



RoHS compliant
850 nm Multi-mode Transceiver
Small Form Pluggable (SFP), with Diagnostic Monitoring
125Mbps /Fast Ethernet



Features

- RoHS compliant
- Compliant with SFF8472 diagnostic monitoring interface
- Duplex LC connector
- Single power supply 3.3V
- Hot Pluggable
- Class 1 laser product complies with EN 60825-1

Ordering Information

PART NUMBER	INPUT/OUTPUT	SIGNAL DETECT	VOLTAGE	TEMPERATURE
LM28-A3S-TC-N-DD	AC/AC	TTL	3.3V	0°C to 70 °C
LM28-A3S-TI-N-DD	AC/AC	TTL	3.3V	-10°C to 85 °C
LM28-A3S-TI-N-DR	AC/AC	TTL	3.3V	-40°C to 85 °C

Diagnostics

Parameter	Range	Accuracy	Unit	Calibration
Temperature	-40 to 95	± 3	°C	External
Voltage	3.0 to 3.6	± 0.1	V	
Bias Current	0 to 20	± 10%	mA	
TX Power	-9.5 to -4	± 3 dB	dBm	
RX Power	-18 to -4	± 3 dB	dBm	



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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
Operating Case Temperature	T_C	0	70	°C	
		-10	85		
		-40	85		
Supply Voltage	V_{CC}	3.1	3.5	V	
Supply Current	$I_{TX} + I_{RX}$	---	200	mA	



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Transmitter Electro-optical Characteristics

$V_{CC} = 3.1\text{ V to }3.5\text{ V}$, $T_C = 0\text{ }^\circ\text{C to }70\text{ }^\circ\text{C}$ ($-10\text{ }^\circ\text{C to }85\text{ }^\circ\text{C}$) ($-40\text{ }^\circ\text{C to }85\text{ }^\circ\text{C}$)

PARAMETER	SYMBOL	MIN	TYP.	MAX	UNITS	NOTE
Bit rate	B		125		Mbps	
Output Optical Power 62.5/125, 50/125 μm fiber	P_{out}	-9.5	---	-4	dBm	Average
Extinction Ratio	ER	9	---	---	dB	
Center Wavelength	λ_C	830	850	860	nm	
Spectral Width (RMS)	$\Delta\lambda$	---	---	0.85	nm	
Rise/Fall Time, (10–90%)	$T_{r,f}$	---	---	2	ns	
Max. P_{out} TX-DISABLE Asserted	P_{OFF}	---	---	-45	dBm	
Differential Input Voltage	V_{DIFF}	0.4	---	2.0	V	



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Receiver Electro-optical Characteristics

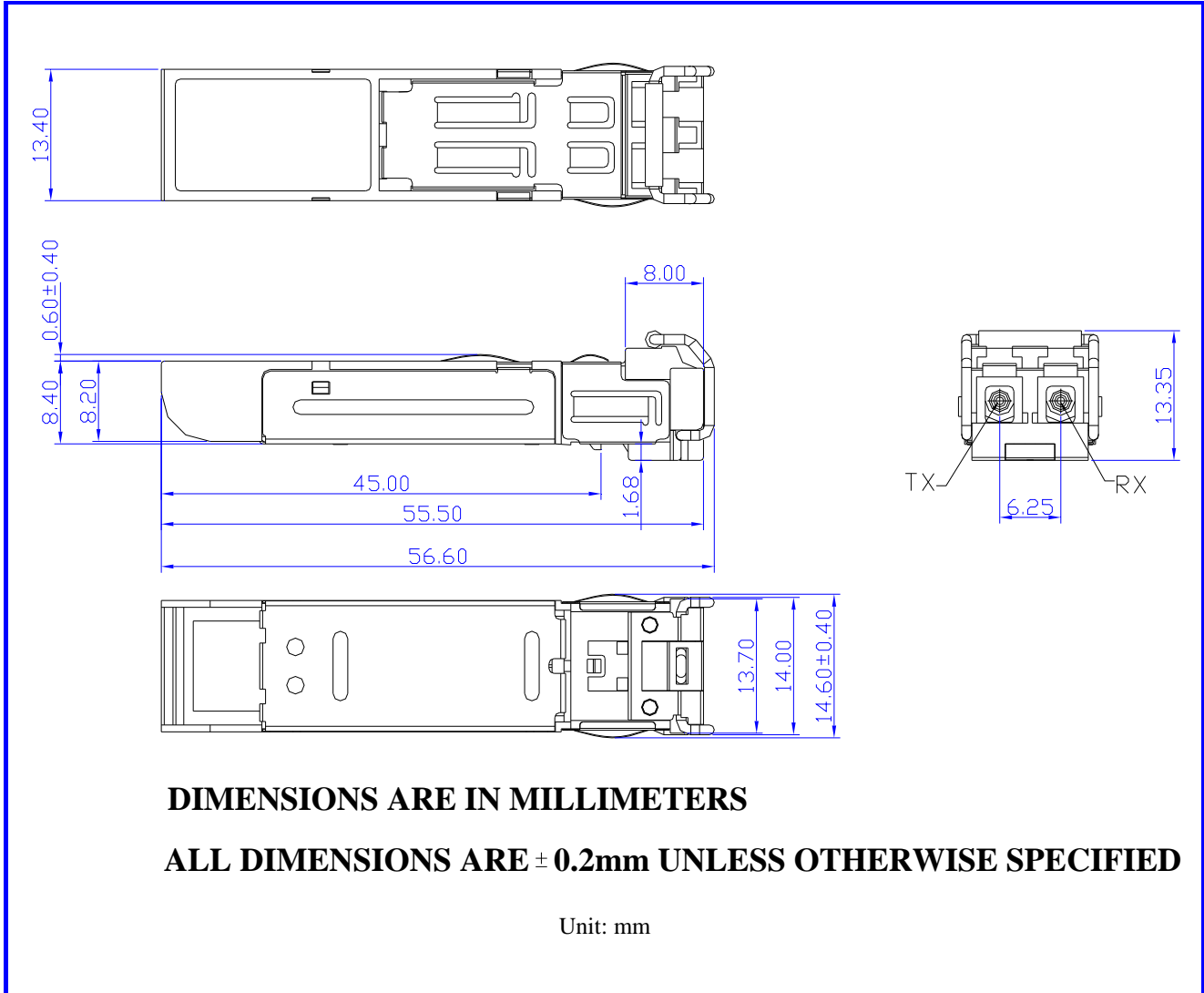
$V_{CC} = 3.1 \text{ V to } 3.5 \text{ V}$, $T_C = 0^\circ \text{C to } 70^\circ \text{C}$ ($-10^\circ \text{C to } 85^\circ \text{C}$) ($-40^\circ \text{C to } 85^\circ \text{C}$)

