深圳市源拓光电技术有限公司
SHENZHEN WIN TOP OPTICAL TECHNOLOGY CO.,LTD.

WT-SFP+-BD/U-40L

10Gb/s SFP+ BIDI Transceiver

1.Feature

● SFP+ package with LC connector

● 1270nm(1330nm) DFB Laser and PIN-TIA photodetector

● Up to 40Km transmission on SMF

● Up to 11.3Gbps Data Links

● Support dual CDR in TX and RX channel(optional)

● +3.3V single power supply

● Power dissipation<1.5W

● 2-wire interface with integrated Digital Diagnostic monitoring

● Low EMI and excellent ESD protection

● laser safety standard IEC-60825 compliant

● Compatible with RoHS

● Compliant with SFF-8472 SFP+ MSA

● Compliant to SFP+ SFF-8431 and SFF-8432

2.Application

● Ethernet

● Telecom

● Fiber Channel

3.Absolute Maximum Ratings

Parameter	Symbol	Minimum	Maximum	Units
Storage Temperature	Tst	-40	+85	°C
Supply Voltage	Vcc	-0.3	+4.0	V
Operating Relative Humidity	RH	5	95	%

4.Operation Environment

Parameter		Symbol	Min	Typical	Max	Units
Supply Voltage		Vcc	3.15	3.3	3.45	V
Operating Case Temperature	Commercial	Tc	-5		+70	°C
	Industrial		-40		+85	
Power Dissipation					1.5	W
Data Rate				10.3125		Gbps

5.Optical Characteristics

(Ambient Operating Temperature 0°C to +70°C, Vcc =3.3 V)

Parameter		Symbol	Min.	Typ.	Max.	Units
Transmitter Section						
Center Wavelength	Tx 1270	λo	1260	1270	1280	nm
	Tx 1330		1320	1330	1340	
Spectral Width(-20dB)	Tx 1270	Δλ			1	nm
	Tx 1330				1	
Average Output Power	Tx 1270	Po	0		+4	dBm
	Tx 1330		0		+4	
Extinction Ratio		Er	3.5			dB
Side-Mode Suppression Ratio		SMSR	35			dB
Total jitter		Tj	IEEE 802.3ae			
Receiver Section						
Center Wavelength	Rx 1330	λo	1320	1330	1340	nm
	Rx 1270		1260	1270	1280	
Receiver Sensitivity		Rsen			-15	dBm

![WinTop Logo]

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Receiver Overload	Rov	-3			dBm
Return Loss		12			dB
LOS Assert	LOS_A	-22			dBm
LOS Dessert	LOS_D			-18	dBm
LOS Hysteresis		0.5		4	

6.Electrical Characteristics

(Ambient Operating Temperature 0°C to +70°C, Vcc =3.3 V)
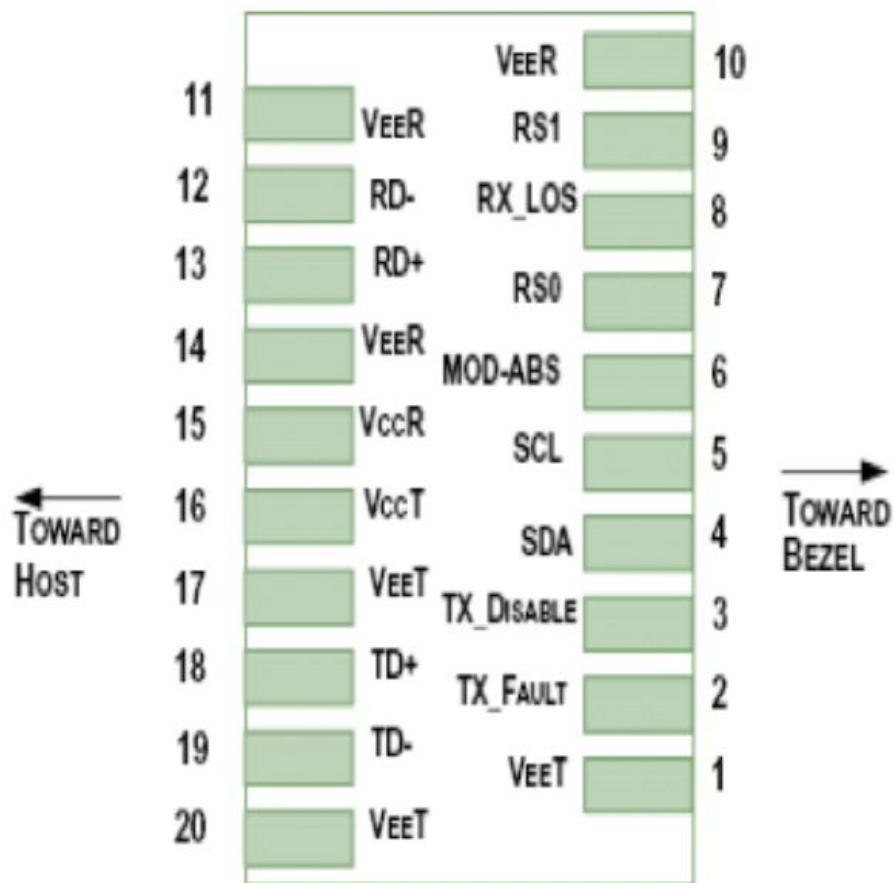
Parameter		Symbol	Min.	Typ.	Max.	unit
Transmitter Section						
Input Differential Impendence		Zin	90	100	110	Ohm
Data Input Swing Differential		Vin	180		700	mV
TX Disable	Disable		2.0		Vcc	V
	Enable		-0.3		0.8	V
TX Fault	Assert		2.4		Vcc	V
	Deassert		-0.3		0.8	V
Receiver Section						
Output differential impendence		Zout	80	100	120	Ohm
Data Input Swing Differential		Vout	300		850	mV
Rx_LOS	Assert		2.0		Vcc	V
	Deassert		-0.3		0.4	V

