OptiWorks
A BizLink Group Company

Transceiver

25G SFP28 BIDI (30km) BS7112G-IN & BS1712G-IN

Applications

- 25G BASE-LR Ethernet
- CPRI Option 10/eCPRI

Key Features

- Up to 25.78Gbps DataLinks
- Up to 30km on SMF
- High sensitivity APD photodiode and TIA
- Rate adaptation
- LC single connector
- Hot-pluggable SFP footprint
- Support Digital Diagnostic Monitor interface
- Single +3.3V power supply
- RoHS Compliant
- Case operating temperature
  Industrial:-40°C to +85°C

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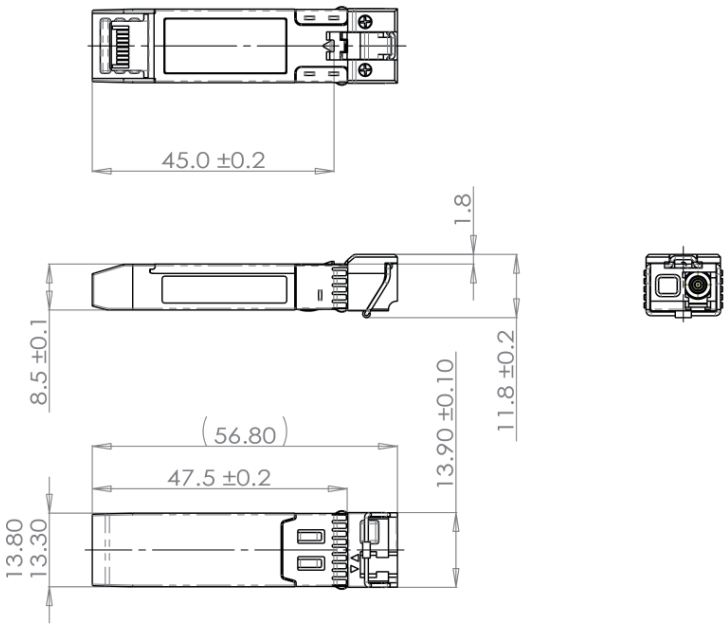
Dimensions



Unit: mm

Absolute Maximum Parameters

Exceeding the limits below may damage the active optical cable permanently.

Parameter	Symbol	Min.	Typ.	Max.	Unit.	Ref.
Maximum Supply Voltage	V_{CC}	-0.5		3.6	V	
Storage Temperature	T_S	-40		85	°C	
Relative Humidity (Non-condensing)	RH	0		85	%	

Recommended Operating Conditions

Parameter	Symbol	Min.	Typ.	Max.	Unit.	Ref.
Supply Voltage	V_{CC}	3.14	3.3	3.47	V	
Case Operating Temperature	T_{op}	-40		85	°C	
Data Rate	DR		25.78125		Gbps	
Bit Error Ratio	BER			5E-5		
Total Power Consumption	P			1.5	W	

Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit.	Ref.
Transmitter						
Differential Input Impedance	R_{IN}		100		Ohm	
Single-ended Data Input	V_{IN}	90		450	mVp-p	
Transmit Disable Voltage	V_{DIS}	2			V	
Transmit Enable Voltage	V_{EN}	V_{EE}		V_{EE}+0.8	V	
Transmit Fault Assert Voltage	V_{FA}	2		V_{CCHOST}	V	
Transmit Fault De-Assert Voltage	V_{FDA}	V_{EE}		V_{EE}+0.4	V	
Receiver						
Single-ended Data Output Swing	V_{OD}	200		450	mVp-p	
LOS Fault Voltage	V_{LOSFT}	2		V_{CCHOST}	V	
LOS Normal Voltage	V_{LOSNR}	V_{EE}		V_{EE}+0.4	V	

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Optical Characteristics

(Condition: Tc= -40°C to 85°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit.	Note.
Transmitter						
Center Wavelength (BS7112G-IN)	λc	1260	1270	1280	nm	
Center Wavelength(BS1712G-IN)	λc	1300	1310	1320	nm	
Average Optical Power	Po	0		5	dBm	
Spectral Width (-20dB)	Δλ			1	nm	
Extinction Ratio	ER	3.5			dB	
Side Mode Suppression Ratio	SMSR	30			dB	
Average Launch Power of off Transmitter	Poff			-30	dBm	
Relative Intensity Noise	RIN			-128	dB/Hz	
Receiver						
Center Wavelength (BS7112G-IN)	λc	1300	1310	1320	nm	
Center Wavelength (BS1712G-IN)	λc	1260	1270	1280	nm	
Receiver Sensitivity (OMA)	Rsense			-17	dBm	1
Receiver Overload (OMA)	Pmax	-5			dBm	
Receiver Reflectance				-12	dB	
LOS Assert	LOSA	-30			dBm	
LOS De-Assert	LOSD			-21	dBm	
LOS Hysteresis	LOSH	0.5			dB	

Notes:
1. Measured at 25.78125Gb/s, ER>3.5dBm, PRBS 231-1 and BER better than or equal to 5E-5.

