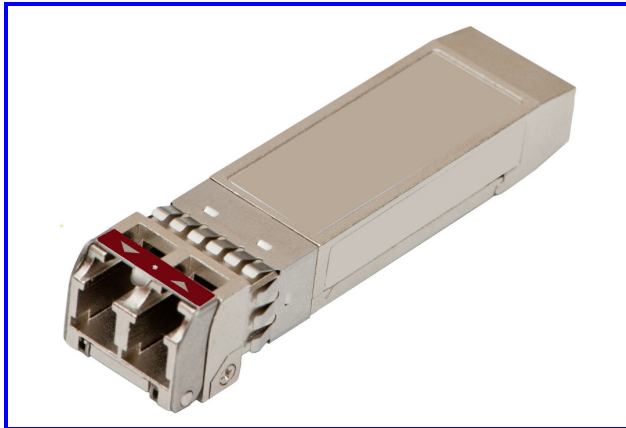




RoHS compliant
Single-mode , SFP28 LC Duplex Connector
25G Ethernet/CPRI
SFP28 LAN-WDM 40km



Features

- Compliant with SFP+ MSA SFF-8431
- Compliant with SFF8472 diagnostic monitoring interface Duplex LC connector
- Single power supply 3.3V
- EML laser and APD receiver
- Link distance up to 40km over single mode fiber
- Support CPRI line bit rate option 10: 24330.24 Mbit/s
- Class 1 laser product complies with EN 60825-1
- Internal transmitter/receiver CDR
- Total link budget 20dB
- Hot Pluggable

Ordering Information

PART NUMBER	WAVELENGTH	TEMPERATURE	Distance
LE38-J3L-TC-N-HA	1277.89 nm	0°C to 70 °C	40km
LE38-J3L-TC-N-HB	1282.26 nm	0°C to 70 °C	40km
LE38-J3L-TC-N-HC	1286.66 nm	0°C to 70 °C	40km
LE38-J3L-TC-N-HD	1291.11 nm	0°C to 70 °C	40km
LE38-J3L-TC-N-HE	1295.56 nm	0°C to 70 °C	40km
LE38-J3L-TC-N-HF	1300.05 nm	0°C to 70 °C	40km
LE38-J3L-TC-N-HG	1304.58 nm	0°C to 70 °C	40km
LE38-J3L-TC-N-HH	1309.14 nm	0°C to 70 °C	40km
LE38-J3L-TI-N-HA	1277.89 nm	-40°C to 85 °C	40km
LE38-J3L-TI-N-HB	1282.26 nm	-40°C to 85 °C	40km
LE38-J3L-TI-N-HC	1286.66 nm	-40°C to 85 °C	40km
LE38-J3L-TI-N-HD	1291.11 nm	-40°C to 85 °C	40km
LE38-J3L-TI-N-HE	1295.56 nm	-40°C to 85 °C	40km
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Diagnostics

PARAMETER	RANGE	ACCURACY	UNIT	CALIBRATION
Temperature	-40 to 85	± 3	$^{\circ}\text{C}$	
Voltage	3.14 to 3.46	± 0.1	V	
Bias Current	0 to 100	$\pm 10\%$	mA	Internal
TX Power	+0 to +5	± 3	dB	
RX average Power	-5 to -20	± 3	dB	

Absolute Maximum Ratings

PARAMETER	SYMBOL	MIN	MAX	UNITS	NOTE
Storage Temperature	T_S	-40	+85	$^{\circ}\text{C}$	
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	$^{\circ}\text{C}$	LE38-J3L-TC-N-Hx
		-40	+85		LE38-J3L-TI-N-Hx
Supply Voltage	V_{CC}	3.14	3.46	V	
Supply Current	$I_{TX} + I_{RX}$		462	mA	LE38-J3L-TC-N-Hx
			578		LE38-J3L-TI-N-Hx
Power Consumption	P	---	1.6	W	LE38-J3L-TC-N-Hx
			2		LE38-J3L-TI-N-Hx



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Transmitter Electro-optical Characteristics

$V_{CC} = 3.14 \text{ V to } 3.46 \text{ V}$, $T_c = -40^\circ \text{C to } 85^\circ \text{C}$

