TSSLS-CBDCH3C Optical Transceiver

10G SFP+ BIDI 40km TX1270nm RX1330nm Single-mode Transceiver, With Diagnostic Monitoring

Features

- Up to 11.3Gb/s data links
- 1270nm DFB Transmitter/1330nm Receiver
- Up to 40km on 9/125um SMF
- Hot-pluggable SFP+ footprint
- BIDI LC optical connector
- Single +3.3V power supply
- Power Dissipation < 1.5W
- Compliant with SFF+MSA, SFF-8431 and SFF-8472
- Support Digital Monitoring interface
- Case operating temperature：0 ~ +70°C
- RoHS compliant and lead-free

Applications

- 10GBASE-ER at 10.3125Gbps
- 10GBASE-EW at 9.953Gbps
- OBSAI rates 6.144 Gb/s, 3.072 Gb/s, 1.536 Gb/s, 0.768Gb/s
- CPRI rates 9.830 Gb/s,7.373Gb/s, 6.144 Gb/s, 4.915 Gb/s, 2.458 Gb/s, 1.229 Gb/s, 0.614Gb/s
- Other Optical Links

Product Description

The laser based 10Gigabit SFP+ Transceiver is designed to transmit and receive serial optical data over single mode optical fiber with 40Km.

They are compliant with SFF-8431, SFF-8432, 10GFC Rev 4.0, and 10GBASE-LR/LW. The transmitter converts serial DML electrical data into serial optical data compliant with the IEEE 802.3ae standard. The receiver converts serial optical data into serial DML electrical data. Digital diagnostics functions are available via a 2-wire serial interface, as specified in SFF-8472.

8 Jinxiu Middle Road, Pingshan, Shenzhen, Guangdong, 518118, P. R. China
+86 755 32983688 | info@china-tscom.com | www.china-tscom.com

Absolute Maximum Ratings

These values represent the damage threshold of the module. Stress in excess of any of the individual Absolute Maximum Ratings can cause immediate catastrophic damage to the module even if all other parameters are within Recommended Operating Conditions.

Parameters	Symbol	Min.	Max.	Unit
Power Supply Voltage	VCC	-0.5	+3.6	V
Storage Temperature	Tc	-40	+85	°C
Relative Humidity	RH	5	95	%

Recommended Operating Conditions

Recommended Operating Environment specifies parameters for which the electrical and optical characteristics hold unless otherwise noted.

Parameter	Symbol	Min	Typical	Max	Unit
Supply Voltage	VCC	3.14	3.3	3.46	V
Operating Case Temperature	T	0	-	70	°C

Notes:
[1] Supply current is shared between VCCTX and VCCRX.

Electrical Characteristics

Parameter	Symbol	Min.	Typical	Max	Unit
Transmitter					
Data Rate	BR	-	10.3	11.3	Gbps
Input differential impedance[1]	RIN	85	100	115	Ω
Differential Input Voltage Swing[2]	Vin,pp	150	-	1200	mVpp
Receiver					
Data Rate	BR	-	10.3	11.3	Gbps
Output differential impedance[1]	Rout	85	100	115	Ω
Differential Data Output	VOD	350		700	mVp-p

Notes:
[1] AC coupled.
[2] Or open circuit.

Transmitter Specifications – Optical

Parameter	Symbol	Min	Typical	Max	Unit
Center Wavelength	λ	1260	1270	1280	-
Optical Spectral Width(-20dB)	Δλ	-	-	1	nm
Side Mode Suppression Ratio	SMSR	30	-	-	dB
Average Optical Power	Po	1	-	5	dBm
Extinction Ratio	ER	3.5	-	-	dB
Average Launch Power of OFF Transmitter	POFF	-	-	-30	dBm

