



**RoHS Compliant**  
**1310 nm Single-mode Transceiver**  
**Small Form Pluggable (SFP+), with Diagnostic Monitoring**  
**25GBASE Ethernet**  
**SFP28 LR**



### Features

- Compliant with SFP+ MSA SFF-8431
- Compliant with SFF8472 diagnostic monitoring interface Duplex LC connector
- Single power supply 3.3V
- Hot Pluggable
- Link distance up to 10km over single mode fiber

### Ordering Information

PART NUMBER	INPUT/OUTPUT	VOLTAGE	TEMPERATURE
LE38-J3S-TC-N	AC/AC	3.3V	0°C to 70 °C
LE38-J3S-TJ-N	AC/AC	3.3V	-20°C to 85 °C
LE38-J3S-TI-N	AC/AC	3.3V	-40°C to 85 °C

### Diagnostics

Parameter	Range	Accuracy	Unit	Calibration
Internal Transceiver Temperature	-40 to 85	± 3	°C	Internal
Internal Transceiver Voltage	3.1 to 3.5	± 0.1	V	
Bias Current	0 to 30	± 10%	mA	
TX Power	-4 to +2	± 3	dB	
RX average Power	-12 to +0	± 3	dB	



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### Absolute Maximum Ratings

PARAMETER	SYMBOL	MIN	MAX	UNITS	NOTE
Storage Temperature	$T_S$	-40	85	°C	
Supply Voltage	$V_{CC}$	-0.5	4.0	V	
Input Voltage	$V_{IN}$	-0.5	$V_{CC}$	V	

### Recommended Operating Conditions

PARAMETER	SYMBOL	MIN	MAX	UNITS	NOTE
Case operating Temperature	$T_C$	0	70	°C	LE38-J3S-TC-N
	$T_C$	-20	85	°C	LE38-J3S-TJ-N
	$T_C$	-40	85	°C	LE38-J3S-TI-N
Supply Voltage	$V_{CC}$	3.14	3.46	V	
Supply Current	$I_{TX} + I_{RX}$		300	mA	
Power Consumption	$P$	---	1.0	W	



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### Transmitter Electro-optical Characteristics

$V_{CC} = 3.14 \text{ V to } 3.46 \text{ V}$ ,  $T_C = 0^\circ \text{ C to } 70^\circ \text{ C}$  for LE38-J3S-TC-N

( $T_C = -20^\circ \text{ C to } 85^\circ \text{ C}$  for LE38-J3S-TJ-N &  $T_C = -40^\circ \text{ C to } 85^\circ \text{ C}$  for LE38-J3S-TI-N)

PARAMETER	SYMBOL	MIN	TYP.	MAX	UNITS	NOTE
Data Rate	$B$	25.5	25.78		Gbps	
Average Output Optical Power	$P_{out}$	-4	---	+2	dBm	
Extinction Ratio	$ER$	3.5			dB	
Center Wavelength	$\lambda_c$	1290	1310	1330	nm	
Spectral Width (RMS)	$\Delta\lambda$	---	---	1	nm	
Max. $P_{out}$ TX-DISABLE Asserted	$P_{OFF}$	---	---	-35	dBm	
Differential Input Impedance	$Z_d$		100		$\Omega$	
Differential Input Voltage Swing	$V_{DIFF}$	180		700	mV	
Transmit Fault Output-Low	$TX\_FAULT_L$	0.0	---	0.8	V	
Transmit Fault Output-High	$TX\_FAULT_H$	2.0	---	$V_{CC}$	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 from fault to assertion	$t_{fault}$	---	---	100	$\mu s$	
TX_DISABLE time to start reset	$t_{reset}$	10	---	---	$\mu s$	



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### Receiver Electro-optical Characteristics