PARAMETER	SYMBOL	MIN	TYP.	MAX	UNITS	NOTE
Bit Rate	B	24	25.78	26.5	Gbps	
Average Optical Power	P_{out}	+0	---	+5	dBm	
Extinction Ratio	ER	6	---	---	dB	
Central Wavelength (-CA)	λ_C	1276.89	1277.89	1278.89	nm	
Central Wavelength (-CB)		1281.25	1282.26	1283.28	nm	
Central Wavelength (-CC)		1285.65	1286.66	1287.69	nm	
Central Wavelength (-CD)		1290.07	1291.11	1292.12	nm	
Central Wavelength (-CE)		1294.53	1295.56	1296.59	nm	
Central Wavelength (-CF)		1299.02	1300.05	1301.09	nm	
Central Wavelength (-CG)		1303.54	1304.58	1305.63	nm	
Central Wavelength (-CH)		1308.09	1309.14	1310.19	nm	
Transmitter eye mask definition {X1, X2, X3, Y1, Y2, Y3}			{0.31, 0.4, 0.45, 0.34, 0.38, 0.4}			Hit ratio 5×10^{-5} hits per sample.
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			1.5	dB	
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

$V_{CC} = 3.14 \text{ V to } 3.46 \text{ V}$, $T_c = -40 \text{ }^\circ\text{C to } 85 \text{ }^\circ\text{C}$

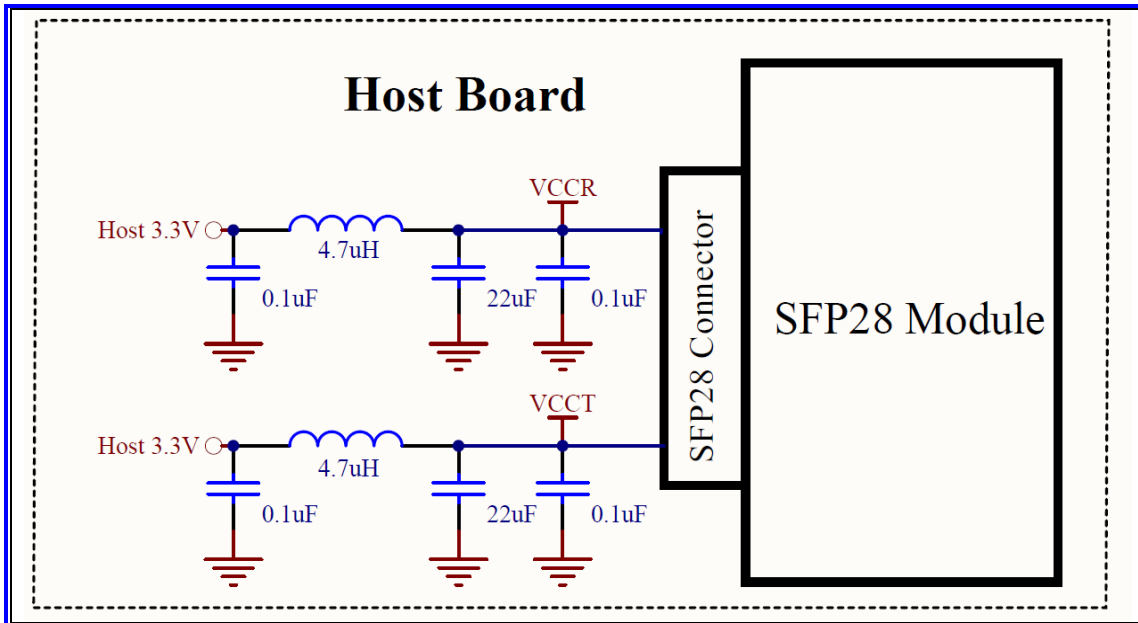
PARAMETER	SYMBOL	MIN	TYP.	MAX	UNITS	NOTE
Data Rate	B	24	25.78	26.5	Gbps	
Average Rx Sensitivity	P_{IN}	-20	---	-5	dBm	(1)
Operating Center Wavelength	λ_C	1260	---	1340	nm	
Optical Return Loss	ORL	26	---	---	dB	
Loss of signal -Deasserted	P_D	---	---	-20	dBm	
Loss of signal -Asserted	P_A	-35	---	---	dBm	
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	μs	
Receiver Loss of Signal Assert Time (on to off)	t_{D,RX_LOS}	---	---	100	μs	

Note(1): Minimum input power @BER=5E-5.

