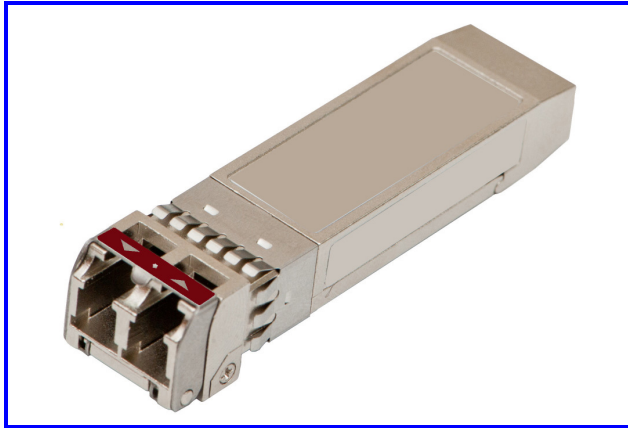




RoHS compliant
1310 nm Single-mode , SFP28 LC Duplex Connector
25G Ethernet/CPRI
SFP28 ER 60km



Features

- Compliant with SFP+ MSA SFF-8431
- Compliant with SFF8472 diagnostic monitoring interface Duplex LC connector
- Compliant to optical interface with IEEE802.3cc 25GBASE-ER requirements.
- 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 60km single mode fiber with FEC
- 23dB link budget

Ordering Information

PART NUMBER	VOLTAGE	TEMPERATURE	DISTANCE
LE38-J3U-TC-N	3.3V	0°C to 70 °C	40km ~ 60km
LE38-J3U-TI-N	3.3V	-40°C to 85 °C	40km ~ 60km

Transmission distance: Attenuation of 0.35 dB/km @1310nm is used for the link length calculations

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 Average Power	+2 to +6	± 3	dB	
RX Average Power	-5 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

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

PARAMETER	SYMBOL	MIN	TYP.	MAX	UNITS	NOTE
Bit Rate	B	24	25.78	26.5	Gbps	
Average Launch Power	P_{avg}	+2	---	+6	dBm	(1)
Optical Modulation Amplitude(OMA)	P_{oma}	+3		+6	dBm	
Extinction Ratio	ER	6.5	---	---	dB	
Center Wavelength	λ_c	1300	1310	1320	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			1	dB	
Output Eye						Compliant with IEEE802.3cc
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	μs	
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	---	---	μs	



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Receiver Electro-optical Characteristics

