DATA SHEET

UTX10Z8Bxx
10.3Gbps XFP BIDI Transceiver, Single Mode,80km Reach TX1490nm / RX1550nm (TX1550nm / RX1490nm)
UTX10Z8Bxx Transceiver Overview

UTX10Z8Bxx are hot pluggable 3.3V Small-Form-Factor transceiver modules. They are designed expressly for high-speed communication applications that require rates up to 11.3Gbps, they are designed to be compliant with XFP MSA. The module data link up to 80km in 9/125um single mode fiber.

Product Features

- Supports 9.95Gb/s to 11.3Gb/s bit rates
- Hot-pluggable XFP footprint
- Up to 80km for SMF transmission
- XFI Loopback Mode
- 1490nm EML laser and APD receiver for UTX10Z8B45
- 1550nm EML laser and APD receiver for UTX10Z8B54
- Compliant with XFP MSA with single LC receptacle
- Compatible with RoHS
- Single +3.3V power supply
- Power dissipation<2.5W
- 2-wire interface with integrated Digital Diagnostic monitoring
- EEPROM with Serial ID Functionality
- Operating case temperature:
- Standard: -5 to +70°C
- Industrial: -40 to +85°C

Applications

- 10GBASE-BX 10.3125Gb/s Ethernet
- 10GBASE-BX 9.953Gb/s Ethernet
- SONET OC-192 SR-1 SDH STM I-64.1

Ordering Information

Part Number	Description
UTX10Z8B45	10GBase-BIDI XFP+ Transceiver(SMF,1490/1550nm ,80KM,LC); 0° C~+70° C
UTX10Z8B54	10GBase-BIDI XFP+ Transceiver(SMF,1550/1490nm ,80KM,LC); 0° C~+70° C
UTX10Z8B45I	10GBase-BIDI XFP+ Transceiver(SMF,1490/1550nm ,80KM,LC); -40° C~+85° C
UTX10Z8B54I	10GBase-BIDI XFP+ Transceiver(SMF,1550/1490nm ,80KM,LC); -40° C~+85° C

For More Information:
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General Specifications

Parameter		Symbol	Min	Typ	Max	Unit	Remarks
Data Rate		DR	9.95	10.3	11.3	Gbps	
Bit Error Rate		BER			10^{-12}		
Operating Temperature	Standard	T_{OP}	-5		70	℃	
	Industrial		-40		+85	℃	
Storage Temperature		T_{STO}	– 40		85	℃	
Supply Current		I_S			600	mA	
Input Voltage		V_{CC}	3.14	3.3	3.46	V	
Maximum Voltage		V_{MAX}	– 0.5		4	V	

Optical Characteristics – Transmitter

V_{CC}=3.14V to 3.46V, T_C=-5℃ to 70℃

Parameter	Symbol	Min	Typ	Max	Unit	Remarks
Output Optical Power	P_{TX}	0		4	dBm	UTX10Z8B45
		-1		3	dBm	UTX10Z8B54
Optical Center Wavelength	λ_C	1480	1490	1500	nm	UTX10Z8B45
		1540	1550	1560	nm	UTX10Z8B54
Spectral Width（-20dB）	Δλ			1	nm	
Extinction Ratio	ER	6			dB	
Optical Rise/Fall Time (20% - 80%)	T_{RF_IN}			20	ps	
Average Launch power of OFF transmitter	P_{off}			-45	dBm	
Output Eye			Compliant with IEEE802.3 standard			

Optical Characteristics – Receiver

V_{CC}=3.14V to 3.46V, T_C=-5℃ to 70℃

Parameter	Symbol	Min	Typ	Max	Unit	Remarks
Receiver Sensitivity	S			-24	dBm	
Optical Center Wavelength	λ_C	1540	1550	1560	nm	UTX10Z8B45
		1480	1490	1500	nm	UTX10Z8B54
Receiver Sensitivity	R_{X_SEN}			-20	dBm	
Optical Power Input Overload	$P_{in\text{-}max}$	-6			dbm	
Receiver Reflectance	R			-14	dB	

LOS Assert	P_{LOS_A}	-38		dBm	
LOS De-Assert	P_{LOS_D}		-21	dBm	
LOS Hysteresis		0.5	4	dB	

