

25Gb/s 10km SFP28 BIDI Transceiver (STC-25G-BIDI-10KM) Data Sheet



Features:

- ▶ UP to 25.78Gb/s bi-directional data links
- ▶ Hot-Pluggable SFP28 footprint
- ▶ Duplex LC connector
- ▶ 1271nm DFB laser transmitter for STC-25G-BIDI-10KM-2733

1331nm DFB laser transmitter for STC-25G-BIDI-10KM-3327

- ▶ Up to 10km on 9/125m SMF
- ▶ 2-wire interface for management specifications compliant with SFF 8472 digital diagnostic monitoring interface for optical transceivers
- ▶ Power Supply :+3.3V
- ▶ Operating case temperature Range:
Commercial: 0~ 70°C
Extended:-5~85°C
Industrial:-40~ 85°C
- ▶ RoHS compliant

Applications:

- ▶ 25GE LR
- ▶ eCPRI&CPRI

Part Number Ordering Information

STC-25G-BIDI-10KM-2733	SFP28 LR 10km BIDI optical transceiver with full real-time digital diagnostic monitoring ,1271nm Transmitter&1331nm Receiver,-40~85°C, 25GE
STC-25G-BIDI-10KM-3327	SFP28 LR 10km BIDI optical transceiver with full real-time digital diagnostic monitoring , 1331nm Transmitter&1271nm Receiver, -40~85°C, 25GE
STC-25G-BIDI-10KM-2733	SFP28 LR 10km BIDI optical transceiver with full real-time digital diagnostic monitoring ,1271nm Transmitter&1331nm Receiver,-5~85°C, 25GE
STC-25G-BIDI-10KM-3327	SFP28 LR 10km BIDI optical transceiver with full real-time digital diagnostic monitoring , 1331nm Transmitter&1271nm Receiver, -5~85°C, 25GE
STC-25G-BIDI-10KM-2733	SFP28 LR 10km BIDI optical transceiver with full real-time digital diagnostic monitoring ,1271nm Transmitter&1331nm Receiver, 0~70°C, 25GE
STC-25G-BIDI-10KM-3327	SFP28 LR 10km BIDI optical transceiver with full real-time digital diagnostic monitoring , 1331nm Transmitter&1271nm Receiver, 0~70°C, 25GE

Description:

SWEDISH TELECOM's STC-25G-BIDI-10KM-XXXX SFP28 transceivers are designed for use in Ethernet links up to 25.78 Gb/s data rate and up to 10 km link length. They are compliant SFF-8472 , and compatible with SFF-8432 and applicable portions of SFF-8431. The product is RoHS compliant and lead-free per Directive 2011/96/EU.

PRODUCT SELECTION

► Pin Function Definitions

PIN #	Name	Function	Notes
1	VeeT	Module transmitter ground	1
2	Fault	Module transmitter Fault	2
3	Disable	Transmitter Disable; Turns off transmitter laser output	3
4	SDL	2 wire serial interface data input/output (SDA)	4
5	SCL	2 wire serial interface clock input (SCL)	4
6	MOD-ABS	Module Absent, connect to VeeR or VeeT in the module	2
7	RS0	Rate select0: module inputs and are pulled low to VeeT with > 30 kΩ resistors in the module.	
8	LOS	Receiver Loss of Signal Indication	
9	RS1	Rate select1: module inputs and are pulled low to VeeT with > 30 kΩ resistors in the module.	

10	VeeR	Module receiver ground	1
11	VeeR	Module receiver ground	1
12	RD-	Receiver inverted data out put	
13	RD+	Receiver non-inverted data out put	
14	VeeR	Module receiver ground	1
15	VccR	Module receiver 3.3V supply	
16	VccT	Module transmitter 3.3V supply	
17	VeeT	Module transmitter ground	1
18	TD+	Transmitter non-inverted data out put	
19	TD-	Transmitter inverted data out put	
20	VeeT	Module transmitter ground	1

Note:

1. The module ground pins shall be isolated from the module case.
2. This pin is an open collector/drain output pin and shall be pulled up with 4.7K-10Kohms to Host_Vcc on the host board.
3. This pin shall be pulled up with 4.7K-10Kohms to VccT in the module.
4. This pin is an open collector/drain output pin and shall be pulled up with 4.7K-10Kohms to Host_Vcc on the host board.

