LS-BL302925-60C

25.78Gbps SFP28 LC BIDI Tx1309nm/Rx1295nm 60km Transceiver

Product Feature

- All metal housing for superior EMI performance
- Support 25GE and CPRI, data rate up to 25.78125Gbps
- Link distance up to 40km single mode fiber without FEC Link
- Distance up to 60km single mode fiber with FEC
- 1295nm EML Transmitter and APD receiver for LS-BL293025-60x
  1309nm EML Transmitter and APD receiver for LS-BL302925-60x
- Low DC power consumption :
- Commercial : <1.6W Industrial : <1.8W
- High speed I/O electrical interface
- I2C interface with integrated Digital Diagnostic monitoring
- RoHS 6 compliance
- Compliant to IEEE 802.3cc, SFF-8402 and SFF-8419
- Complies with EU Directive 2015/863/EU
- Case Operating temperature ranges:
- Commercial : 0 °C to 70 °C
- Industrial : -40 °C to 85 °C

Applications

- 25G Ethernet
- Data center

Standard

- Compliant to SFP28 MSA
- Compliant with IEEE 802.3cc
- Compliant with SFF-8432,SFF-8472
- RoHS complaint

Product Description

The SFP28 BIDI optical Transceiver integrates receiver and transmitter path on one module. In the transmit side, one of serial data streams are recovered, retimed, and passed to laser driver. In the receive side, the optical data streams is recovered by a APD and trans-impedance amplifier, retimed. This module features a hot-pluggable electrical interface, low power consumption.

The product is designed with form factor, optical/electrical connection and digital diagnostic interface according to the SFP28 and compliant to IEEE 802.3cc.

Pin Assignment

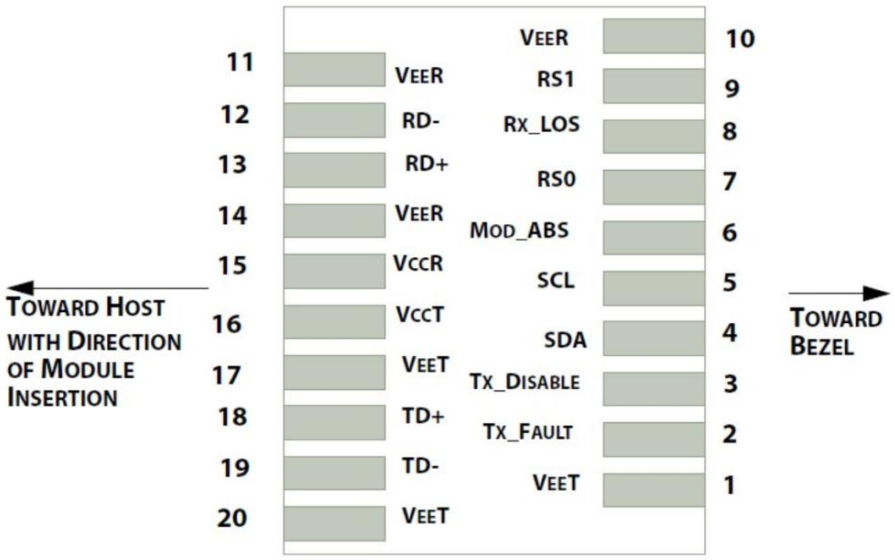


Diagram of Host Board Connector Block Pin Numbers and Names

Pin Descriptions

Pin	Symbol	Name/Description	Note
1	VeeT	Transmitter Ground	1
2	Tx_Fault	Transmitter Fault - High indicates a fault condition	2
3	Tx_Disable	Transmitter Disable – High or open disables the transmitter	

4	SDA	2-wire Serial Interface Data Line (MOD-DEF2)	3
5	SCL	2-wire Serial Interface Clock (MOD-DEF1)	3
6	MOD_ABS	Module Absent, connected to VeeT or VeeR in the module	
7	RS0	Rate Select 0	5
8	RX_LOS	Receiver Loss of Signal(LVTTL-O). Logic 0 indicates normal operation	4
9	RS1	Rate Select 1	5
10	VeeR	Receiver Ground	1
11	VeeR	Receiver Ground	1
12	RD-	Inverse Received Data out (CML-O), AC Coupled	
13	RD+	Receiver Non-inverted DATA out. AC Coupled	
14	VeeR	Receiver Ground	1
15	VccR	Receiver Power Supply	
16	VccT	Transmitter Power Supply	
17	VeeT	Transmitter Ground	1
18	TD+	Transmitter Non-Inverted DATA in. AC Coupled.	
19	TD-	Transmitter Inverted DATA in. AC Coupled.	
20	VeeT	Transmitter Ground	1