7.Diagnostics

Parameter	Range	Accuracy	Unit	Calibration
Temperature	-5 ~ 70	±3	°C	Internal
Voltage	0 ~ VCC	0.1	V	Internal
Bias Current	0 ~ 120	±2	mA	Internal
Tx Power	-5 ~ +5	±1	dBm	Internal
Rx Power	-30 ~ 0	±2	dBm	Internal

8.Pin Description

Pins	Name	Discription	NOTE
1	VeeT	Transmitter Ground	
2	Tx Fault	Transmitter Fault Indication	1
3	Tx Disable	Transmitter Disable	2
4	MOD DEF2	Module Definition 2	3
5	MOD DEF1	Module Definition 1	3
6	MOD DEF0	Module Definition 0	3
7	RS0	Not Connected	
8	LOS	Loss of Signal	4
9	RS1	Not Connected	
10	VeeR	Receiver Ground	
11	VeeR	Receiver Ground	
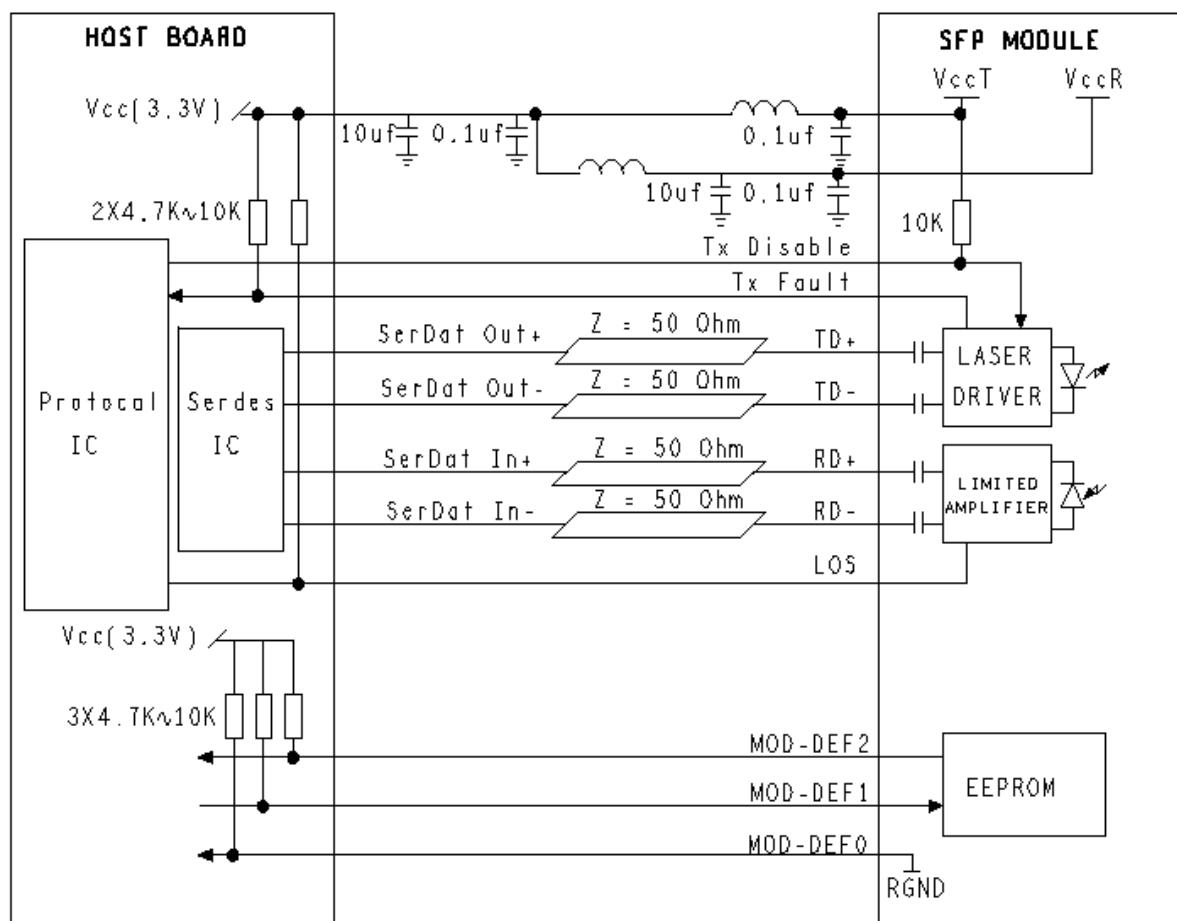
12	RD-	Inv. Received Data Output	5
13	RD+	IReceived Data Output	5
14	VeeR	Receiver Ground	
15	VccR	Receiver Power	
16	VccT	Transmitter Power	
17	VeeT	Transmitter Ground	
18	TD+	Transmit Data Input	6
19	TD-	Inv. Transmit Data Input	6
20	VeeT	Transmitter Ground	