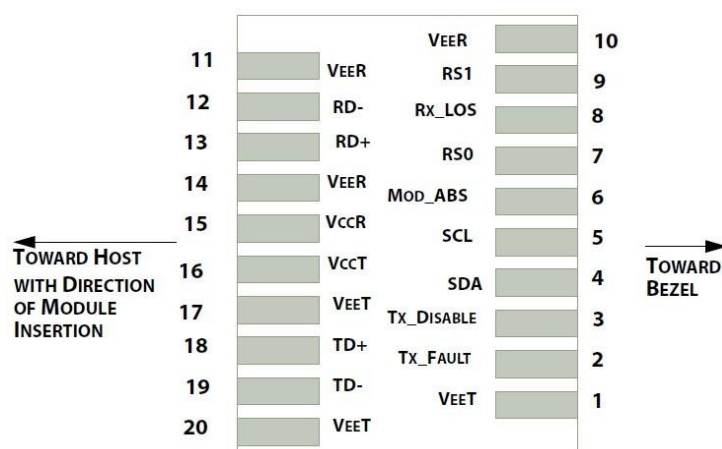


Diagram of Host Board Connector Block Pin Numbers and Names

► Absolute Maximum Ratings

Parameter	Symbol	Min.	Typical	Max.	Unit	Note
Storage Temperature	T _S	-40		+85	°C	
Case Operating Temperature	T _A	0		+70	°C	Commercial
		-5		+85	°C	Extended
		-40		+85	°C	Industrial
Maximum Supply Voltage	V _{CC}	0		3.6	V	
Relative Humidity(Non-condensing)	RH	0		85	%	

► Electrical Characteristics (VCC = 3.15 to 3.46 Volts)

Parameter	Symbol	Min.	Typical	Max.	Unit	Note
Supply Voltage	V _{CC}	3.14		3.46	V	
Supply Current	I _{CC}			300	mA	Commercial
				360	mA	Extended
				360	mA	Industrial
Power Consumption	P			1	W	Commercial
				1.2	W	Extended
				1.2	W	Industrial
Data Rate	R	24.3		26.5	Gb/s	
Fiber Length	L			10	KM	
Transmitter Section:						
Input differential impedance	R _{in}		100		Ω	1
Differential input voltage swing	V _{in,pp}	180		450	mV	2
Transmit Disable Voltage	V _D	2		V _{CC}	V	3
Transmit Enable Voltage	V _{EN}	V _{EE}		V _{EE} +0.8	V	
Receiver Section:						
Single Ended Output Voltage Tolerance	V	-0.3		4	V	
Rx Output Diff Voltage	V _O	180		450	mV	
LOS Fault	V _{LOS fault}	2		V _{CC} HOS _T	V	4
LOS Normal	V _{LOS norm}	V _{EE}		V _{EE} +0.8	V	4

Note:

1. Connected directly to TX data input pins. AC coupling from pins into laser driver IC.
2. Per SFF-8431 Rev 3.0
3. Into 100 ohms differential termination.
4. LOS is an open collector output. Should be pulled up with 4.7k – 10k Ω on the host board. Normal operation is logic 0; loss of signal is logic 1. Maximum pull-up voltage is 5.5V.

Optical Characteristics (VCC = 3.15 to 3.46 Volts)

Parameter	Symbol	Min.	Typical	Max.	Unit	Note
Transmitter Section:						
Center Wavelength	λ_t	1265	1271	1277	nm	
		1325	1331	1337	nm	
spectral width(-20dB)	$\Delta \lambda$			1	nm	
Average Optical Power	Pavg	-5.0		+2.0	dBm	1
Laser Off Power	Poff			-30	dBm	
Side Mode Suppression Ratio		30				
Extinction Ratio	ER	3.5			dB	
Optical Return Loss Tolerance				-12	dB	
Receiver Section:						
Center Wavelength	λ_r	1325	1331	1337	nm	
		1265	1271	1277	nm	
Receiver Sensitivity	Sen			-9	dBm	2
Los Assert	LOS _A	-30		-	dBm	
Los Dessert	LOS _D			-16	dBm	
Los Hysteresis	LOS _H	0.5			dB	
Overload		2			dBm	

Note:

1. Average power figures are informative only, per IEEE802.3cc.
2. Receiver sensitivity is informative. Shall be measured with conformance test signal for . BER =5x 10⁻⁵.

