

DATA SHEET
UTS10E6Bxx
**10.3125G SFP (Small Form Pluggable) 1270/1330 60km BIDI Transceiver and
10.3125G SFP (Small Form Pluggable) Tx1330/Rx1270 60km BIDI Transceiver**
UTS10E6Bxx Overview

SFP-10GE-BIDI-T1270R1330-60KM and SFP-10GE-BIDI-T1330R1270-60KM optical transceivers are hot pluggable 3.3V Small-Form-Factor transceiver modules. They are designed expressly for high-speed communication applications that require rates up to 11.3Gb/s, they are designed to be compliant with SFF-8472 SFP+ MSA. The module data link up to 60km in 9/125um single mode fiber.

Product Features

- Supports up to 11.3Gbps bit rates
- Hot-pluggable SFP+ footprint
- 1270nm DFB laser and APD receiver for SFP-10GE-BIDI-T1270R1330-60KM
1330nm DFB laser and APD receiver for SFP-10GE-BIDI-T1330R1270-60KM
- Up to 60km for SMF transmission
- Compliant with SFP+ MSA and SFF-8472 with single LC receptacle
- Compatible with RoHS
- Single +3.3V power supply
- Power dissipation<1.5W
- 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
- 10G SONET/SDH, OTU2/2e

Ordering Information

Part Number	Description
UTS10E6B23	10GBase-BIDI SFP+ Transceiver(SMF,1270/1330nm,60KM,LC); -5 to +70°C
UTS10E6B32	10GBase-BIDI SFP+ Transceiver(SMF,1330/1270nm,60KM,LC); -5 to +70°C
UTS10E6B23I	10GBase-BIDI SFP+ Transceiver(SMF,1270/1330nm,60KM,LC); -40 to +85°C
UTS10E6B32I	10GBase-BIDI SFP+ Transceiver(SMF,1330/1270nm,60KM,LC); -40 to +85°C

For More Information:

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General Specifications

Parameter	Symbol	Min	Typ	Max	Unit
Operating Case Temperature (Standard)	T _c	-5		+70	°C
Operating Case Temperature (Industrial)	T _c	-40		+85	°C
Power Supply Voltage	V _{cc}	3.135	3.30	3.465	V
Power Supply Current	I _{cc}			450	mA
Data Rate			10.3	11.3	Gbps
Fiber Length 9/125µm core SMF		-	60	-	km

Notes:

1. Case temperature
2. Ambient temperature
3. For electrical power interface

Optical Characteristics – Transmitter
V_{CC}=3.135 to 3.465 T_C=-40°C to 85°C

Parameter	Symbol	Min	Typ	Max	Unit	Remarks
Centre Wavelength	λ _c	1260	1270	1280	nm	SFP-10GE-B IDI-T1270R 1330-60KM
		1320	1330	1340	nm	SFP-10GE-B IDI-T1330R 1270-60KM
Spectral Width (-20dB)	Δλ			1	nm	
Side-Mode Suppression Ratio	SMSR	30	-		dB	
Average Output Power	P _{out}	0		5	dBm	1
Extinction Ratio	ER	3.5			dB	

Notes:

1. The optical power is launched into SMF.

Optical Characteristics – Receiver
V_{CC}=3.135 to 3.465 T_C=-40°C to 85°C

Parameter	Symbol	Min	Typ	Max	Unit	Remarks
Centre Wavelength	λ _c	1260	1270	1280	nm	SFP-10GE-BI DI-T1270R13 30-60KM
		1320	1330	1340	nm	SFP-10GE-BI DI-T1330R12 70-60KM
Receiver Sensitivity				-20	dBm	1
Receiver Overload		6			dBm	1

LOS De-Assert	LOS _D			-21	\
LOS Assert	LOS _A	-35			dBm
LOS Hysteresis		0.5	2	6	dB

Notes:

1. Measured with a PRBS²³¹-1 test pattern @10312Mbps, BER $\leq 1 \times 10^{-12}$.

Electrical Characteristics – Transmitter
V_{CC}=3.135 to 3.465 T_C=-40°C to 85°C

Parameter	Symbol	Min	Typ	Max	Unit	Remarks
Data Input Swing Differential	V _{IN}	180		700	mV	1
Input Differential Impedance	Z _{IN}	85	100	115	Ω	
TX Disable	Disable	2.4		V _{CC}	V	
	Enable	-0.3		0.8	V	
TX Fault	Fault	2.0		V _{CC} +0.3	V	
	Normal	-0.3		0.8	V	

Notes:

