WTSP-B2731(3127)-40D(I)

SFP28 25Gb/s BIDI 40km Transceivers / PRODUCT FEATURES

Part Number	Wavelength	Temperature
WTSP-B2731-40D	1270 Tx/ 1310 Rx	0°C~+70°C



1. Product Overview

WTSP-B2731(3127)-40D(I) Transceiver is intended for 40km reach service from 24.33Gb/s to 25.78Gb/s BI-direction 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 DML laser transmitter and APD/TIA 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.

Features

- Operating data rate up to 25.78Gbps
- Up to 40km transmission distance
- High sensitivity APD photodiode and TIA
- Rate Adaptation
- LC single connector
- Hot pluggable 20pin connector
- Low power consumption < 1.5 W
- Single +3.3V ±5% power supply
- Compliant with SFF-8472
- Fully RoHS Compliant
- Operating temperature range:
- Commercial: 0°C to +70°C

Applications

- 25GE BASE-LR Ethernet
- CPRI Option 10/eCPRI

2. Ordering Information

Part No.	Bit Rate	Laser (nm)	Distance	Fiber Type	Connector	Temp
WTSP-B2731-40D	25.78Gbps	1270 Tx/ 1310 Rx	40km	SMF	LC	0°C~+70°C
WTSP-B3127-40D	25.78Gbps	1310 Tx/ 1270 Rx	40km	SMF	LC	0°C~+70°C
WTSP-B2731-40DI	25.78Gbps	1270 Tx/ 1310 Rx	40km	SMF	LC	-40°C~+85°C
WTSP-B3127-40DI	25.78Gbps	1310 Tx/ 1270 Rx	40km	SMF	LC	-40°C~+85°C

3. Absolute Maximum Ratings

Parameter	Symbol	Min	Type	Max	Unit
Storage Temperature	Ts	-40		85	°C

Parameter	Symbol	Min	Type	Max	Unit
Relative Humidity	RH	0		85	%

4. Recommended Operating Conditions

Parameter	Symbol	Min.	Typ.	Max.	Unit
Case Temperature (Commercial)	Tc	0		70	°C
Case Temperature (Industrial)	Tc	-40		85	°C
Power Supply Voltage	Vcc	3.14	3.3	3.46	V
Bit Rate	BR		25.78		Gbps
Bit Error Ratio	BER			5*10-5	
Max Supported Link Length	L			40	km

5. Recommended Operating Conditions

Parameter	Symbol	Unit	Min	Typ	Max	Note
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	

6. Recommended Operating Conditions

Parameter	Parameter	Symbol	Unit	Min	Typ	Max	Note
Transmitter	Transmitter	Transmitter	Transmitter	Transmitter	Transmitter	Transmitter	Transmitter
Center Wavelength	WTSP-B2731-40D(I)	λ	nm	1260	1270	1280	
Center Wavelength	WTSP-B3127-40D(I)	λ	nm	1300	1310	1320	
Average Output Power	Average Output Power	Pav	dBm	0		6	

Parameter	Parameter	Symbol	Unit	Min	Typ	Max	Note
Spectral Width (-20dB)	Spectral Width (-20dB)		nm			1	
Extinction Ratio	Extinction Ratio	ER	dB	3.5			
Side Mode Suppression Ratio	Side Mode Suppression Ratio	SMSR	dB	30			
Average Launch Power of OFF Transmitter	Average Launch Power of OFF Transmitter	POFF	dBm			-30	
Relative Intensity Noise	Relative Intensity Noise	RIN	dB/Hz			-128	
Receiver	Receiver	Receiver	Receiver	Receiver	Receiver	Receiver	Receiver
Center Wavelength	WTSP-B2731-40D(I)	λC	nm	1300	1310	1320	
Center Wavelength	WTSP-B3127-40D(I)	λC	nm	1260	1270	1280	
Receiver Sensitivity(OMA)	Receiver Sensitivity(OMA)	RSENSE	dBm			-19	1
Receiver Overload (OMA)	Receiver Overload (OMA)	Pmax	dBm	-5			
Receiver Reflectance	Receiver Reflectance		dB			-12	
LOS Assert	LOS Assert	LOSA	dBm	-35			
LOS De-Assert LOS	LOS De-Assert LOS	LOSD	dBm			-21	
LOS Hysteresis	LOS Hysteresis		dB	0.5			

7. 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.
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.

Pin	Symbol	Name	Description
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.