Electrical Characteristics – Transmitter

V_{CC}=3.14V to 3.46V, T_C=-5℃ to 70℃

Parameter	Symbol	Min	Typ	Max	Unit	Remarks
Input differential impedance	R_{IN}		100		Ω	
Transmit differential output Voltage		120		820	mV	
Transmit disable voltage	V_D	V_{CC}–0.5		V_{CC}	V	
Transmit enable voltage	V_{EN}	V_{EE}		V_{EE}+0.8	V	
Supply Voltage – 1.8V supply	Vcc2	1.71		1.89	V	
Supply Voltage – 3.3V supply	Vcc3	3.13		3.47	V	
Supply Current – 1.8V supply	Icc2			200	mA	
Transmit disable assert time				10	us	

Electrical Characteristics – Receiver

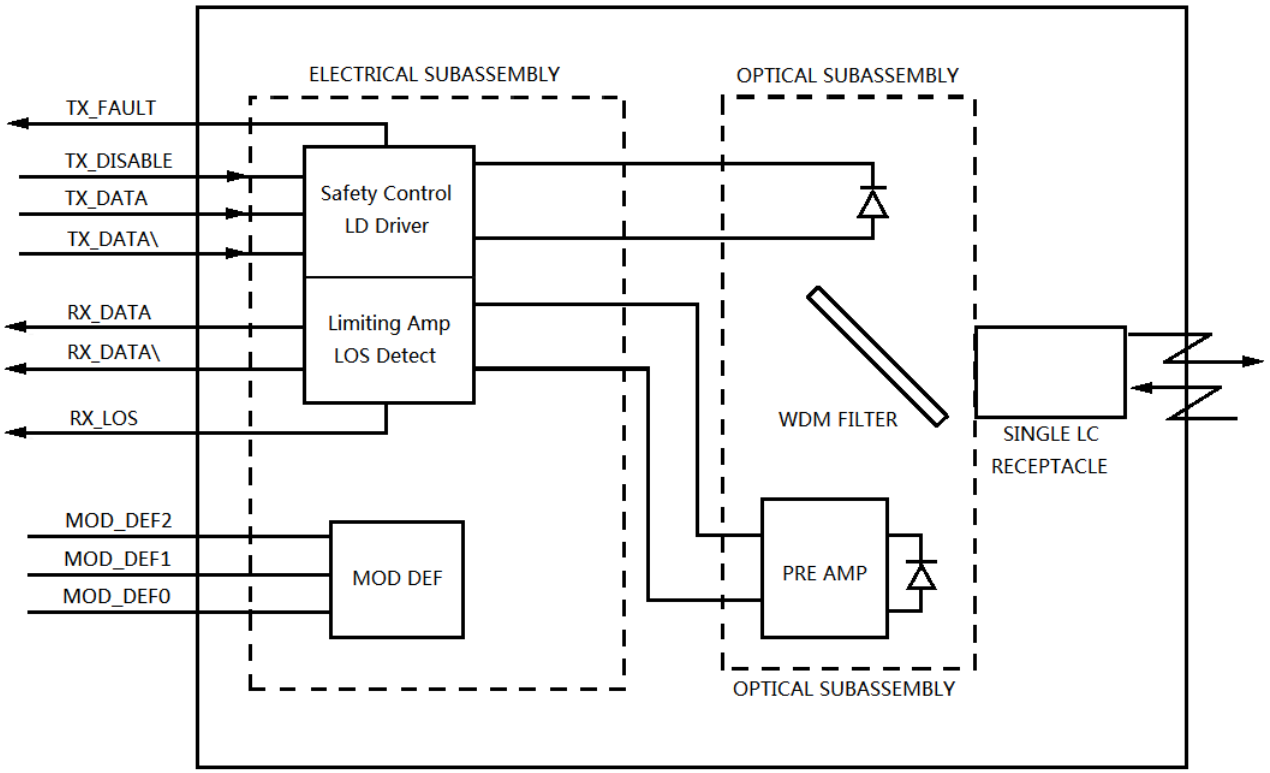
V_{CC}=3.14V to 3.46V, T_C=-5℃ to 70℃

Parameter	Symbol	Min	Typ	Max	Unit	Remarks
Differential data out put swing	V_{OUT_PP}	340	400	850	mV	
Data output rise/fall time (20%-80%)	T_R			20	ps	
LOS Fault	V_{LOS_Fault}	V_{CC} – 0.5		V_{CC_HOST}	V	
LOS Normal	V_{LOS_Normal}	V_{EE}		V_{EE} +0.5	V	

Notes:

1. The optical power is launched into SMF.
2. PECL input, internally AC-coupled and terminated.
3. Measured with a PRBS231-1 test pattern @10312Mbps, BER ≤1×10-12.