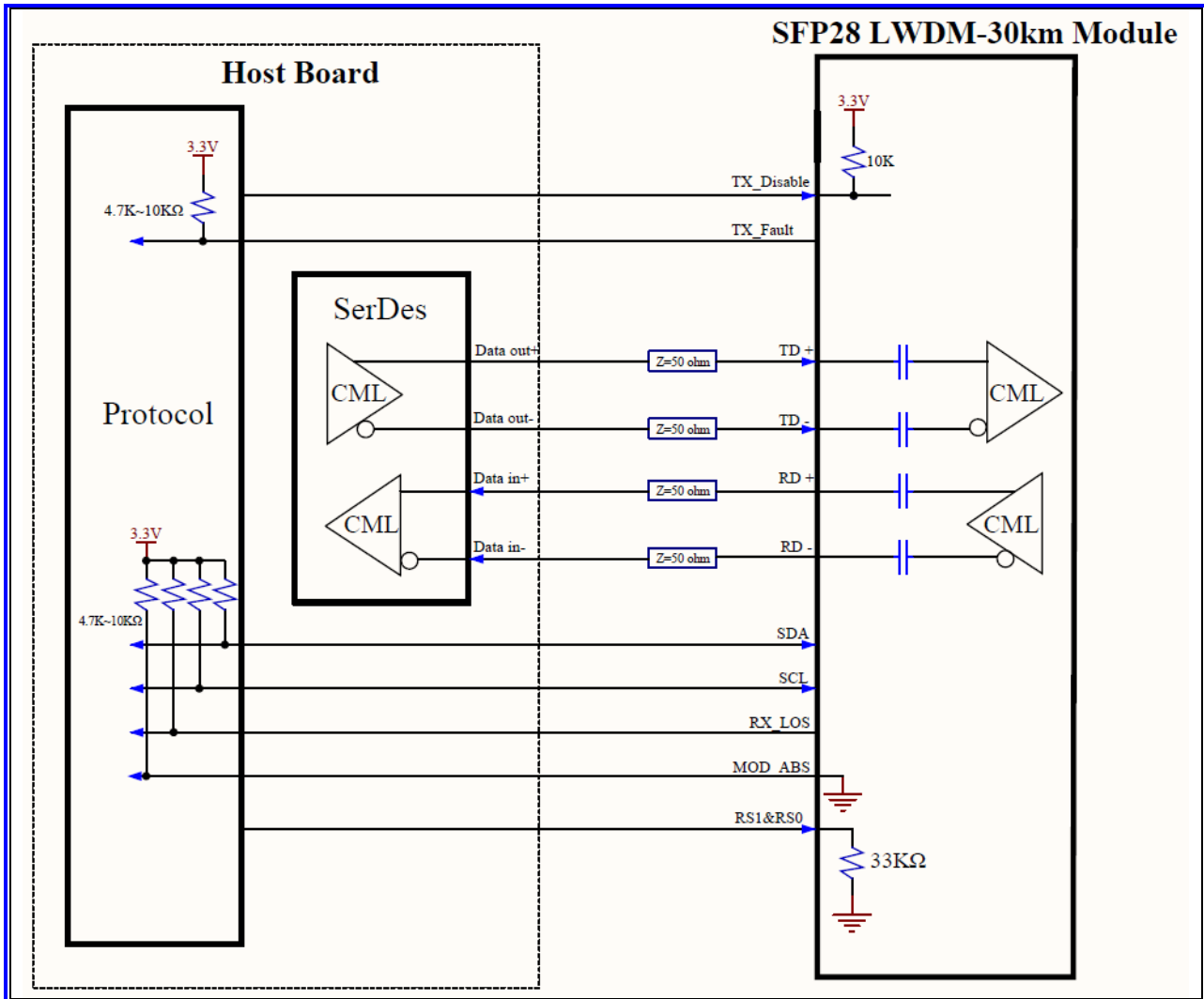
Timing Parameters

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

