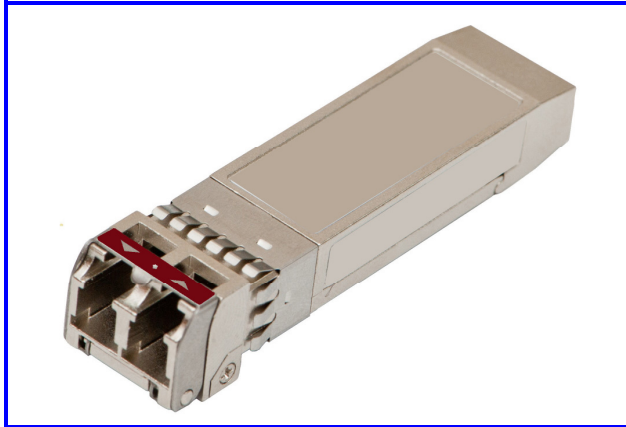




**RoHS compliant**  
**1310 nm Single-mode , SFP28 LC Duplex Connector**  
**25G Ethernet/CPRI**  
**SFP28 ER 40km**



### Features

- Compliant with SFP+ MSA SFF-8431
- Compliant with SFF8472 diagnostic monitoring interface Duplex LC connector
- Single power supply 3.3V
- Hot Pluggable
- EML laser and APD receiver
- Support CPRI line bit rate option 10: 24330.24 Mbit/s
- Class 1 laser product complies with EN 60825-1
- Link distance up to 40km single mode fiber

### Ordering Information

PART NUMBER	VOLTAGE	TEMPERATURE	DISTANCE
LE38-J3L-TC-N	3.3V	0°C to 70 °C	40km
LE38-J3L-TI-N	3.3V	-40°C to 85 °C	40km

### Diagnostics

PARAMETER	RANGE	ACCURACY	UNIT	CALIBRATION
Temperature	-40 to 85	± 3	°C	
Voltage	3.14 to 3.46	± 0.1	V	
Bias Current	0 to 120	± 10%	mA	Internal
TX Power	-1 to +6	± 3	dB	
RX average Power	-4 to -21	± 3	dB	



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### Absolute Maximum Ratings

PARAMETER	SYMBOL	MIN	MAX	UNITS	NOTE
Storage Temperature	$T_s$	-40	85	°C	
Supply Voltage	$V_{cc}$	-0.4	3.6	V	
Operating Relative Humidity	$RH$	5	85	%	

### Recommended Operating Conditions

PARAMETER	SYMBOL	MIN	MAX	UNITS	NOTE
Case operating Temperature	$T_c$	0	70	°C	C-Temp
		-40	85		I-Temp
Supply Voltage	$V_{cc}$	3.14	3.46	V	
Supply Current@3.3V	$I_{TX} + I_{RX}$		462	mA	C-Temp
			578		I-Temp
Power Consumption@3.3V	$P$	---	1.6	W	C-Temp
			2		I-Temp



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**Transmitter Electro-optical Characteristics**

$V_{CC} = 3.14 \text{ V to } 3.46 \text{ V}$ ,  $TC = 0 \text{ }^\circ\text{C to } 70 \text{ }^\circ\text{C}$ ,  $TI = -40 \text{ }^\circ\text{C to } 85 \text{ }^\circ\text{C}$