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

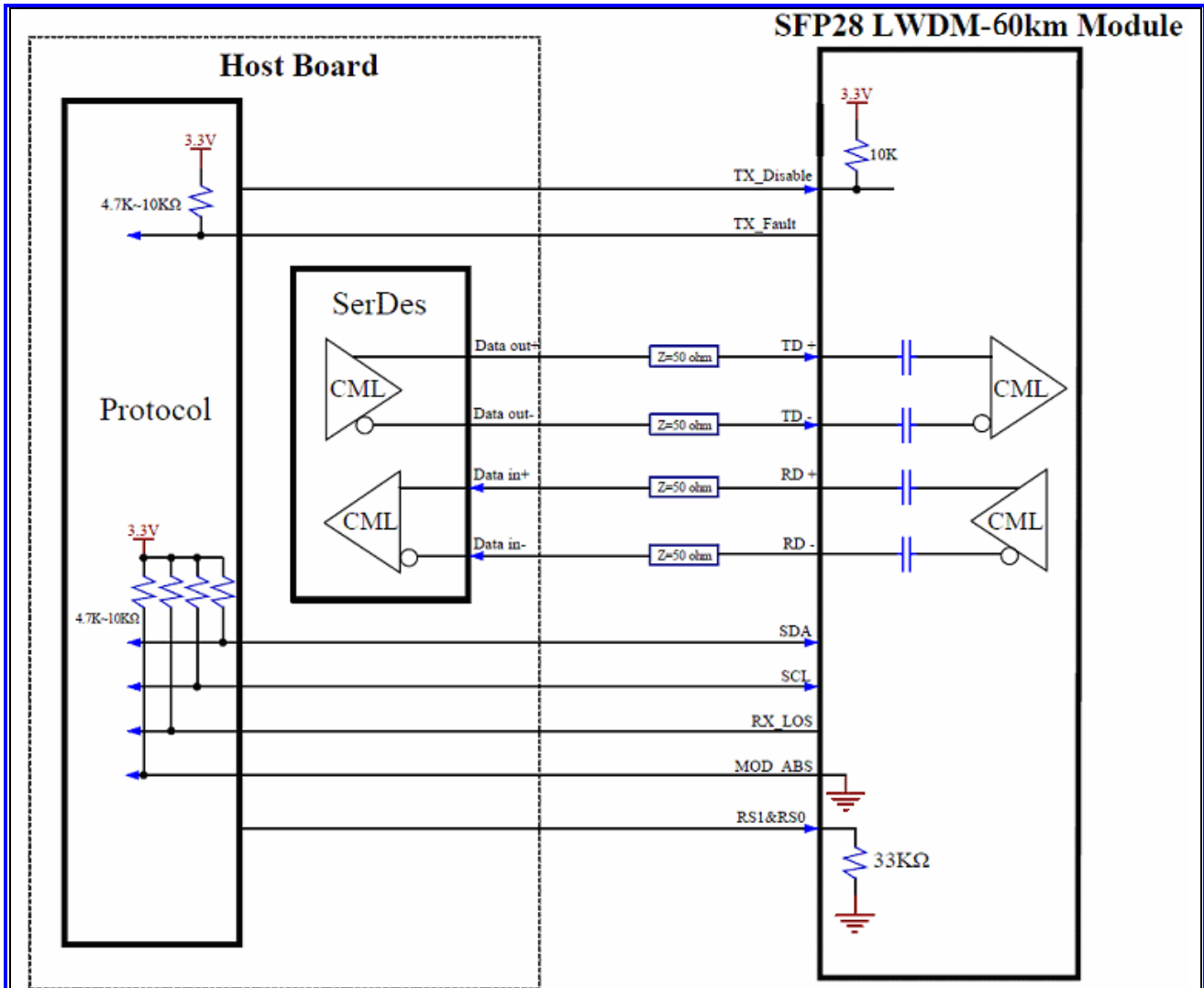
PARAMETER	SYMBOL	MIN	TYP.	MAX	UNITS	NOTE
Data Rate	B	24	25.78	26.5	Gbps	
Average Receive Power		-21		-5	dBm	(1)
Receiver Sensitivity(OMA)	P_{IN}	---	---	-20	dBm	@BER=5E-5
Operating Center Wavelength	λ_C	1270	---	1330	nm	
Optical Return Loss	ORL	26	---	---	dB	
Loss of signal -Deasserted	P_D	---	---	-23	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	μs	
Receiver Loss of Signal Assert Time (on to off)	t_{D,RX_LOS}	---	---	100	μs	

Note1: Average launch power (min) is informative and not the principal indicator of signal strength. A transmitter with launch power below this value cannot be compliant; however, a value above this does not ensure compliance.