1. PECL input, internally AC-coupled and terminated.

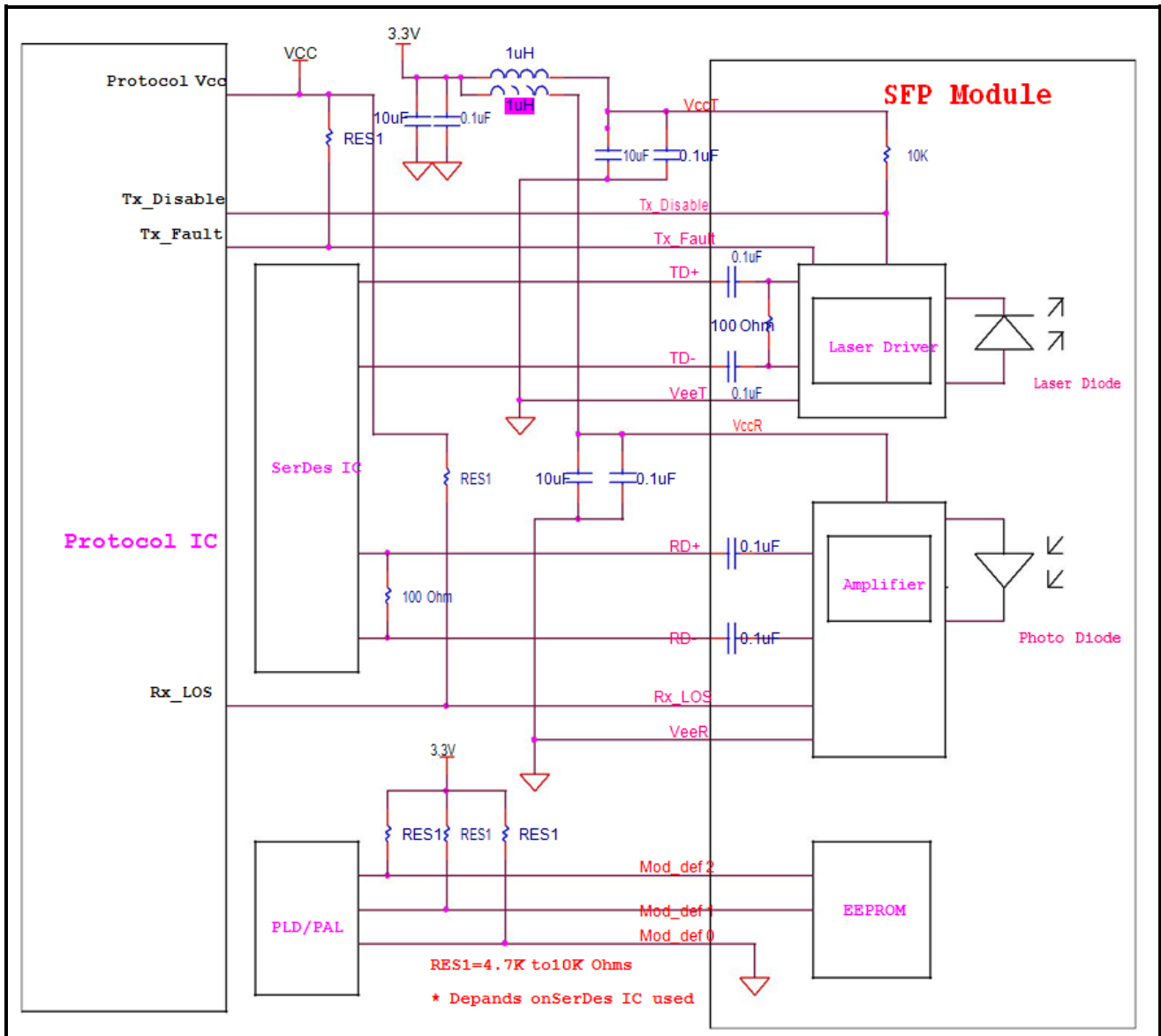
Electrical Characteristics – Receiver
V_{CC}=3.135 to 3.465 T_C=-40°C to 85°C

Parameter	Symbol	Min	Typ	Max	Unit	Remarks
Data Output Swing Differential	V _{out}	300		850	mV	1
Differential line Output Impedance	ROUT	80	100	120	Ohm	
Receiver LOS Pull up Resistor	RLOS	4.7		10	KOhm	
Data Output Rise/Fall time	tr/tf			38	ps	
LOS	Fault	V _{CC} -1.3		V _{CC} Host	V	
	Norm	V _{EE}		V _{EE} +0.8	V	