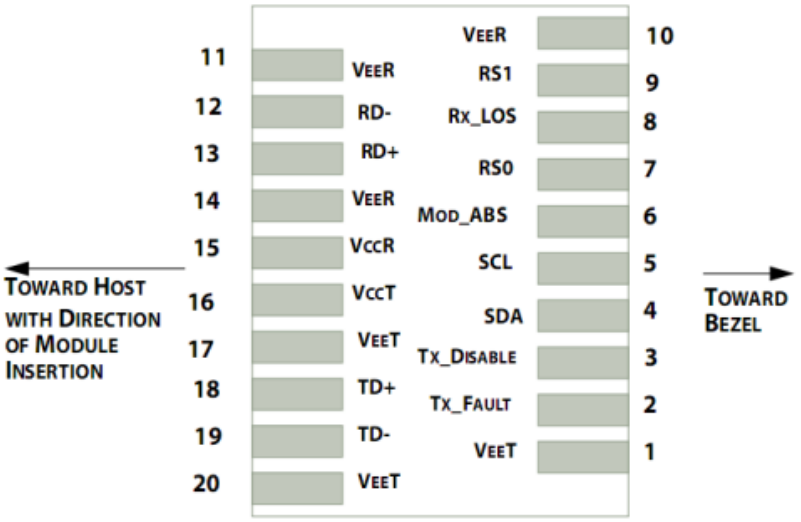
8. Pin Descriptions

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

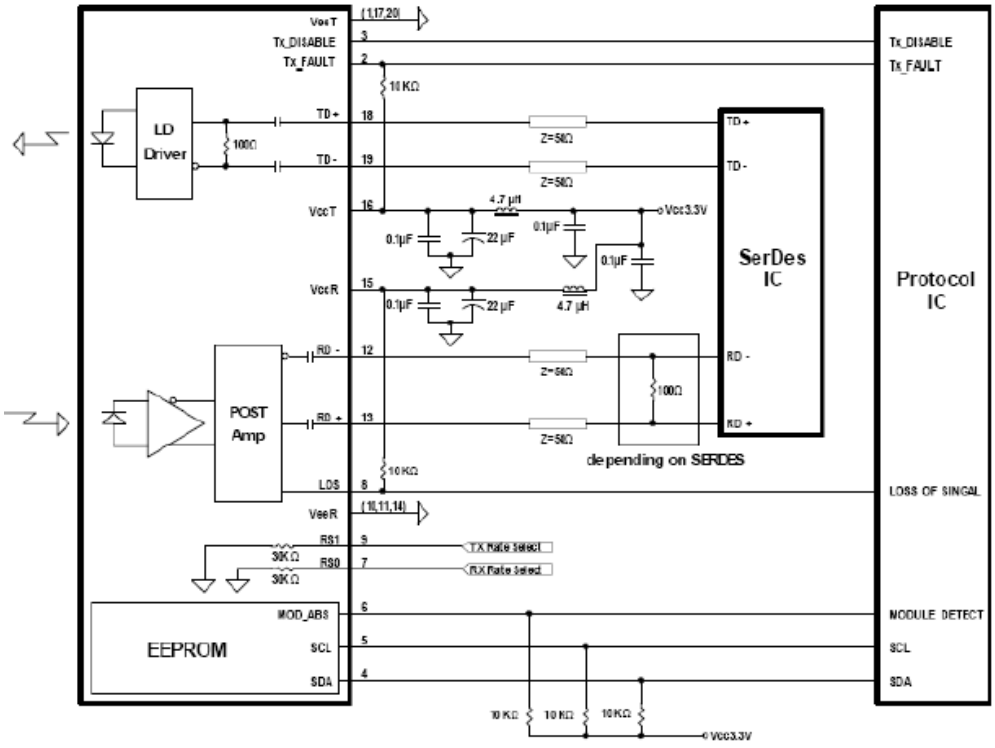
9. Pin Descriptions

Version No.	Date	Description
1.0	Dec.12, 2021	Specification datasheet

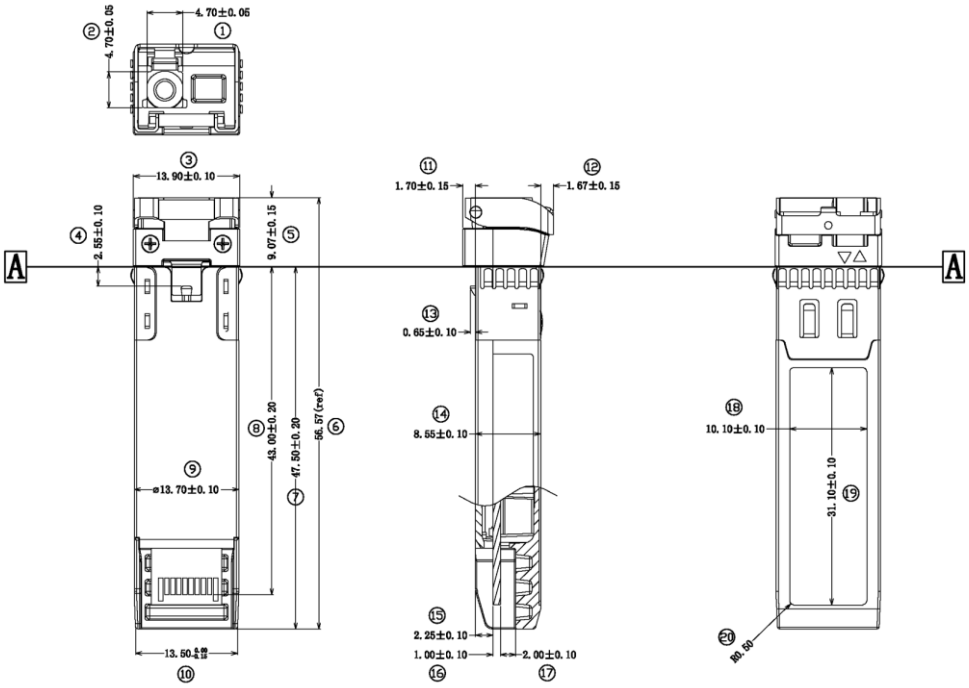
10. Pin Assignment



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