Pin Configuration

Pin#	Symbol	Name/Description	Note
1	VEET	Transmitter ground (Common with receiver ground)	1
2	TFAULT	Transmitter fault. Not supported	2
3	TDIS	Transmitter disable. PHY disabled on high or open	3
4	SDA	2-wire serial interface data Line	4
5	SCL	2-wire serial interface clock	4
6	MOD_ABS	Module Absent, connection to VeeT or	
7	RS0	Rate select 0, optionally controls	
8	RX_LOS	Loss of signal indication	5
9	RS1	Rate select 1, optionally controls	
10	VEER	Receiver ground (Common with transmitter ground)	1

Pin#	Symbol	Name/Description	Note
11	VEER	Receiver ground (Common with transmitter ground)	1
12	RD-	Receiver inverted data out.	
13	RD+	Receiver non-inverted data out.	
14	VEER	Receiver ground (Common with transmitter ground)	1
15	VCCR	Receiver power supply	
16	VCCT	Transmitter power supply	
17	VEET	Transmitter ground (Common with receiver ground)	1
18	TD+	Transmitter non-inverted data in.	
19	TD-	Transmitter inverted data in.	
20	VEET	Transmitter ground (Common with receiver ground)	1

Notes:
1. Circuit ground is isolated from chassis ground.
2. Open drain/collector and shall be pulled up to the Vcc host with a resistor in the range of 4.7kOhms to 10kOhms.
3. Tx_Disable is an input contact with a 4.7kOhms to 10kOhms pullup to VccT inside the module.
4. SCL and SDA are pulled up to Vcc_Host_2w by resistors in the host.
5. Rx_LOS is an open drain/collector output. For a nominally 3.3 V Vcc_Host using a resistive pull up to Vcc_Host the resistor value shall be in the range 4.7kOhms to 10kOhms. For a nominally 2.5 V Vcc_Host using a resistive pull up to Vcc_Host the resistor value shall be in the range 4.7kOhms to 7.2kOhms.

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Pin Diagram

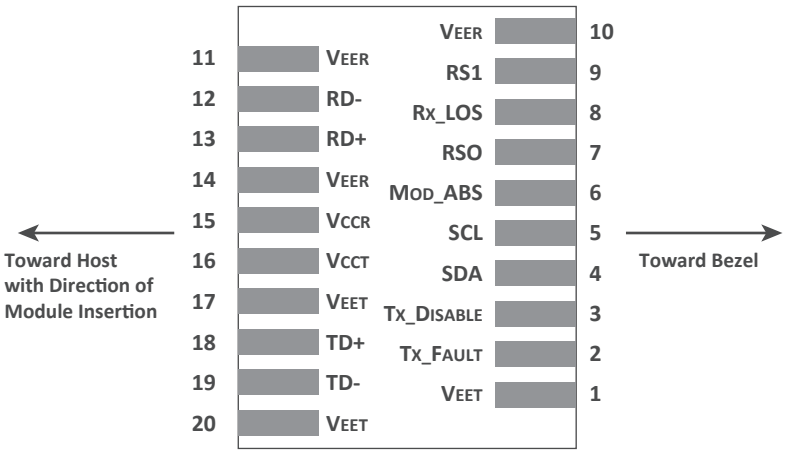
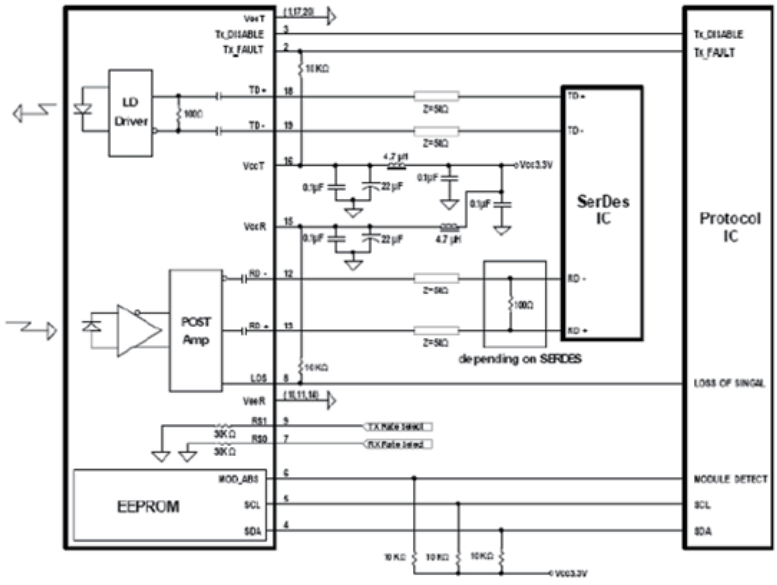


Diagram of Module Interface to Host

Block Diagram



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