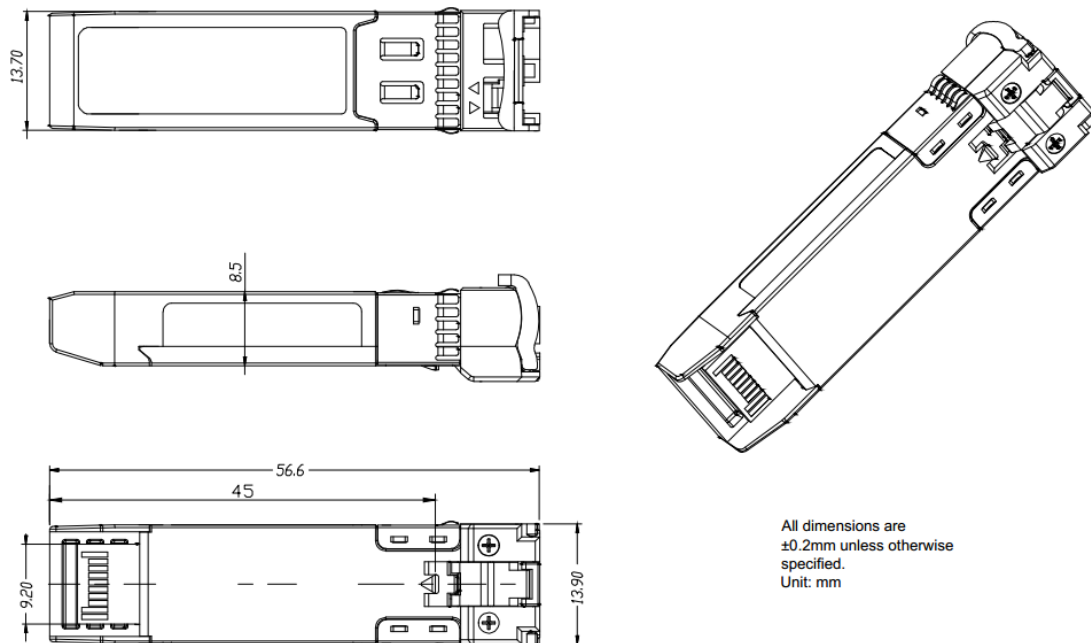
Notes

1. Internally AC-coupled.

Block Diagram of Transceiver

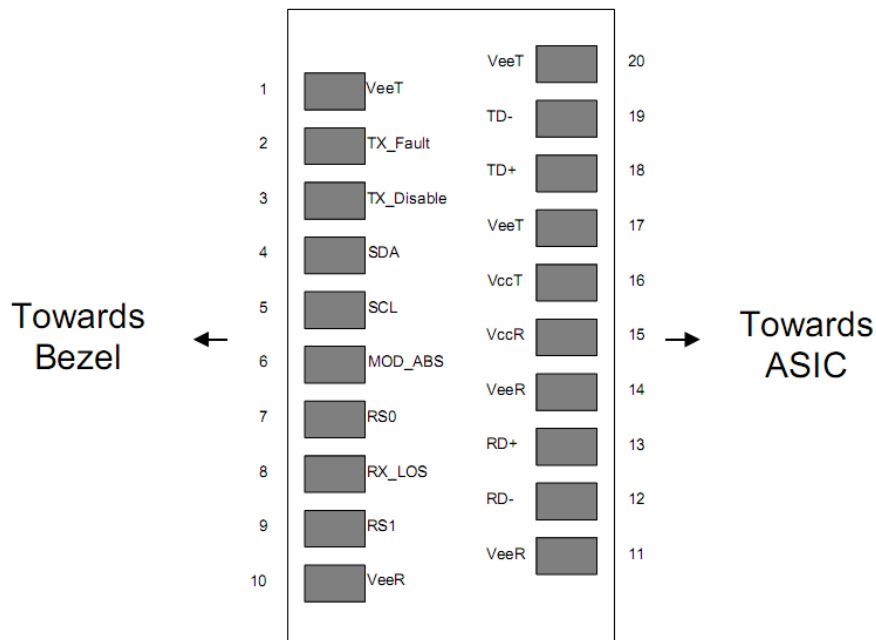


Dimensions



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

Electrical Pad Layout



Pin Assignment

PIN #	Symbol	Description	Remarks
1	V _{EET}	Transmitter Ground	
2	TX_FAULT	Transmitter Fault Indication	Note 1

3	TX DISABLE	Transmitter Disable	Note 2
4	SDA	SDA Serial Data Signal	
5	SCL	SCL Serial Clock Signal	
6	MOD_ABS	Module Absent. Grounded within the module	
7	RS0	Not Connected	
8	LOS	Loss of Signal	Note 3
9	RS1	Not Connected	
10	V _{EER}	Receiver ground	
11	V _{EER}	Receiver ground	
12	RD-	Inv. Received Data Out	Note 4
13	RD+	Received Data Out	Note 4
14	V _{EER}	Receiver ground	
15	V _{CCR}	Receiver Power Supply	
16	V _{CCT}	Transmitter Power Supply	
17	V _{EET}	Transmitter Ground	
18	TD+	Transmit Data In	Note 5
19	TD-	Inv. Transmit Data In	Note 5
20	V _{EET}	Transmitter Ground	

Notes:

Plug Seq.: Pin engagement sequence during hot plugging.

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. Laser output disabled on TDIS >2.0V or open, enabled on TDIS <0.8V.
3. LOS is open collector output Should be pulled up with 4.7k~10kΩ on host board to a voltage between 2.0V and 3.6V. Logic 0 indicates normal operation; logic 1 indicates loss of signal.
4. RD-/+: These are the differential receiver outputs. They are internally AC-coupled 100 differential lines which should be terminated with 100Ω (differential) at the user SERDES.
5. TD-/+: These are the differential transmitter inputs. They are internally AC-coupled, differential lines with 100Ω differential termination inside the module.

References

1. IEEE standard 802.3. IEEE Standard Department, 2005.
2. Small Form Factor Pluggable (SFP) Transceiver Multi-Source Agreement (MSA), September 2000.