



## DATA SHEET

### UNIVISO: USS25E3B23/ USS25E3B32

25GBase-BX SFP28 Transceiver (SMF, 1270nm/1330nm, BIDI,30km, LC) Transceiver

## Features

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- ◆ Supports 24.3Gb/s to 26.5Gb/s bit rates Up to 30km transmission on SMF
- ◆ Hot-pluggable SFP footprint
- ◆ 1270nm DFB laser and APD receiver for USS25E3B23
- ◆ 1330nm DFB laser and APD receiver for USS25E3B32
- ◆ 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
- ◆ Metal enclosure, for lower EMI
- ◆ Operating case temperature:  
Commercial: 0°C ~ +70°C

## Application

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- ◇ 25G Ethernet
- ◇ CPRI 10

## Standard

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- ◇ Compliant with MSA SFP specification(SFF-8431)
- ◇ Compliant with SFF-8472
- ◇ Compliant to IEEE 802.3ae

## Specification

### Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Unit
Supply Voltage	V <sub>cc</sub>	-0.3	4	V
Storage Temperature	T <sub>s</sub>	-40	+85	°C
Operating Humidity	-	5	95	%
Signal Input Voltage		V <sub>cc</sub> -0.3	V <sub>cc</sub> +0.3	V

### Recommended Operating Conditions

Parameter	Symbol	Min	Typical	Max	Unit
Operating Case Temperature	T <sub>c</sub>	0		+70	°C
Power Supply Voltage	V <sub>cc</sub>	3.135	3.30	3.465	V
Power Supply Current	I <sub>cc</sub>			360	mA
Data Rate		24.3	25.78	26.5	Gbps
Fiber Length 9/125µm core SMF		-	30	-	km

### Optical and Electrical Characteristics

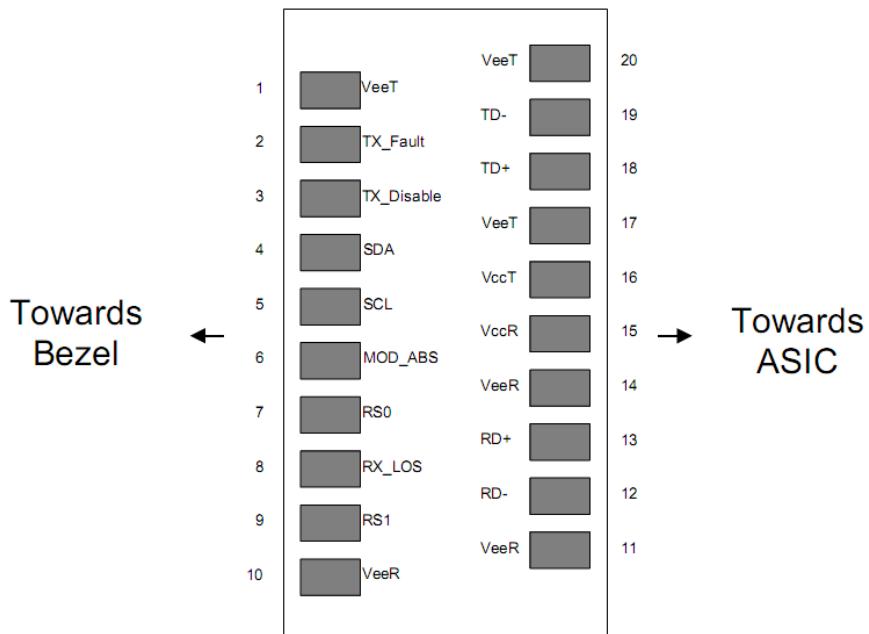
Parameter	Symbol	Min	Typical	Max	Unit	Notes
<b>Transmitter</b>						
Centre Wavelength	$\lambda_c$	1260	1270	1280	nm	AC-SPBL-23G25-30
		1320	1330	1340	nm	AC-SPBL-32G25-30
Spectral Width (-20dB)	$\Delta\lambda$			1	nm	
Side-Mode Suppression Ratio	SMSR	30	-		dB	
Average Output Power	P <sub>out</sub>	0		5	dBm	1
Extinction Ratio	ER	3.5			dB	
Data Input Swing Differential	V <sub>IN</sub>	180		800	mV	2
Input Differential Impedance	Z <sub>IN</sub>	80	100	120	Ω	
TX Disable	Disable	V <sub>cc</sub> - 1.3		V <sub>cc</sub>	V	
	Enable	V <sub>ee</sub>		V <sub>ee</sub> + 0.8	V	
TX Fault	Fault	V <sub>cc</sub> - 1.3		V <sub>cc</sub>	V	
	Normal	V <sub>ee</sub>		V <sub>ee</sub> + 0.8	V	
<b>Receiver</b>						
Centre Wavelength	$\lambda_c$	1320	1330	1340	nm	AC-SPBL-

						23G25-30
		1260	1270	1280	nm	AC-SPBL-32G25-30
Receiver Sensitivity				-18	dBm	3
Receiver Overload		-5			dBm	3
LOS De-Assert	LOS <sub>D</sub>			-19	dBm	
LOS Assert	LOS <sub>A</sub>	-30			dBm	
LOS Hysteresis		0.5		5	dB	
LOS	Fault	Vcc-1.3		VccHost	V	
	Norm	Vee		Vee +0.8	V	

**Notes:**

1. The optical power is launched into SMF.
2. PECL input, internally AC-coupled and terminated.
3. Measured with a PRBS<sup>231</sup>-1 test pattern @25780Mbps, BER ≤5×10<sup>-5</sup>.
4. Internally AC-coupled.