Notes:

1. TX Fault is an open collector output, which should be pulled up with a 4.7k~10kΩ resistor on the host board to a voltage between 2.0V and Vcc+0.3V. Logic 0 indicates normal operation; logic 1 indicates a laser fault of some kind. In the low state, the output will be pulled to less than 0.8V.

2. TX Disable is an input that is used to shut down the transmitter optical output. It is pulled up within the module with a 4.7k~10kΩ resistor. Its states are:

    Low (0~0.8V): Transmitter on

    (>0.8V, <2.0V): Undefined

    High (2.0~3.3V): Transmitter Disabled

    Open: Transmitter Disabled

3. MOD-DEF 0,1,2 are the module definition pins. They should be pulled up with a 4.7k~10kΩ resistor onthe host board. The pull-up voltage shall be VccT or VccR.

    MOD-DEF 0 is grounded by the module to indicate that the module is present

    MOD-DEF 1 is the clock line of two wire serial interface for serial ID

    MOD-DEF 2 is the data line of two wire serial interface for serial ID

4. LOS is an open collector output, which should be pulled up with a 4.7k~10kΩ resistor on the host board to a voltage between 2.0V and Vcc+0.3V. Logic 0 indicates normal operation; logic 1 indicates loss of signal. In the low state, the output will be pulled to less than 0.8V.

5. These are the differential receiver output. They are internally AC-coupled 100Ω differential lines which should be terminated with 100Ω (differential) at the user SERDES.

6. These are the differential transmitter inputs. They are AC-coupled, differential lines with 100Ω differential termination inside the module.

9.Recommended Application Circuit

HOST BOARD

SFP MODULE

Vcc(3.3V)

VccT   VccR

10uf 0.1uf   0.1uf

10uf 0.1uf

2X4.7K∿10K

10K

Tx Disable

Tx Fault

Protocal IC   Serdes IC

SerDat Out+   Z = 50 Ohm   TD+

SerDat Out-   Z = 50 Ohm   TD-

LASER DRIVER

SerDat In+   Z = 50 Ohm   RD+

SerDat In-   Z = 50 Ohm   RD-

LIMITED AMPLIFIER

LOS

Vcc(3.3V)

3X4.7K∿10K

MOD-DEF2

MOD-DEF1   EEPROM

MOD-DEF0

RGND

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10.Outline drawing (mm)