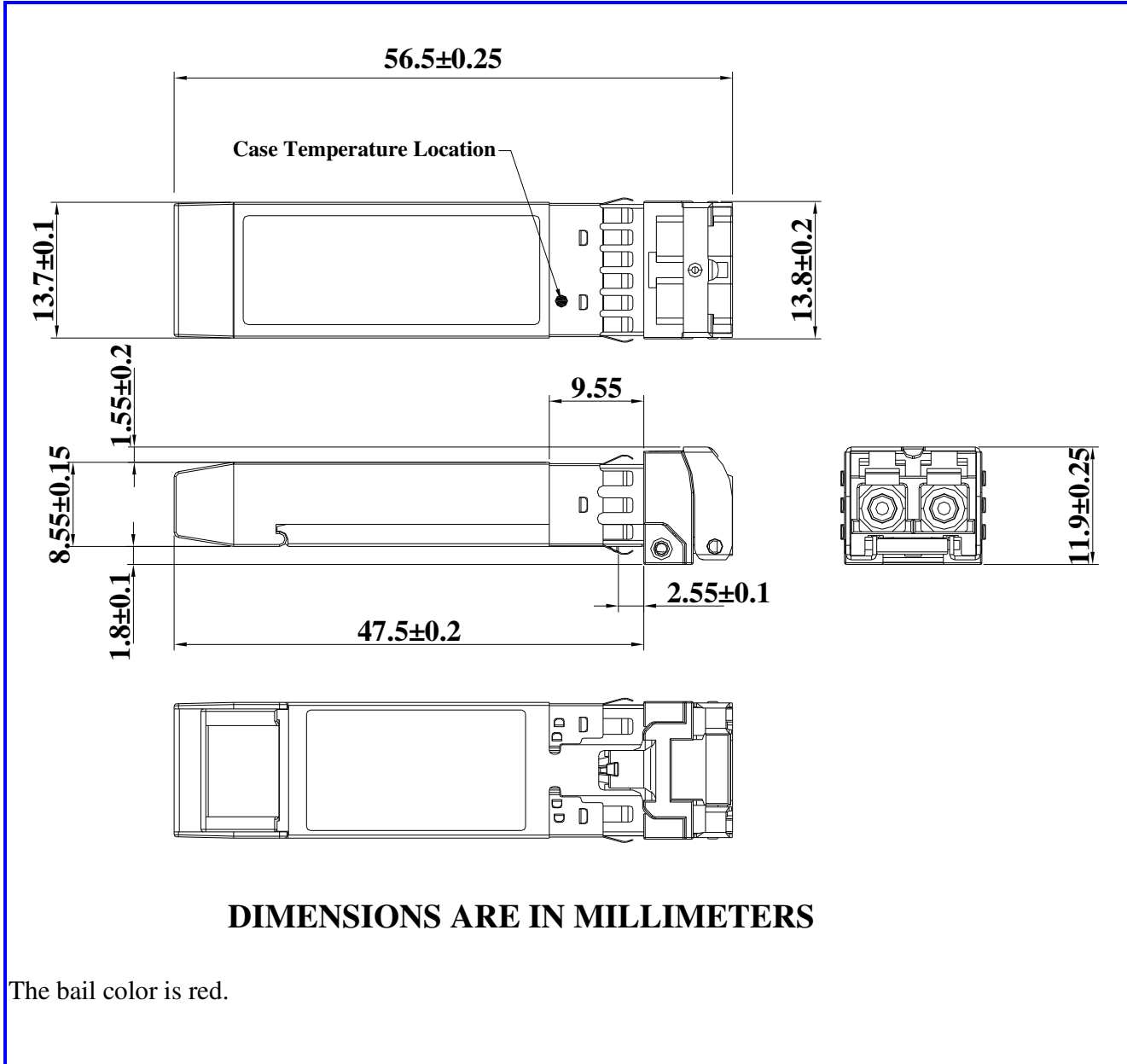
Timing Parameters

PARAMETER	SYMBOL	MIN	TYP.	MAX	UNITS	NOTE
Time to initialize	t_{start_up}			10	s	

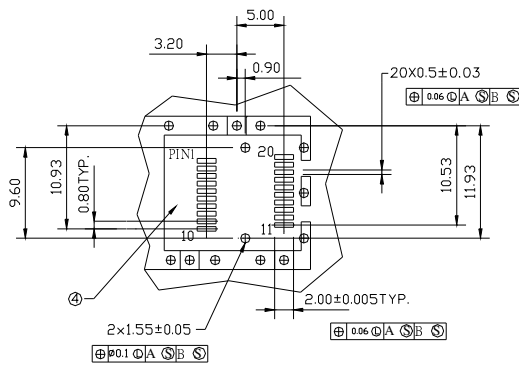
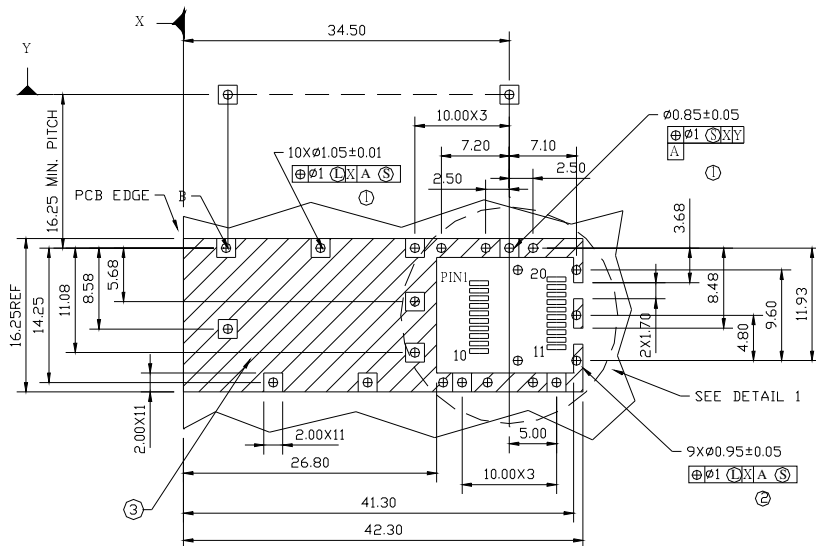
Block Diagram of Transceiver