Notes:
1. Module ground pins GND are isolated from the module case.
2. Tx_Fault is an open collector/drain output, which should be pulled up with a 4.7k – 10k Ohms resistor on Host board.
3. Should be pulled up with 4.7k–10kohms on host board to a voltage between 2.0V and 3.6V.
4. LOS is open collector output. Should be pulled up with 4.7k–10kohms on host board to a voltage between 2.0V and 3.6V.
5. RS0 and RS1 pins are pulled low to GND with a resistor > 30KΩ in module.

Absolute Maximum Ratings

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Storage Temperature	Ts	-40		+85	°C	
Relative Humidity	RH	0		95	%	
Power Supply Voltage	Vcc	0		+3.6	V	

Recommended Operating Conditions

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Case Operating Temperature	T_A	0		70	°C	Commercial
		-40		85	°C	Industrial
Power Supply Voltage	Vcc	3.15	3.3	3.46	V	
Power Supply Current	Icc			480	mA	Commercial
				540	mA	Industrial

Electrical Characteristics

High-Speed Signal: Compliant to CEI-28G-VSR

Low-Speed Signal: Compliant to SFF-8419

Parameter		Symbol	Min.	Typ.	Max.	Unit	Note
Transmitter							
Differential Data Input Amplitude		VIN,P-P			900	mVpp	
Differential Impedance			90	100	110	Ω	
Tx_Disable	Normal Operation	VIL	-0.3		0.8	V	
	Laser Disable	VIH	2.0		VCC+0.3	V	
Receiver							
Differential Data Output Amplitude		VOUT,P-P			900	mVpp	
Differential Termination Mismatch(1MHZ）					10	%	
Differential Impedance			90	100	110	Ω	
Rx_LOS	Normal Operation	VOL	-0.3		0.4	V	
	Loss Signal	VOH	2		VCCHOST	V	

Optical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Transmitter						
Optical Modulation Amplitude(OMA)	POMA	2		6	dBm	
Average Output Power	POUT	1		6	dBm	
Average Output Power(Laser Off)	POFF			-30	dBm	
Center Wavelength	λc	1281	1295	1297	nm	LS-BL293025-60x
		1306	1309	1322	nm	LS-BL302925-60x
SpectrumBandwidth @ -20dB	Δλ			1	nm	
Side mode suppression ratio(SMSR)	SMSR	30			dB	
Extinction ratio	ER	4			dB	
Transmitter and dispersion penalty(TDP)				2.7	dB	
RIN20OMA	RIN			-130	dB/Hz	
Transmitter Reflectance (max)	TFL			-26	dB	
Receiver						
Input Optical Wavelength	λC	1306	1309	1322	nm	LS-BL293025-60x
		1281	1295	1297	nm	LS-BL302925-60x
Receiver sensitivity (OMA)(40km)	RSEN-OMA			-19	dBm	40km NO FEC
Receiver sensitivity (OMA)(60km)	RSEN-OMA			-21	dBm	60km With FEC
Optical Power Overload	PIN(SAT)	-4			dBm	
Rx_LOS of Signal Assert	PA	-35			dBm	
Rx_LOS of Signal De-assert	PD			-21	dBm	
Rx_LOS of Signal Hysteresis	PHy	0.5		5	dB	