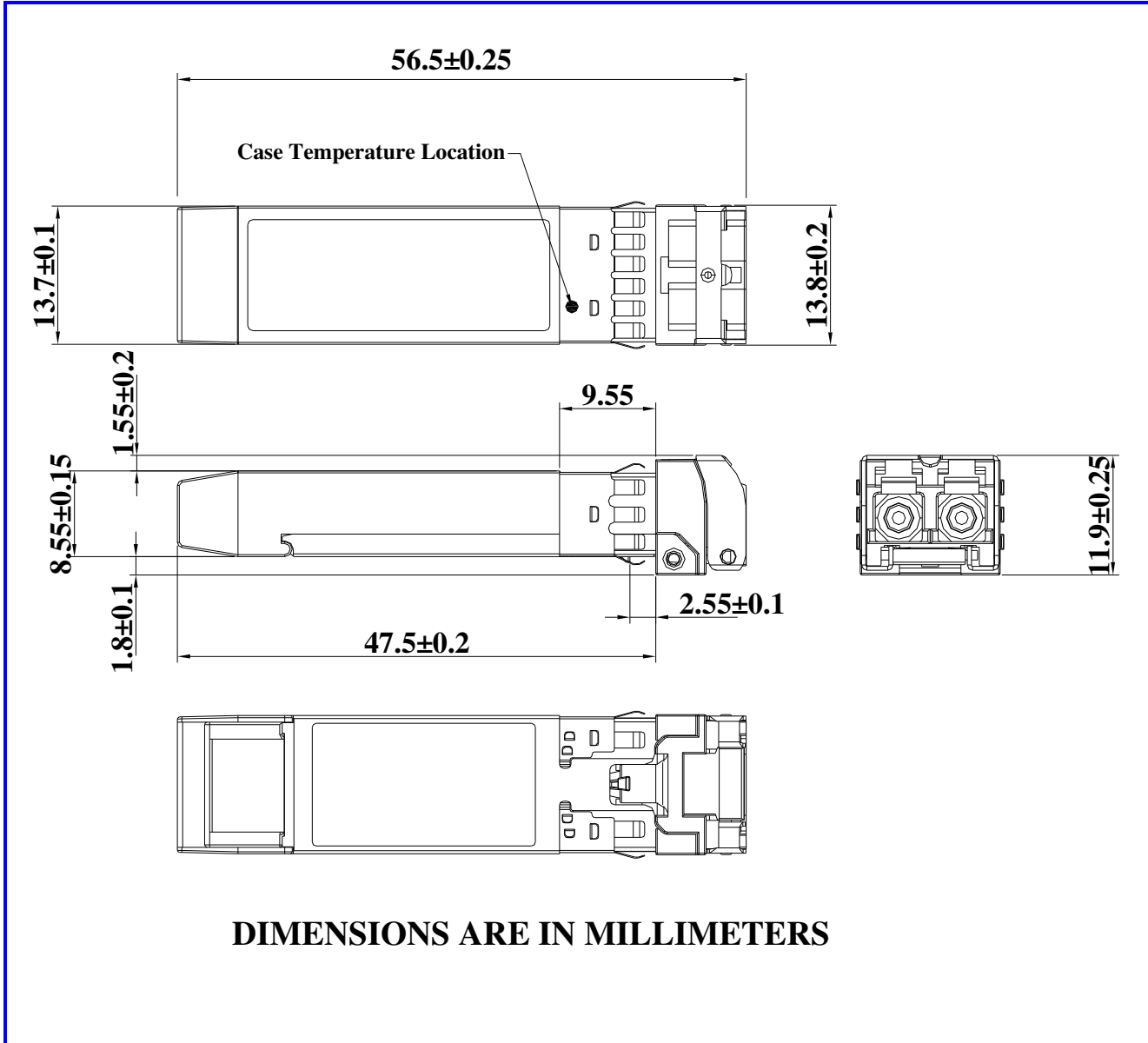
Recommended Host Board Power Supply Circuit



