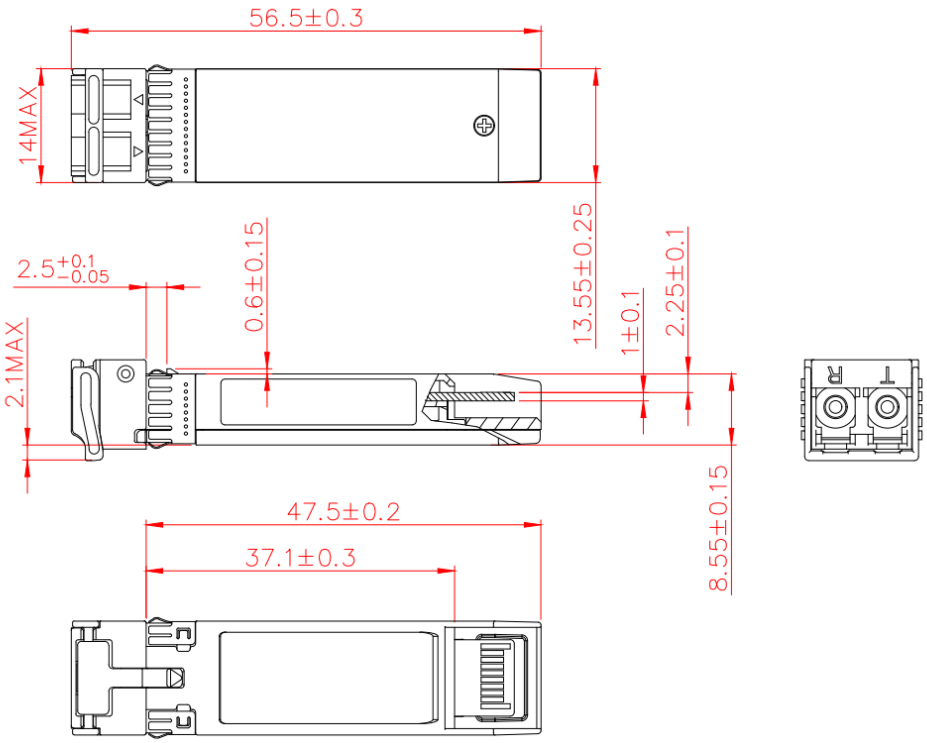
10. Pin Assignment



11. Recommended Interface Circuit



12. Mechanical Specifications



13. Revision History

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