PARAMETER	SYMBOL	MIN	TYP.	MAX	UNITS	NOTE
Bit Rate	$B$	24	25.78	26.5	Gbps	
Average Launch Power	$P_{avg}$	-1	---	+6	dBm	
Optical Modulation Amplitude(OMA)	$P_{oma}$	0		+6	dBm	
Extinction Ratio	$ER$	6.5	---	---	dB	
Center Wavelength	$\lambda_c$	1295	1305	1310	nm	
Spectral Width (-20dB)	$\Delta\lambda$	---	---	1	nm	
Side Mode Suppression Ratio	$SMSR$	30			dB	
Max. $P_{out}$ TX-DISABLE Asserted	$P_{OFF}$	---	---	-45	dBm	
Transmitter and dispersion penalty	$TDP$			2.7	dB	
OMA-TDP		-1			dBm	
Differential Input Voltage	$V_{DIFF}$	200		1000	mV	
Transmit Fault Output-Low	$TX\_FAULT_L$	0.0	---	0.5	V	
Transmit Fault Output-High	$TX\_FAULT_H$	2.4	---	$V_{CC}$	V	
TX_DISABLE Assert Time	$t_{off}$	---	---	100	$\mu s$	
TX_DISABLE Negate Time	$t_{on}$	---	---	2	ms	
Time to initialize, include reset of TX_FAULT	$t_{init}$	---	---	300	ms	
Tx_Fault assert for cooled module	$t_{fault}$	---	---	50	ms	
TX_DISABLE time to start reset	$t_{reset}$	10	---	---	$\mu s$	



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SFP28 ER 40km

### Receiver Electro-optical Characteristics

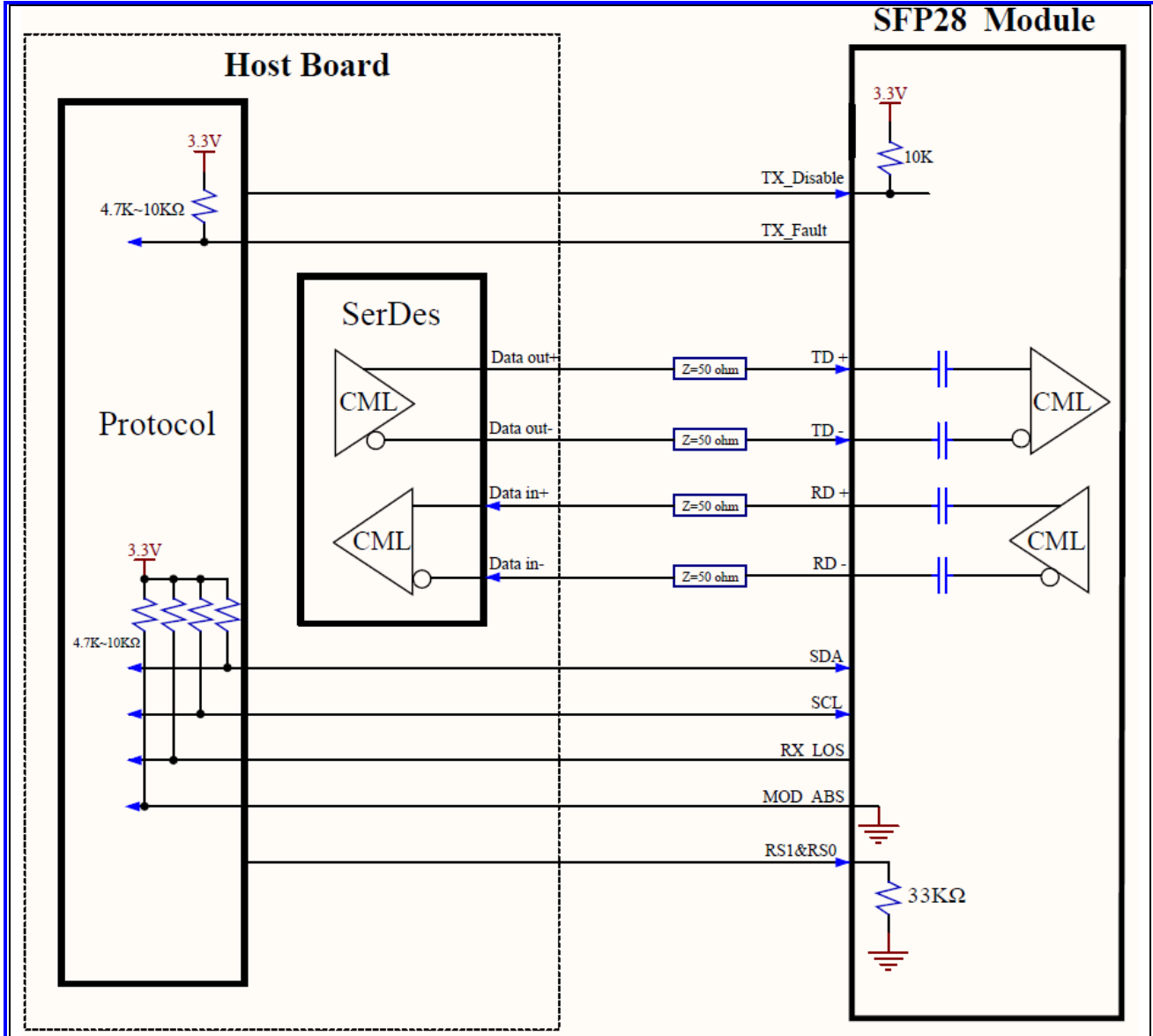
$V_{CC} = 3.14 \text{ V to } 3.46 \text{ V}$ ,  $TC = 0^\circ\text{C to } 70^\circ\text{C}$ ,  $TI = -40^\circ\text{C to } 85^\circ\text{C}$