Dimensions



SFP host board mechanical layout



DETAIL 1

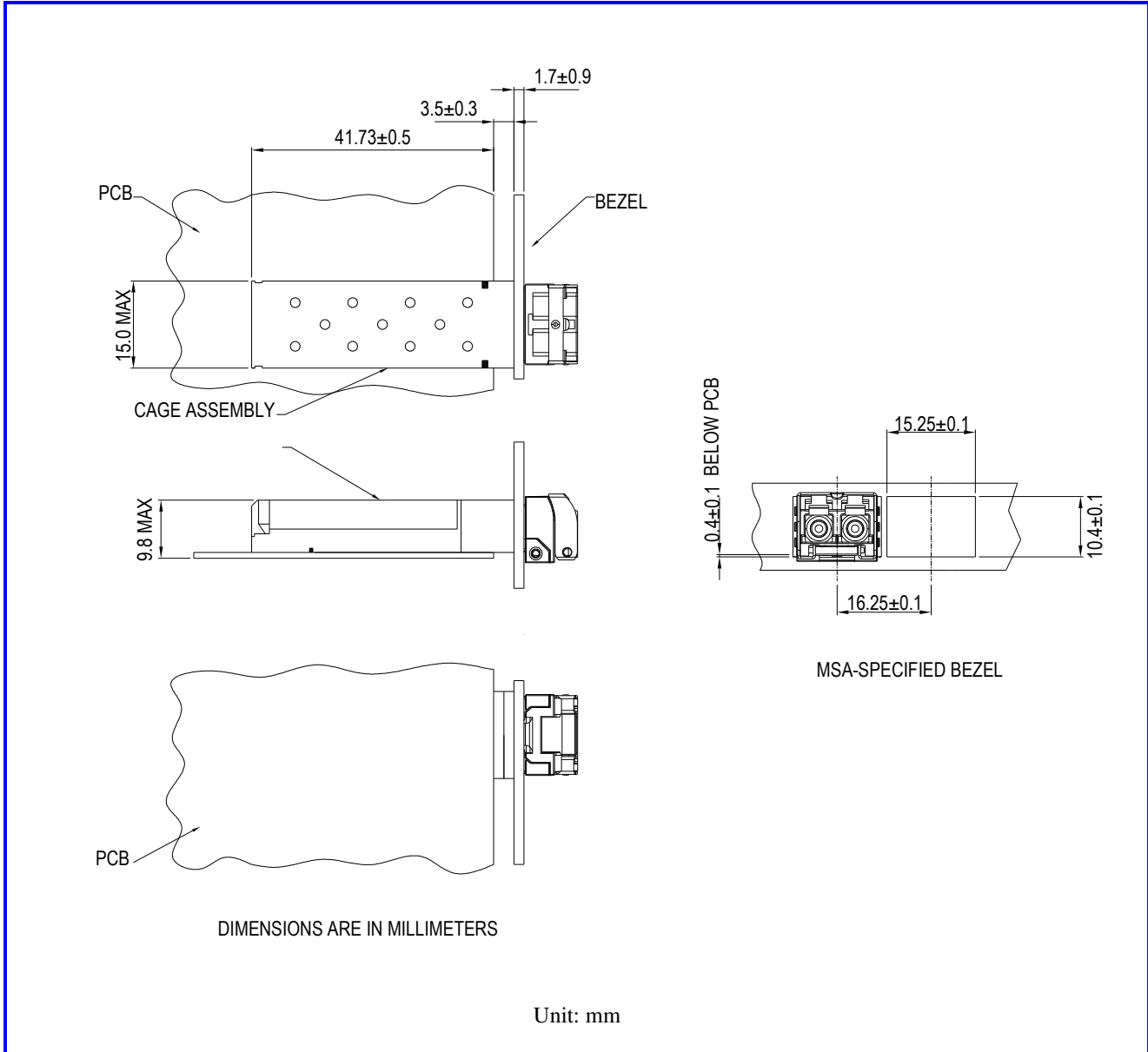
LEGEND

- 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

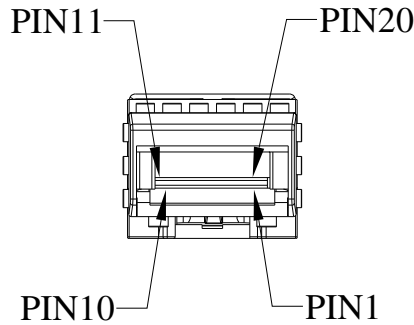




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Pin Assignment

Pin-Out



Pin	Signal Name	Description
1	<i>T_{GND}</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_{GND}</i>	Receiver Ground
11	<i>R_{GND}</i>	Receiver Ground
12	<i>RX-</i>	Receive Data Bar, ac coupled
13	<i>RX+</i>	Receive Data, ac coupled
14	<i>R_{GND}</i>	Receiver Ground
15	<i>V_{CCR}</i>	Receiver Power Supply
16	<i>V_{CCT}</i>	Transmitter Power Supply
17	<i>T_{GND}</i>	Transmitter Ground
18	<i>TX+</i>	Transmit Data, ac coupled
19	<i>TX-</i>	Transmit Data Bar, ac coupled
20	<i>T_{GND}</i>	Transmitter Ground

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