Block Diagram of Transceiver



Transmitter Section

The FP driver accepts differential input data and provide bias and modulation currents for driving a laser. An automatic power-control (APC) feedback loop is incorporated to maintain a constant average optical power.

TX_DISABLE

The TX_DISABLE signal is high (TTL logic "1") to turn off the laser output. The laser will turn on within 1ms when TX_DISABLE is low (TTL logic "0").

TX_FAULT

When the TX_FAULT signal is high, output indicates a laser fault of some kind. Low indicates normal operation.

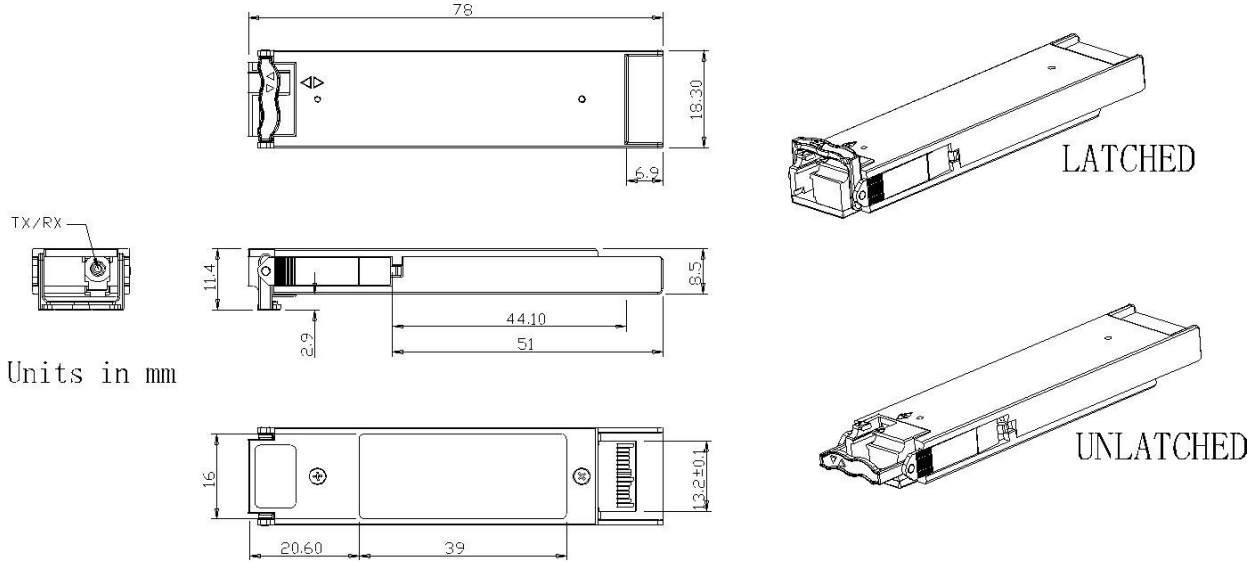
Receiver Section

The receiver utilizes a PIN detector integrated with a trans-impedance preamplifier in an OSA. This OSA is connected to a Limiting Amplifier which providing post-amplification quantization, and optical signal detection. The limiting Amplifier is AC-coupled to the transimpedance amplifier, with internal 100Ω differential termination.

Receive Loss (RX_LOS)