PARAMETER	SYMBOL	MIN	TYP.	MAX	UNITS	NOTE
Bit rate	B		125		Mbps	
Optical Input Power-maximum	P_{IN}	-4	---	---	dBm	PRBS7, BER < 10^{-10}
Optical Input Power-minimum (Sensitivity)	P_{IN}	---	---	-18	dBm	PRBS7, BER < 10^{-10}
Operating Center Wavelength	λ_C	770	---	860	nm	
Optical Return Loss	ORL	12	---	---	dB	
Signal Detect-Asserted	P_A	---	---	-18	dBm	
Signal Detect-Deasserted	P_D	-35	---	---	dBm	
Differential Output Voltage	V_{DIFF}	0.5	---	1.2	V	
Data Output Rise, Fall Time (20–80%)	$T_{r,f}$	---	---	0.35	ns	
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	



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Dimensions

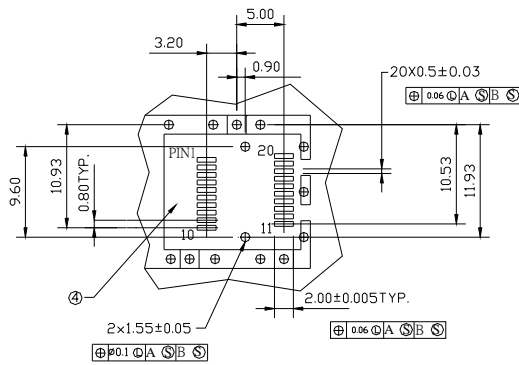
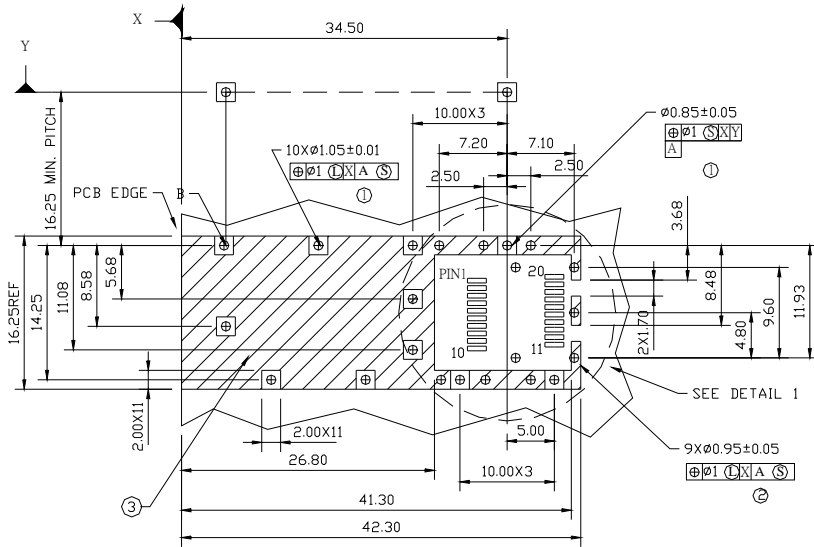