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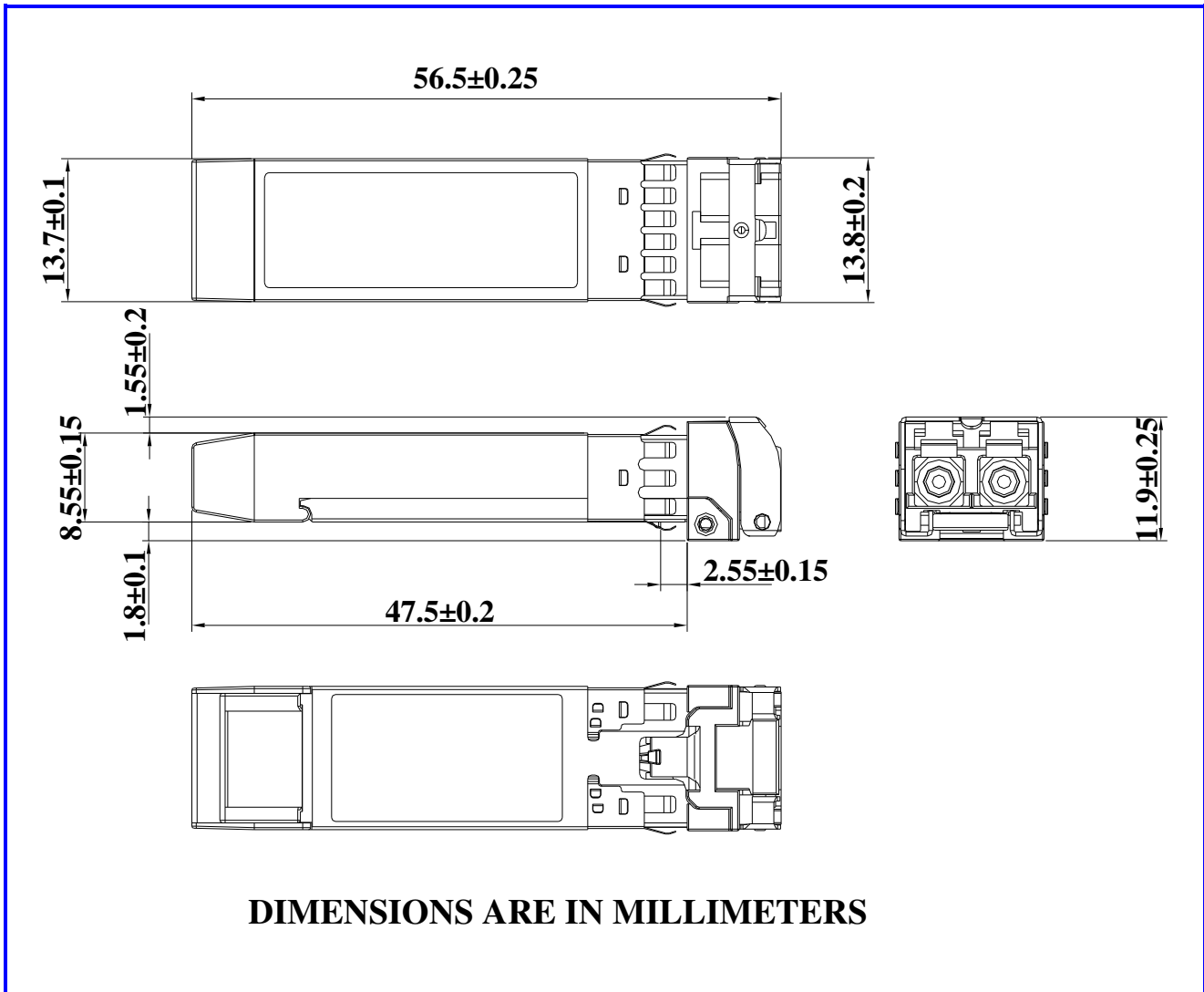
( $T_C = -20^\circ \text{ C to } 85^\circ \text{ C}$  for LE38-J3S-TJ-N &  $T_C = -40^\circ \text{ C to } 85^\circ \text{ C}$  for LE38-J3S-TI-N)

PARAMETER	SYMBOL	MIN	TYP.	MAX	UNITS	NOTE
Data Rate	$B$	25.5	25.78		Gbps	
Receiver Sensitivity(OMA)	$P_{IN}$	---	---	-11.5	dBm	BER<5e-5
Stressed Receiver Sensitivity(OMA)	$P_{IN}$	---	---	-8.8	dBm	BER<5e-5
Operating Center Wavelength	$\lambda_C$	1260	---	1360	nm	
Optical Return Loss	$ORL$	12	---	---	dB	
Loss of Signal-Asserted	$P_A$	-25	---	---	dBm	
Loss of Signal-Deasserted	$P_D$	---	---	-12	dBm	
Differential Output Impedance	$Z_d$		100		$\Omega$	
Differential Output Voltage	$V_{DIFF}$	300	---	800	mV	
Receiver Loss of Signal Output Voltage-Low	$RX\_LOS_L$	0	---	0.8	V	
Receiver Loss of Signal Output Voltage-High	$RX\_LOS_H$	2.0	---	$V_{CC}$	V	
Receiver Loss of Signal Assert Time (off to on)	$t_{A,RX\_LOS}$	---	---	100	$\mu s$	
Receiver Loss of Signal Assert Time (on to off)	$t_{D,RX\_LOS}$	---	---	100	$\mu s$	