PARAMETER	SYMBOL	MIN	TYP.	MAX	UNITS	NOTE
Data Rate	$B$	24	25.78	26.5	Gbps	
Damage threshold		-3			dBm	
Average Receive Power		-21		-4	dBm	
Receiver Sensitivity(OMA)	$P_{IN}$	-19		-4	dBm	@BER=5E-5
Operating Center Wavelength	$\lambda_C$	1270	---	1330	nm	
Optical Return Loss	$ORL$	26	---	---	dB	
Loss of signal -Deasserted	$P_D$	---	---	-20	dBm	
Loss of signal -Asserted	$P_A$	-35	---	---	dBm	
Differential Output Voltage	$V_{DIFF}$	500	---	1000	mV	
Receiver Loss of Signal Output Voltage-Low	$RX\_LOS_L$	0	---	0.5	V	
Receiver Loss of Signal Output Voltage-High	$RX\_LOS_H$	2.4	---	$V_{CC}$	V	
Receiver Loss of Signal Assert Time (off to on)	$t_{A,RX\_LOS}$	---	---	100	$\mu\text{s}$	
Receiver Loss of Signal Assert Time (on to off)	$t_{D,RX\_LOS}$	---	---	100	$\mu\text{s}$	

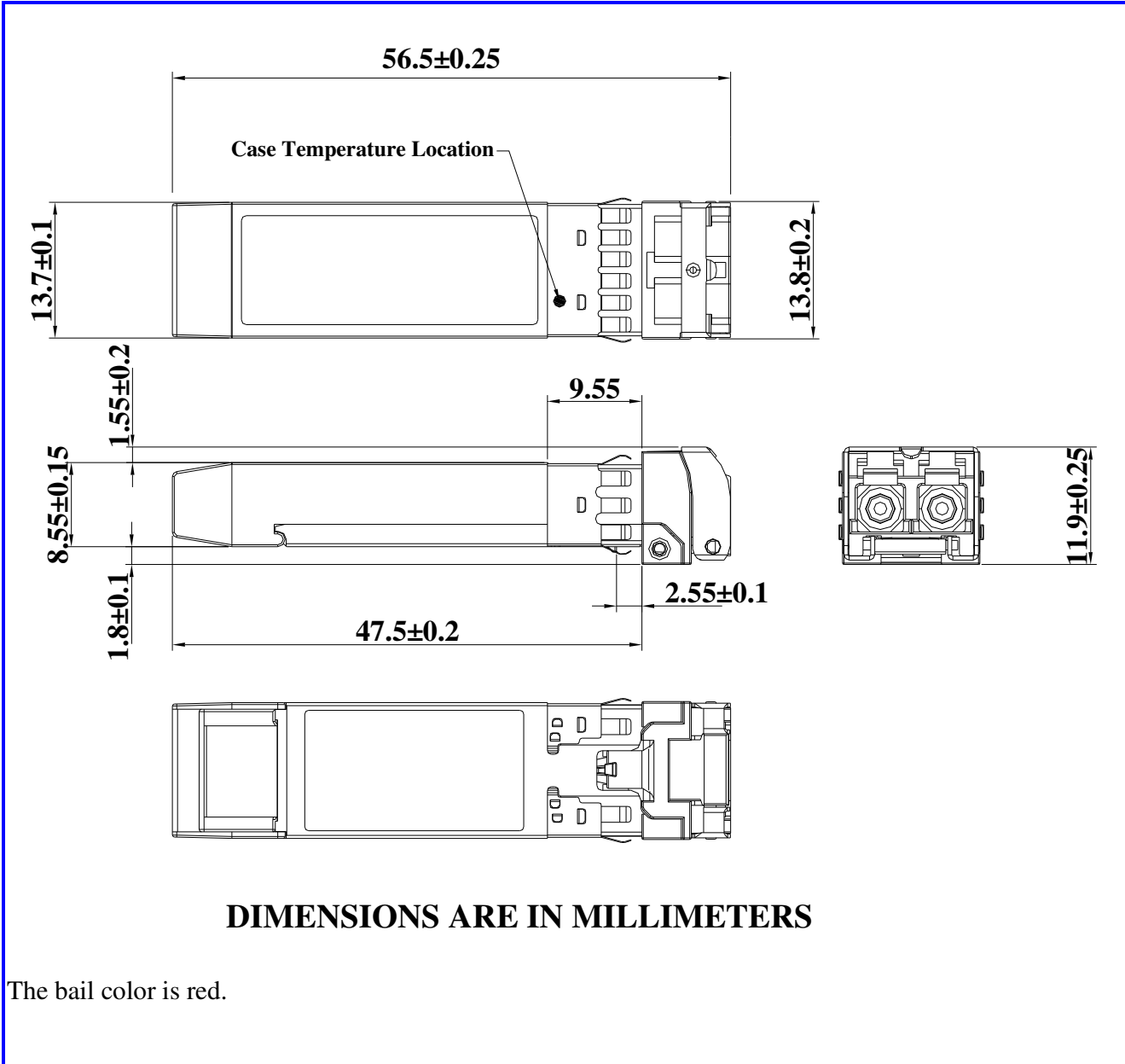
### Timing Parameters

PARAMETER	SYMBOL	MIN	TYP.	MAX	UNITS	NOTE
Time to initialize	$t_{start\_up}$			10	s	