## Pin Descriptions



Pin	Signal Name	Description	Plug Seq.	Notes
1	VEET	Transmitter Ground	1	
2	TX FAULT	Transmitter Fault Indication	3	Note 1
3	TX DISABLE	Transmitter Disable	3	Note 2
4	SDA	SDA Serial Data Signal	3	
5	SCL	SCL Serial Clock Signal	3	
6	MOD_ABS	Module Absent. Grounded within the module	3	
7	RS0	Not Connected	3	
8	LOS	Loss of Signal	3	Note 3
9	RS1	Not Connected	3	
10	VEER	Receiver ground	1	
11	VEER	Receiver ground	1	
12	RD-	Inv. Received Data Out	3	Note 4
13	RD+	Received Data Out	3	Note 4
14	VEER	Receiver ground	1	
15	VCCR	Receiver Power Supply	2	
16	VCCT	Transmitter Power Supply	2	
17	VEET	Transmitter Ground	1	
18	TD+	Transmit Data In	3	Note 5
19	TD-	Inv. Transmit Data In	3	Note 5
20	VEET	Transmitter Ground	1	

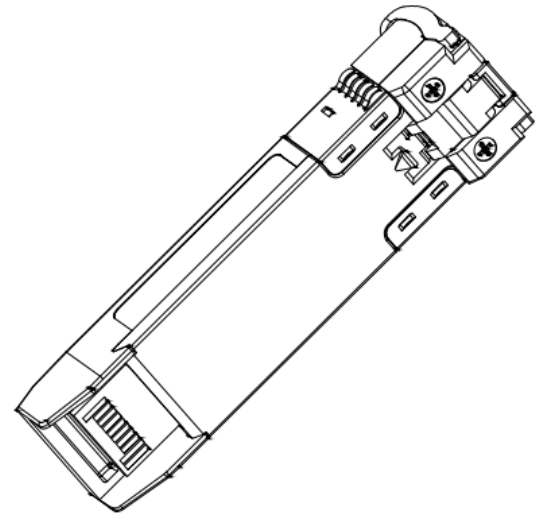
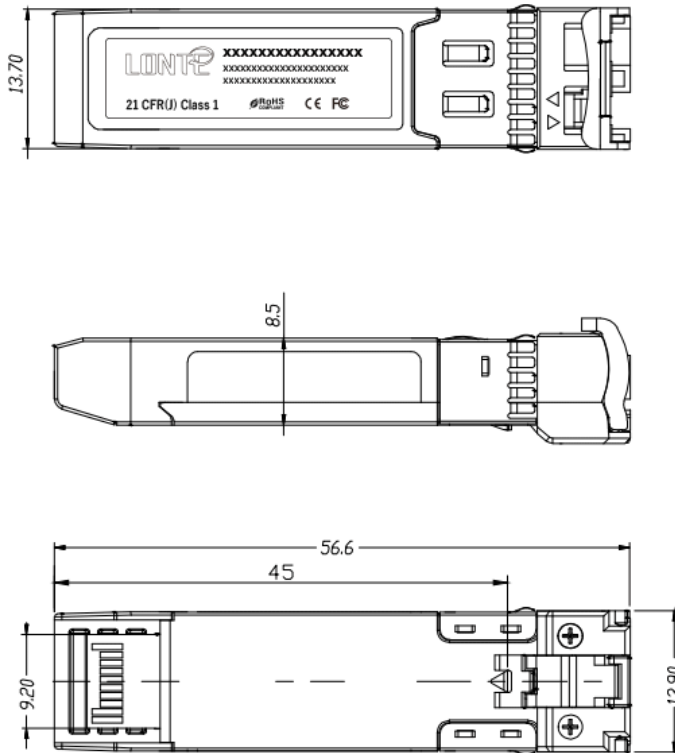
**Notes:**

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.

### Mechanical Dimensions

Dimensions are in millimeters. All dimensions are  $\pm 0.2\text{mm}$  unless otherwise specified. (Unit: mm)



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### Regulatory Compliance

Feature	Test	Method
Electrostatic Discharge (ESD) to the Electrical Pins	MIL-STD-883E Method 3015.7	Class 1 (>1.5kV) – Human Body Model
Electrostatic Discharge (ESD) Immunity	IEC61000-4-2	Class 2(>4.0kV)
Electromagnetic Interference (EMI)	CISPR22 ITE Class B FCC Class B CENELEC EN55022 VCCI Class 1	Comply with standard
Immunity	IEC61000-4-3	Comply with standard
Eye Safety	FDA 21CFR 1040.10 and 1040.11 EN (IEC) 60825-1,2	Compatible with Class I laser Product



### Ordering information

Part. No	Specifications								
	Pack	Rate (Gbps)	Tx (nm)	Po (dBm)	RX	Sen (dBm)	Temp (°C)	Reach (km)	DDM
USS25E3B23	SFP28	25.78	1270	0~5	APD	<-18	0~70	30	Y
USS25E3B32	SFP28	25.78	1330	0~5	APD	<-18	0~70	30	Y