Block Diagram of Transceiver

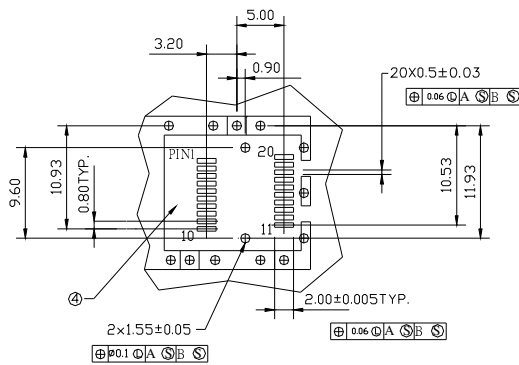
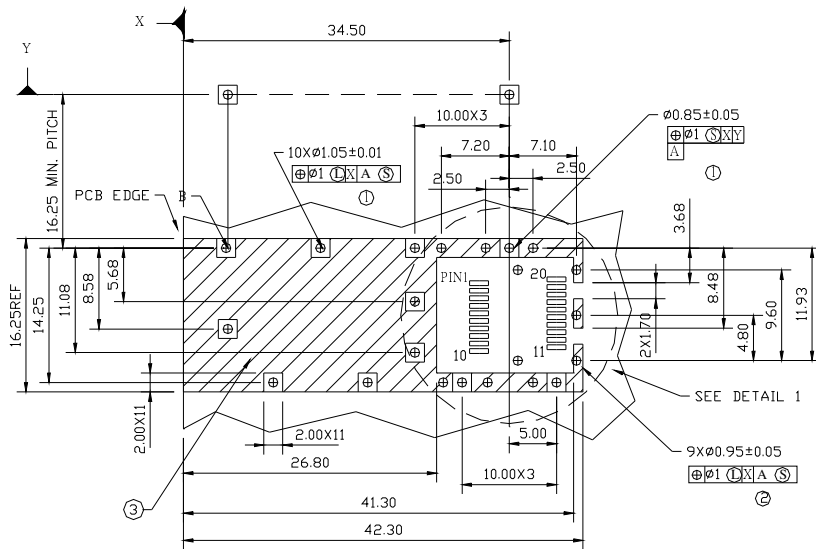


Dimensions



The bail color is red.