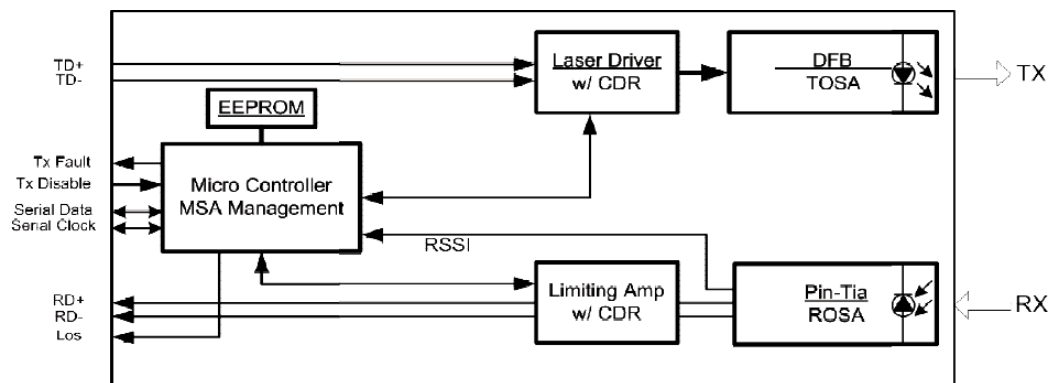
► Timing Characteristics

Parameter	Symbol	Min.	Typical	Max.	Unit
TX_Disable Assert Time	t _{off}			100	us
TX_Disable Negate Time	t _{on}			2	ms
Time to Initialize 2-wire interface	t _{2w_start_up}			300	ms
Time to Initialize	t _{start_up}			300	ms
Time to Initialize cooled module and time to power up a cooled module to Power level II	t _{start_up_cooled}			90	s
Time to Power Up to Level II	t _{power_level2}			300	ms
Time to Power Down from Level II	t _{power_down}			300	ms
Tx_Fault assert	Tx_Fault_on			1	ms
Tx_Fault assert for cooled module	Tx_Fault_on_cooled			50	ms
TX_FAULT Reset	t _{reset}	10			us
Rx_LOS assert delay	t _{los_on}			100	us
Rx_LOS negate delay	t _{los_off}			100	us