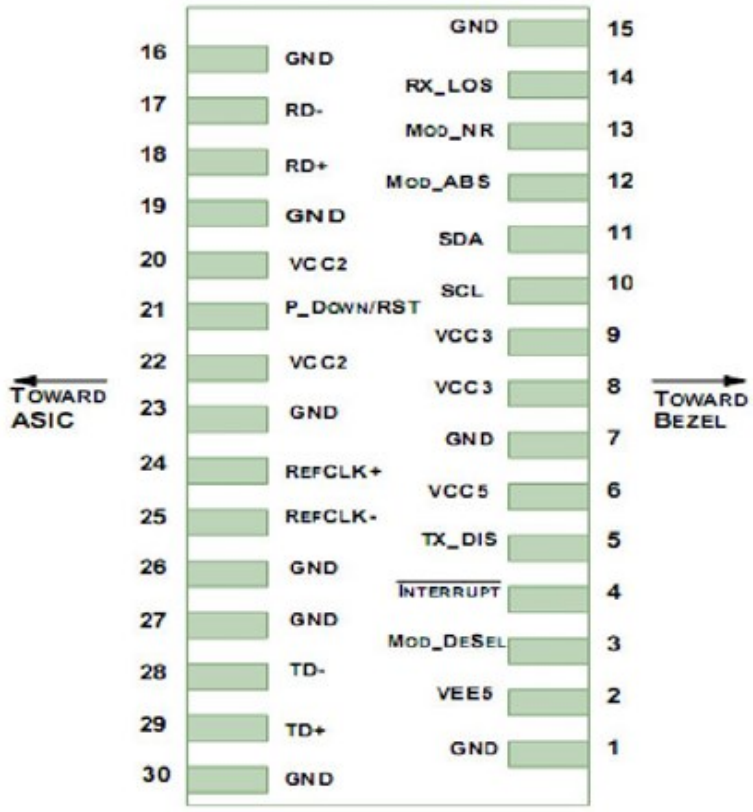
The RX_LOS is high (logic "1") when there is no incoming light from the companion transceiver. This signal is normally used by the system for the diagnostic purpose. The signal is operated in TTL level.

Dimensions



ALL DIMENSIONS ARE ±0.2mm UNLESS OTHERWISE SPECIFIED
UNIT: mm

Electrical Pad Layout



Pin	Signal Name	Description	Plug Seq.	Notes
1	GND	Module Ground		1
2	VEE5	Optional –5.2 Power Supply – Not required		
3	Mod-Desel	Module De-select; When held low allows the module to respond to 2-wire serial interface commands	LVTTL-I	
4	Interrupt	Interrupt (bar); Indicates presence of an important condition which can be read over the serial 2-wire interface	LVTTL-O	2
5	TX_DIS	Transmitter Disable; Transmitter laser source turned off	LVTTL-I	
6	VCC5	+5 Power Supply		
7	GND	Module Ground		1
8	VCC3	+3.3V Power Supply		
9	VCC3	+3.3V Power Supply		
10	SCL	Serial 2-wire interface clock	LVTTL-I	2
11	SDA	Serial 2-wire interface data line	LVTTL-I/O	2
12	Mod_Abs	Module Absent; Indicates module is not present. Grounded in the module.	LVTTL-I	2
13	Mod_NR	Module Not Ready; defines it as a logical OR between RX_LOS and Loss of Lock in TX/RX.	LVTTL-I	2
14	RX_LOS	Receiver Loss of Signal indicator	LVTTL-I	2
15	GND	Module Ground		1
16	GND	Module Ground		1
17	RD-	Receiver inverted data output	CML-O	
18	RD+	Receiver non-inverted data output	CML-O	
19	GND	Module Ground		1
20	VCC2	+1.8V Power Supply – Not required		
21	P_Down/RST	Power Down; When high, places the module in the low power stand-by mode and on the falling edge of P_Down initiates a module reset Reset; The falling edge initiates a complete reset of the module	LVTTL-I	
22	VCC2	including the 2-wire serial interface, equivalent to a power cycle. +1.8V Power Supply – Not required		
23	GND	Module Ground		1
24	RefCLK+	Reference Clock non-inverted input, AC coupled on the host board – Not required	PECL-I	3

25	RefCLK-	Reference Clock inverted input, AC coupled on the host board – Not required	PECL-I	3
26	GND	Module Ground		1
27	GND	Module Ground		1
28	TD-	Transmitter inverted data input	CML-I	
29	TD+	Transmitter non-inverted data input	CML-I	
30	GND	Module Ground		1

Notes:

Plug Seq.: Pin engagement sequence during hot plugging.

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

2) Open collector; should be pulled up with 4.7k – 10kohms on host board to a voltage between 3.15V and 3.6V.

3) A Reference Clock input is not required by these model. If present, it will be ignored.

References

1. IEEE standard 802.3. IEEE Standard Department, 2005.

2. Small Form Factor Pluggable (SFP) Transceiver Multi-Source Agreement (MSA), September 2000.