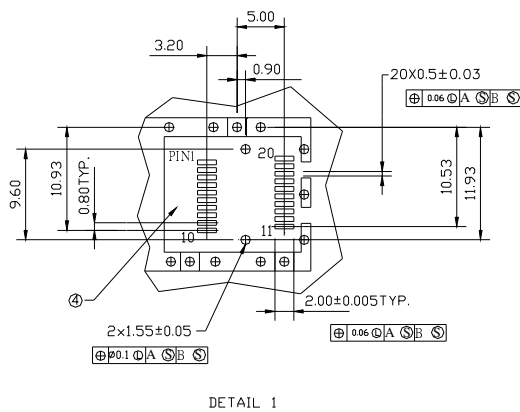
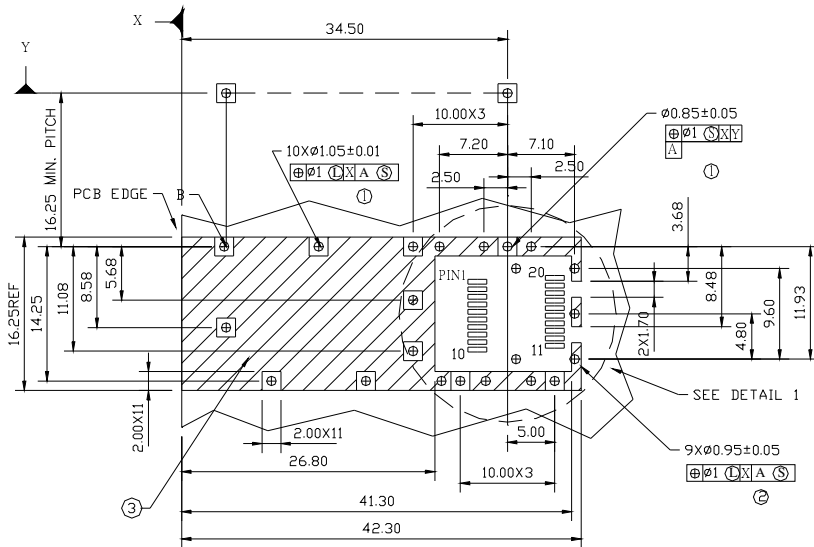