Block Diagram of Transceiver



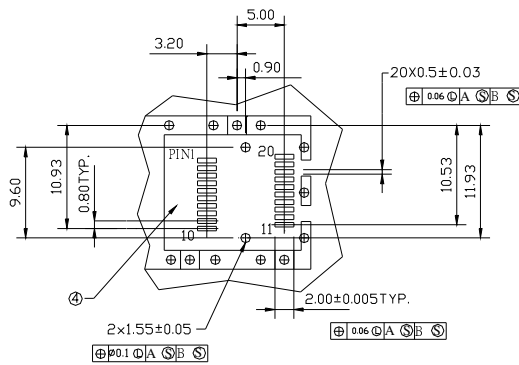
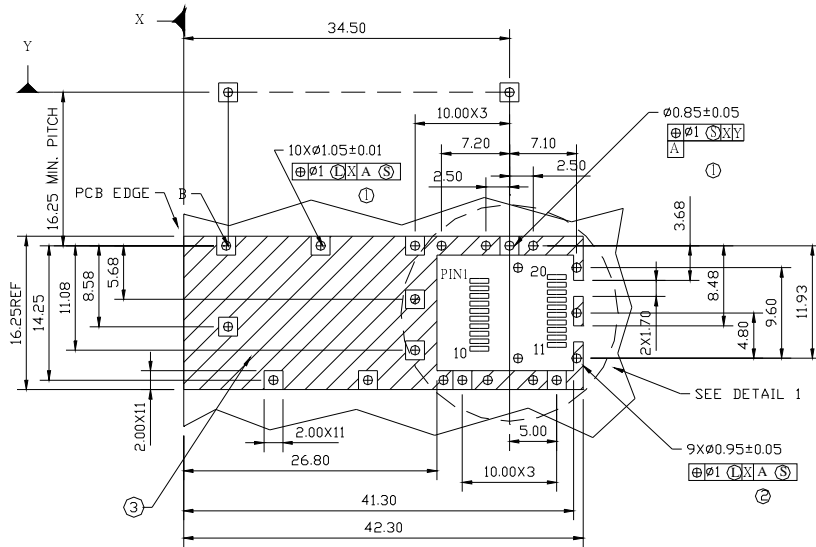
### Dimensions



**DIMENSIONS ARE IN MILLIMETERS**

The bail color is red.