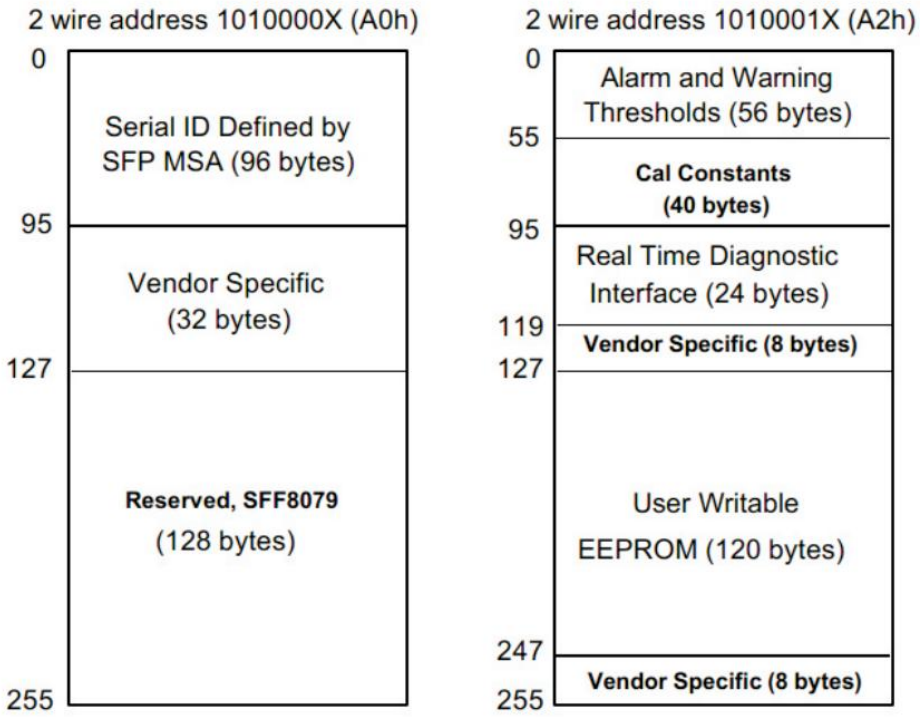
Digital Diagnostic Monitoring Interface

Five transceiver parameter values are monitored. The following table defines the monitored parameter’s accuracy.

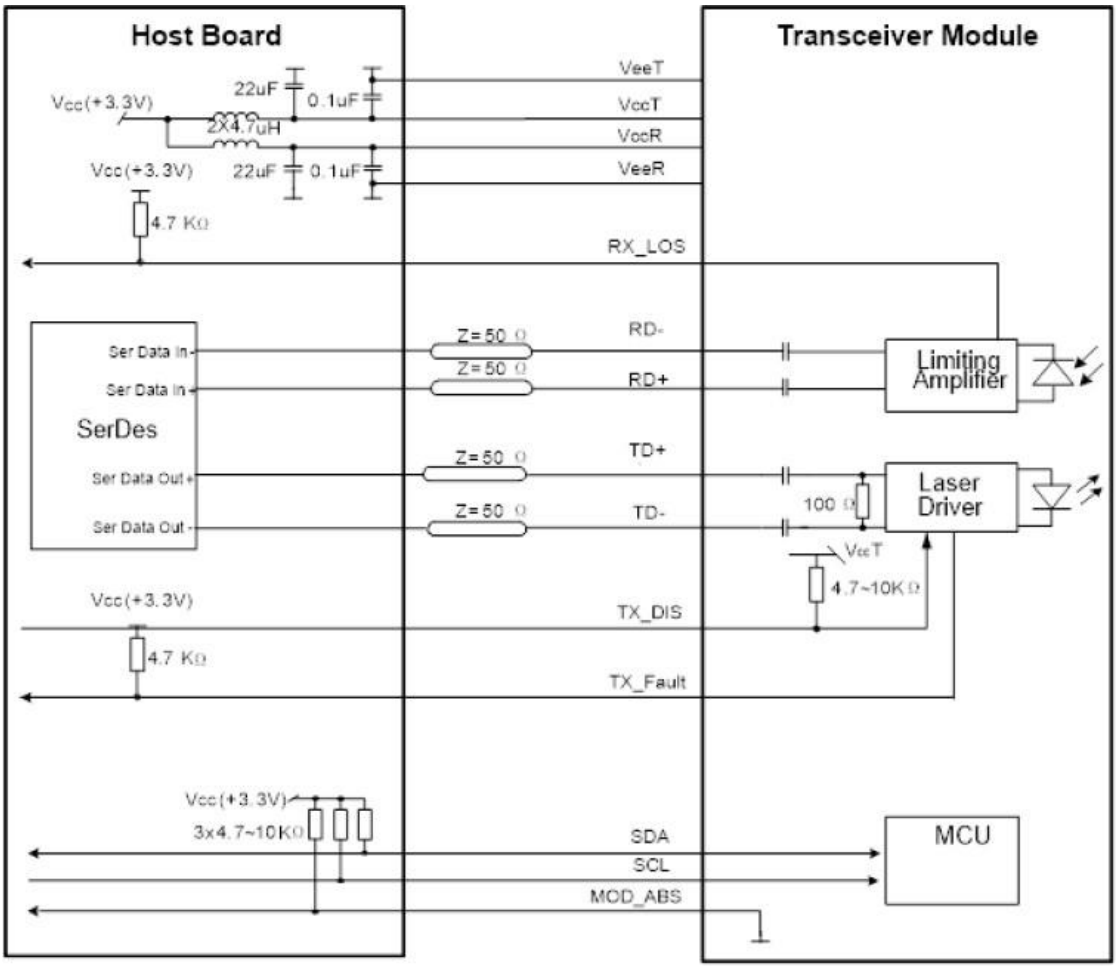
Parameter	Range	Accuracy	Calibratiom
Temperature	0 to +70°C (C)	±3°C	Internal
	-40 to +85°C (I)		
Voltage	3.13 to 3.47V	±5%	Internal
Bias Current	0 to 100mA	±10%	Internal
TX Power	0 to +6dBm	±3dBm	Internal
RX Power	-21 to -4dBm	±3dBm	Internal