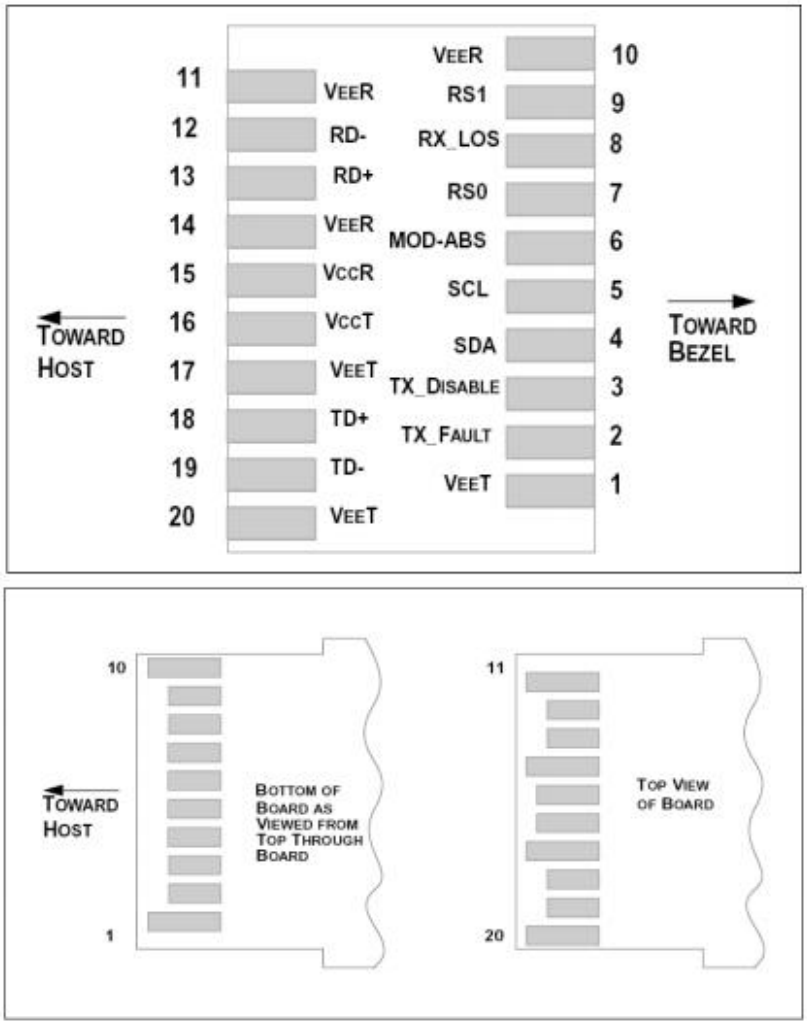
Receiver Specifications – Optical

Parameter	Symbol	Min	Typical	Max	Unit
Center Wavelength	λ	1320	1330	1340	nm
Receiver Sensitivity[1]	Pin	-	-	-15	dBm
Receive overload	Pmax	0.5	-	-	dBm
LOS Asserted	LSA	-30	-	-	dBm
LOS De-Asserted	LDA	-	-	-18	dBm
LOS Hysteresis	LH	0.5	-	-	dB

Notes:

[1] Measured with worst ER, BER≤1E-12 @10.3125Gbps, PRBS=2^{31} -1 NRZ.

SFP+ Transceiver Electrical Pad Layout



Pin definition

Pin	Symbol	Name/Description
1	VEET [1]	Transmitter Ground
2	Tx_FAULT [2]	Transmitter Fault
3	Tx_DIS [3]	Transmitter Disable. Laser output disabled on high or open
4	SDA [2]	2-wire Serial Interface Data Line
5	SCL [2]	2-wire Serial Interface Clock Line
6	MOD_ABS [4]	Module Absent. Grounded within the module
7	RS0 [5]	Rate Select 0
8	RX_LOS [2]	Loss of Signal indication. Logic 0 indicates normal operation
9	RS1 [5]	Rate Select 1
10	VEER [1]	Receiver Ground
11	VEER [1]	Receiver Ground
12	RD-	Receiver Inverted DATA out. AC Coupled

13	RD+	Receiver DATA out. AC Coupled
14	VEER [1]	Receiver Ground
15	VCCR	Receiver Power Supply
16	VCCT	Transmitter Power Supply
17	VEET [1]	Transmitter Ground
18	TD+	Transmitter DATA in. AC Coupled
19	TD-	Transmitter Inverted DATA in. AC Coupled
20	VEET [1]	Transmitter Ground

Notes:

[1] Module circuit ground is isolated from module chassis ground within the module.

[2] Should be pulled up with 4.7k – 10k ohms on host board to a voltage between 3.15Vand 3.6V.

[3] Tx_Disable is an input contact with a 4.7 kΩ to 10 kΩ pullup to VCCT inside the module.

[4] Mod_ABS is connected to VeeT or VeeR in the SFP+ module. The host may pull this contact up to VCC_Host with a resistor in the range 4.7 kΩ to10 kΩ.Mod_ABS is asserted “High” when the SFP+ module is physically absent from a host slot.

[5] RS0 and RS1 are module inputs and are pulled low to VeeT with > 30 kΩ resistors in the module.

Ordering Information

Part Number	Product Description
TSSLS-CBDCH3C	10G SFP+ BIDI 40km TX1270nm RX1330nm Single-mode Transceiver, 0 ~

Important Notice

Performance figures, data and any illustrative material provided in this data sheet are typical and must be specifically confirmed in writing by T&S before they become applicable to any particular order or contract. In accordance with the T&S policy of continuous improvement specifications may change without notice.

The publication of information in this data sheet does not imply freedom from patent or other protective rights of T&S or others. Further details are available from any T&S sales representative.

8 Jinxiu Middle Road, Pingshan, Shenzhen, Guangdong, 518118, P. R. China
+86 755 32983688 | info@china-tscom.com | www.china-tscom.com