SFP host board mechanical layout



DETAIL 1

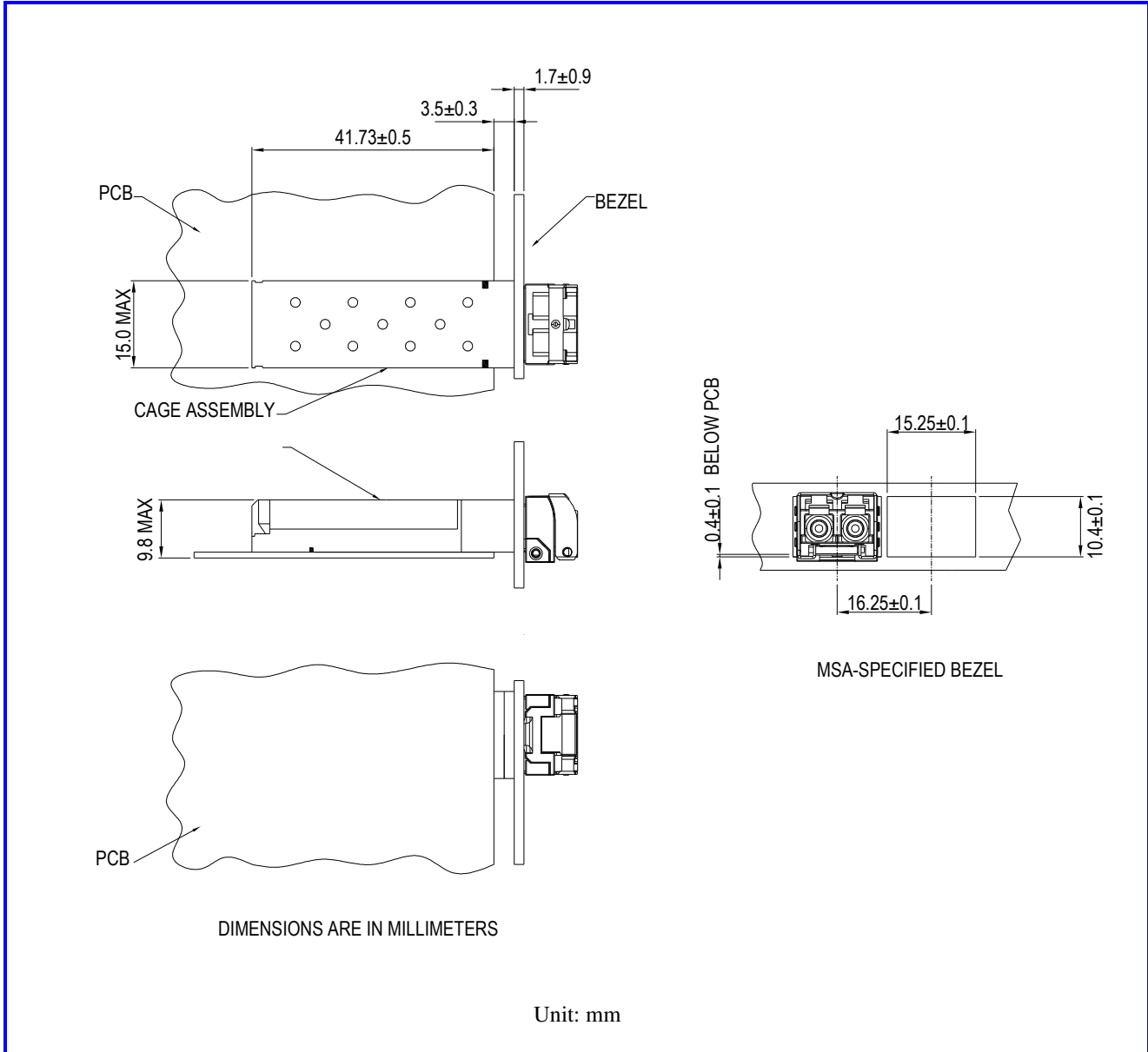
LEGEND

- 1.PADS AND VIAS ARE CHASSIS GROUND
- 2.THROUGH HOLES, PLATING OPTIONAL
- 3.HATCHED AREA DENOTES COMPONENT AND TRACE KEEPOUT(EXCEPT CHASSIS GROUND)
- 4.AREA DENOTES COMPONENT KEEPOUT (TRACES ALLOWED)

DIMENSIONS ARE IN MILLIMETERS

Unit: mm

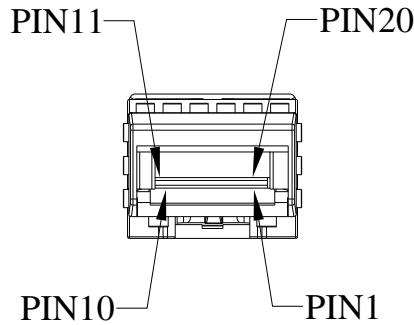
Assembly drawing





### Pin Assignment

Pin-Out



Pin	Signal Name	Description
1	<i>T<sub>GND</sub></i>	Transmit Ground
2	<i>TX_FAULT</i>	Transmit Fault
3	<i>TX_DISABLE</i>	Transmit Disable
4	<i>SDA</i>	SDA Serial Data Signal
5	<i>SCL</i>	SCL Serial Clock Signal
6	<i>MOD_ABS</i>	Internal connected to ground
7	<i>RS0</i>	Rate select 0, not used (2)
8	<i>RX_LOS</i>	Receiver Loss of Signal, LVTTTL High, open collector
9	<i>RS1</i>	Rate select 1, not used (2)
10	<i>R<sub>GND</sub></i>	Receiver Ground
11	<i>R<sub>GND</sub></i>	Receiver Ground
12	<i>RX-</i>	Receive Data Bar, ac coupled
13	<i>RX+</i>	Receive Data, ac coupled
14	<i>R<sub>GND</sub></i>	Receiver Ground
15	<i>V<sub>CCR</sub></i>	Receiver Power Supply
16	<i>V<sub>CCT</sub></i>	Transmitter Power Supply
17	<i>T<sub>GND</sub></i>	Transmitter Ground
18	<i>TX+</i>	Transmit Data, ac coupled
19	<i>TX-</i>	Transmit Data Bar, ac coupled
20	<i>T<sub>GND</sub></i>	Transmitter Ground

Note (2):RS0 and RS1 are module inputs and are pulled low to VeeT with > 30 kΩ resistors in the module.