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Dimensions



**SFP host board mechanical layout**



**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)

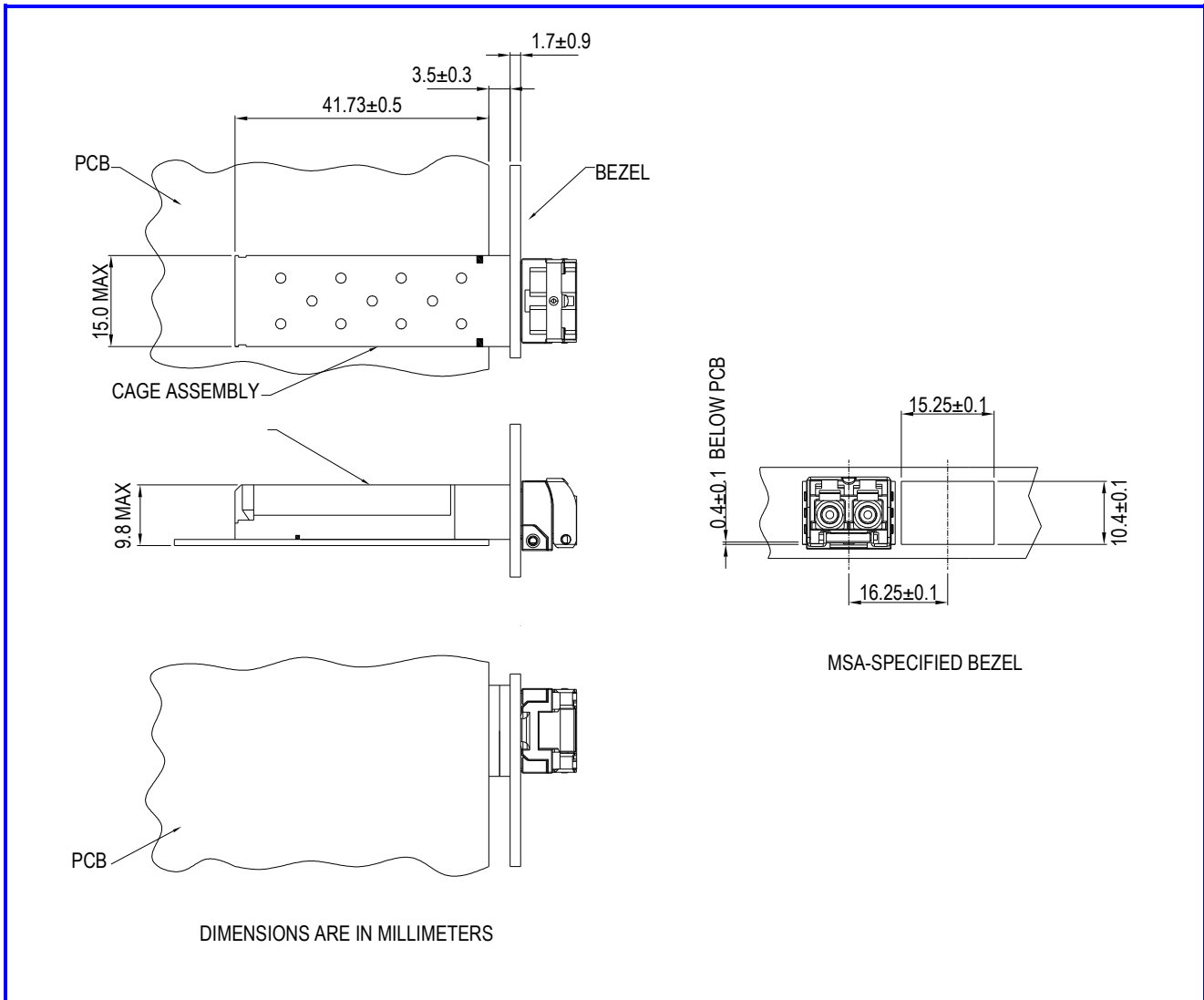
DIMENSIONS ARE IN MILLIMETERS

Unit: mm



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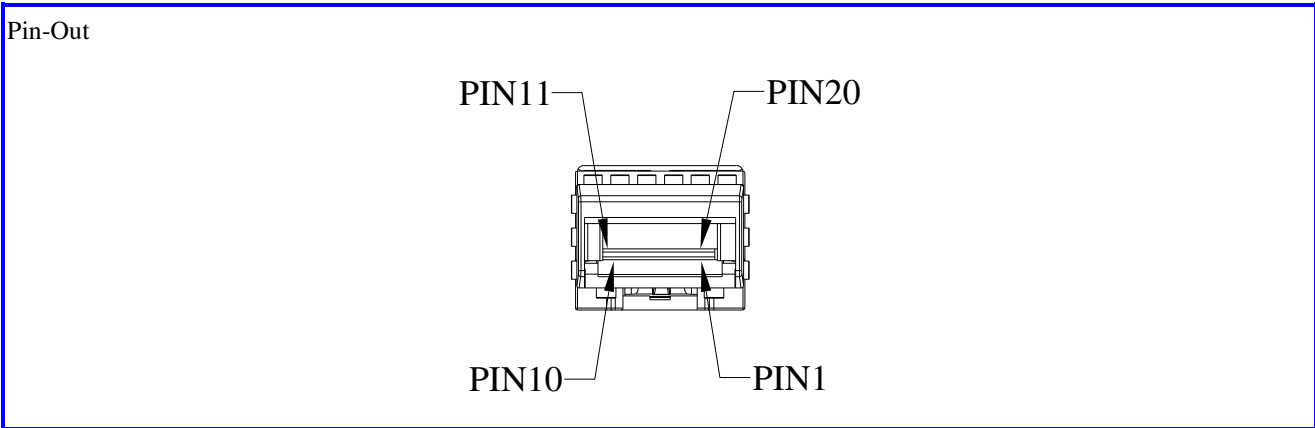
**Assembly drawing**





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**Pin Assignment**



Pin	Signal Name	Description
1	$T_{GND}$	Transmit Ground
2	$TX\_FAULT$	Transmit Fault
3	$TX\_DISABLE$	Transmit Disable
4	$MOD\_DEF (2)$	SDA Serial Data Signal
5	$MOD\_DEF (1)$	SCL Serial Clock Signal
6	$MOD\_DEF (0)$	TTL Low
7	$RS0$	RX Rate Select, No used
8	$RX\_LOS$	Receiver Loss of Signal, TTL High, open collector
9	$RS1$	TX Rate Select, No used
10	$R_{GND}$	Receiver Ground
11	$R_{GND}$	Receiver Ground
12	$RX-$	Receive Data out Bar, ac coupled
13	$RX+$	Receive Data out, ac coupled
14	$R_{GND}$	Receiver Ground
15	$V_{CCR}$	Receiver Power Supply
16	$V_{CCT}$	Transmitter Power Supply
17	$T_{GND}$	Transmitter Ground
18	$TX+$	Transmit Data in, ac coupled
19	$TX-$	Transmit Data in Bar, ac coupled
20	$T_{GND}$	Transmitter Ground