SFP host board mechanical layout



DETAIL 1

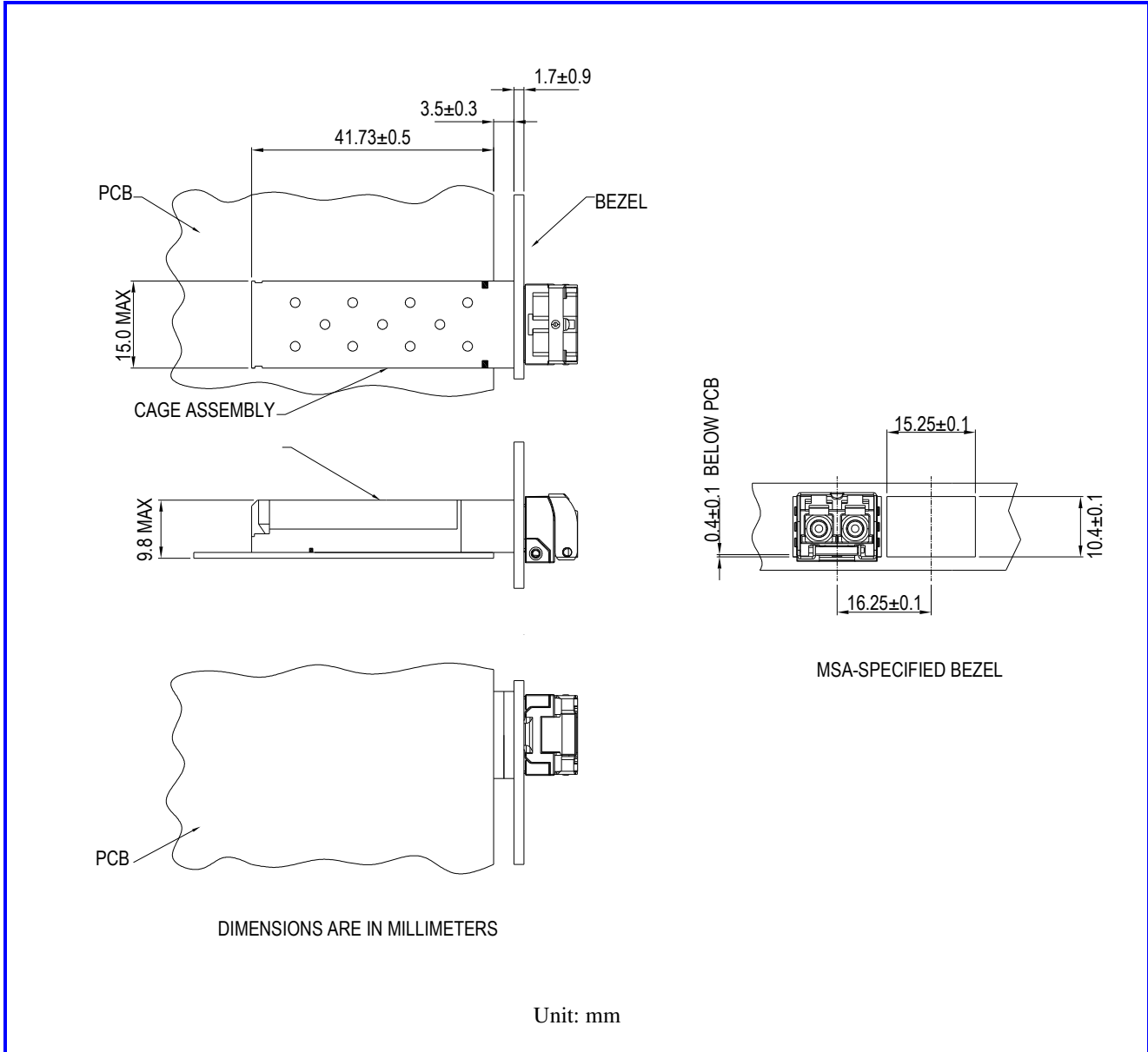
LEGEND

- 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

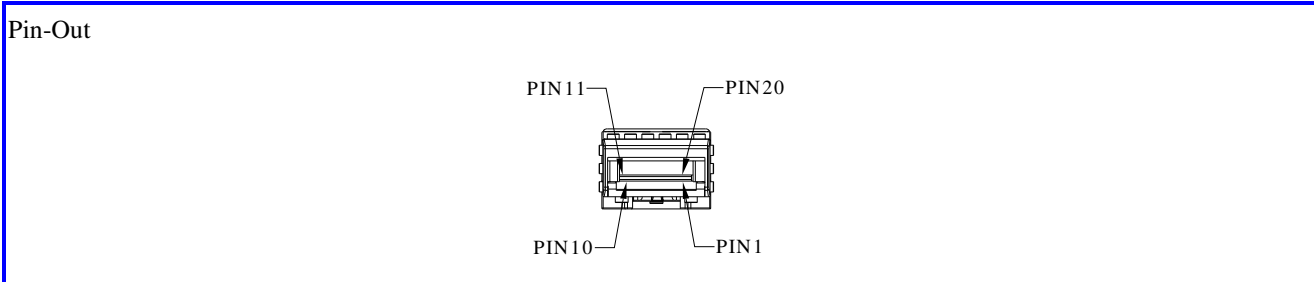
Assembly drawing





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Pin Assignment



Pin	Signal Name	I/O	Logic	Description	Note
1	<i>VeeT</i>			Transmit Ground	
2	<i>TX_FAULT</i>	O	LVTTL	Transmit Fault	
3	<i>TX_DISABLE</i>	I	LVTTL	Transmit Disable	
4	<i>SDA</i>	I/O	LVTTL	2-wire Serial Interface Data Line	
5	<i>SCL</i>	I/O	LVTTL	2-wire Serial Interface Clock	
6	<i>MOD_ABS</i>			Module Absent, connected to VeeT or VeeR in the module	
7	<i>RS0</i>	I	LVTTL	Rate select 0, not used	(2)
8	<i>RX_LOS</i>	O	LVTTL	Receiver Loss of Signal	
9	<i>RS1</i>	I	LVTTL	Rate select 1, not used	(2)
10	<i>VeeR</i>			Receiver Ground	
11	<i>VeeR</i>			Receiver Ground	
12	<i>RD-</i>	O	CML	Receive Data out Bar, AC coupled	
13	<i>RD+</i>	O	CML	Receive Data out, AC coupled	
14	<i>VeeR</i>			Receiver Ground	
15	<i>V_{CCR}</i>			Receiver Power Supply	
16	<i>V_{CCT}</i>			Transmitter Power Supply	
17	<i>VeeT</i>			Transmitter Ground	
18	<i>TD+</i>	I	CML	Transmit Data in, AC coupled	
19	<i>TD-</i>	I	CML	Transmit Data in Bar, AC coupled	
20	<i>VeeT</i>			Transmitter Ground	

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