EEPROM Information

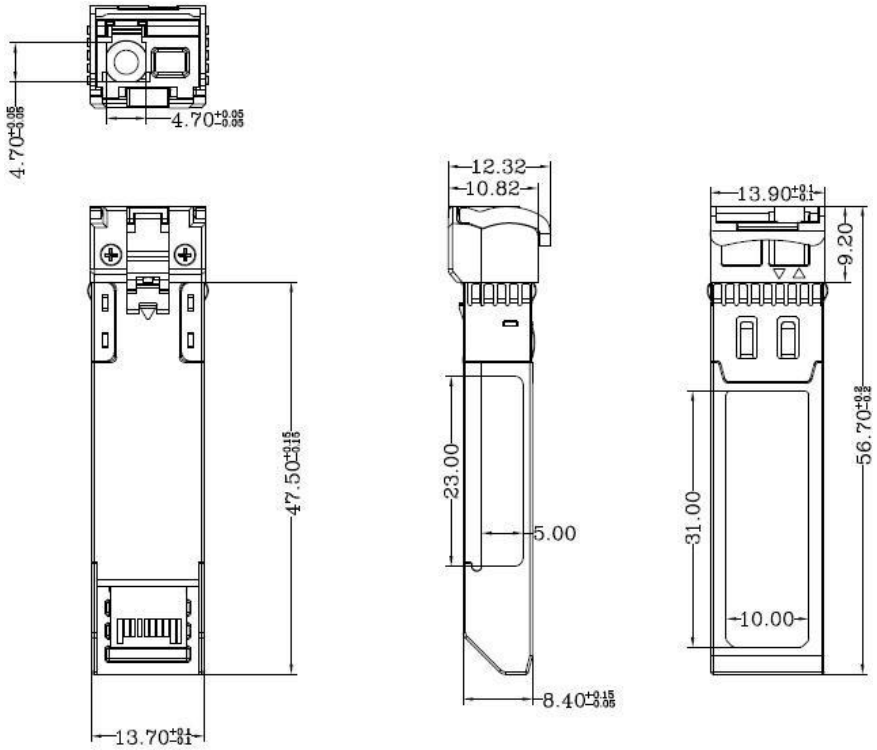
EEPROM memory map specific data field description is as below:



Recommend Circuit Schematic



Mechanical Specifications



Ordering information

PN	Description
LS-BL293025-60C	SFP28, 25.78G, Tx1295nm/Rx1309nm, 60km, 0˚C-70˚C
LS-BL293025-60I	SFP28, 25.78G, Tx1295nm/Rx1309nm, 60km, -40˚C-85˚C
LS-BL302925-60C	SFP28, 25.78G, Tx1309nm/Rx1295nm, 60km, 0˚C-70˚C
LS-BL302925-60I	SFP28, 25.78G, Tx1309nm/Rx1295nm, 60km, -40˚C-85˚C