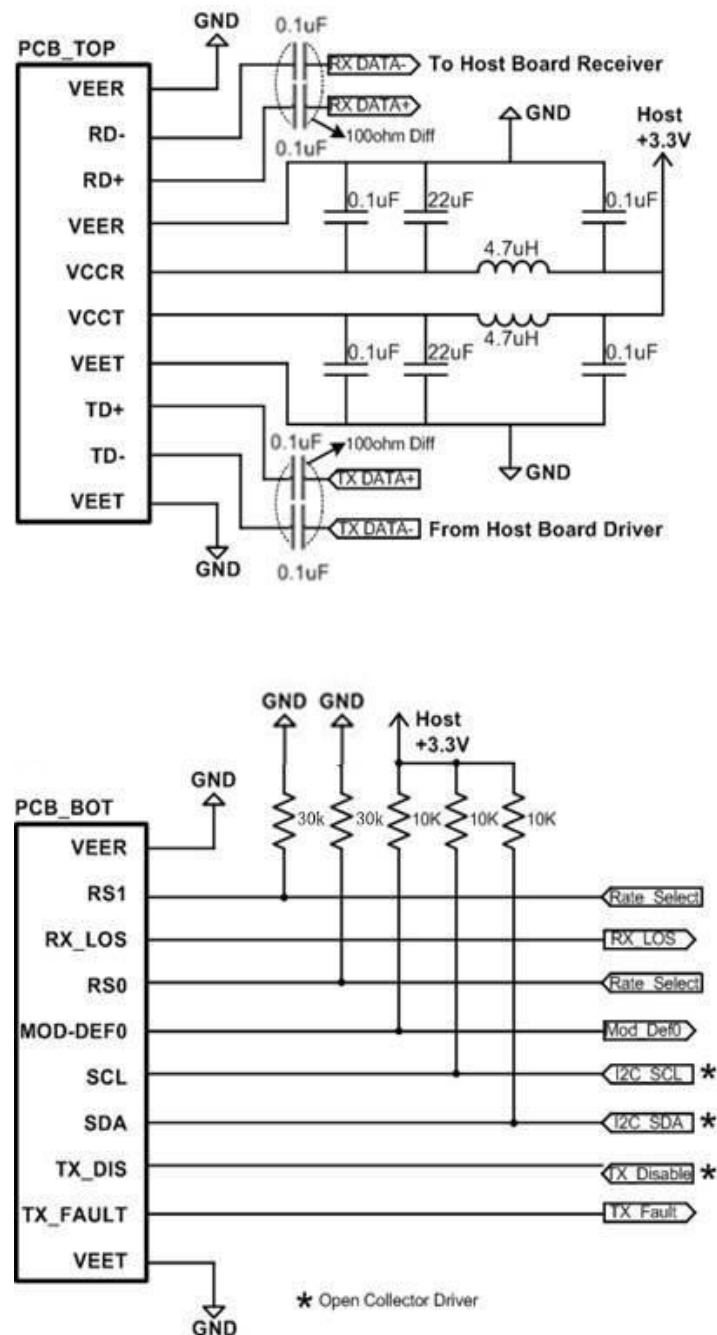
► Digital Diagnostic Specifications

Parameter	Symbol	Units	Min	Max	Accuracy	Note
Transceiver Temperature	DDDTemp	°C	-40	+85	±5°C	Industrial
			-5	+85	±5°C	Extended
			0	+70	±5 °C	Commercial
Transceiver Supply Voltage	DDDVoltage	V	3.15	3.45	±3%	
Transmitter Bias Current	DDDBias	mA	0	35	±10%	
Transmitter Output Power	DDDTx-Power	dBm	-5	+5	±3dB	
Receiver Average Optical Input Power	DDDRx-Power	dBm	-16	-3	±3dB	

► Transceiver Block Diagram

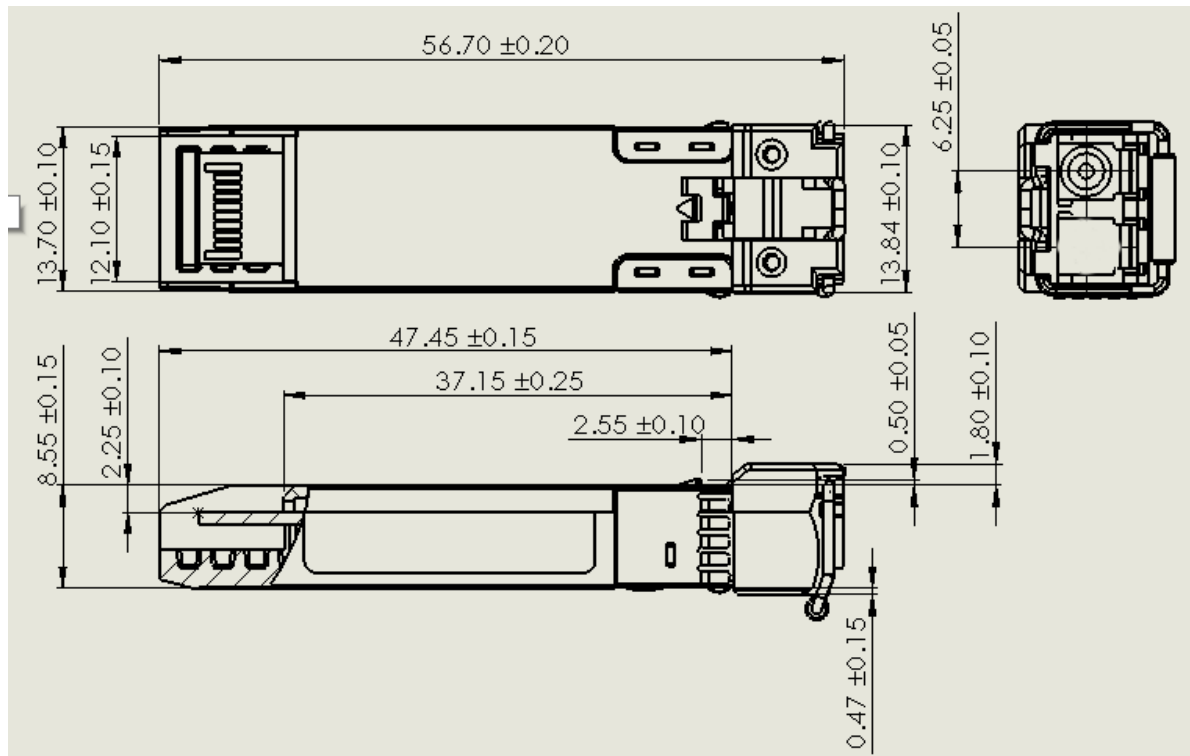


Recommended Circuit:



Recommended High-speed Interface Circuit

Mechanical Dimensions:



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