DIMENSIONS ARE IN MILLIMETERS

ALL DIMENSIONS ARE ± 0.2mm UNLESS OTHERWISE SPECIFIED

Unit: mm

SFP host board mechanical layout



DETAIL 1

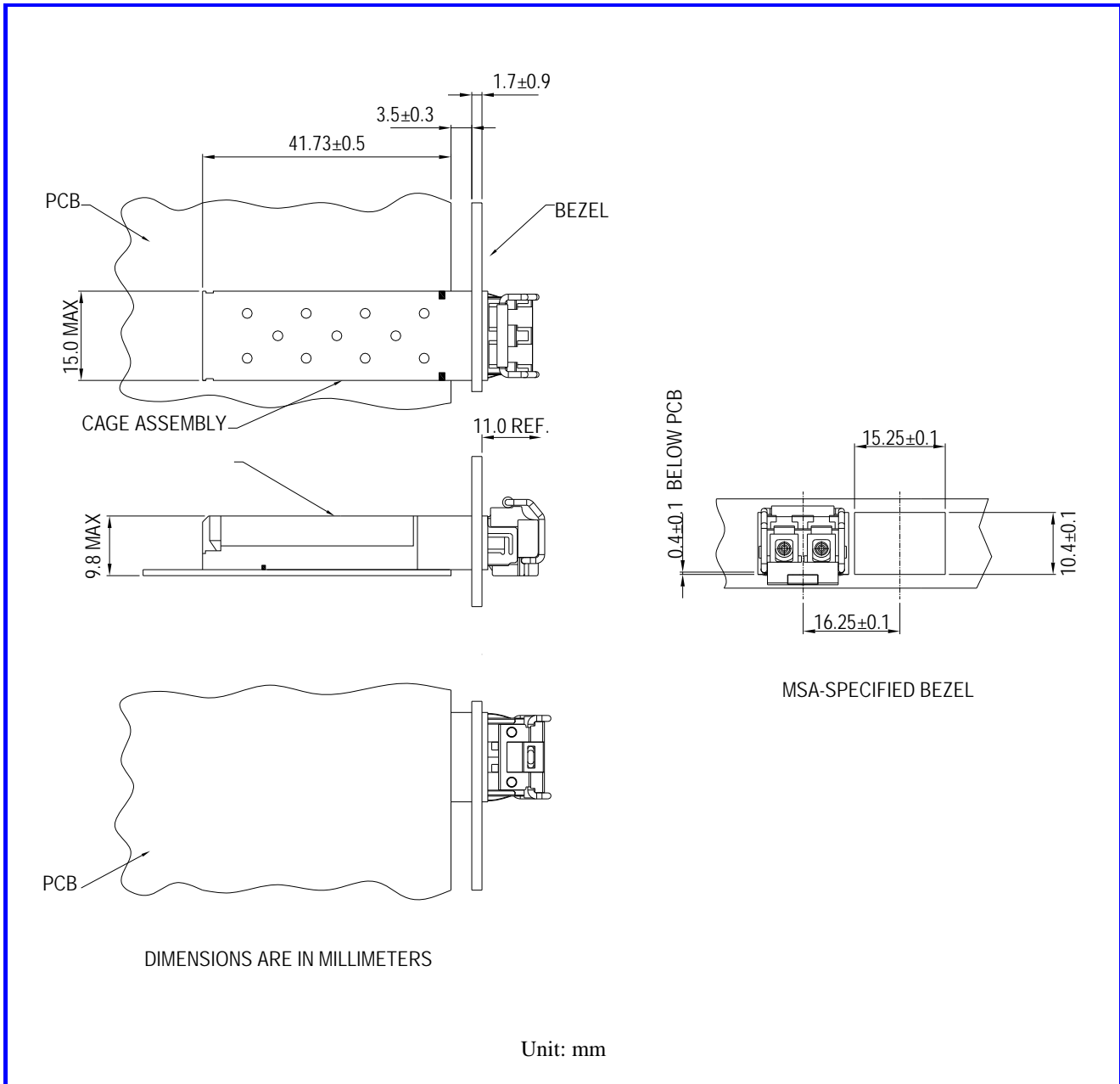
LEGEND

- 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

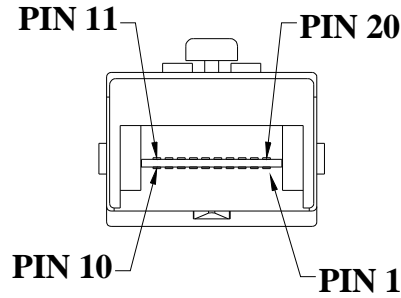




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Pin Assignment

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>MOD_DEF (2)</i>	SDA Serial Data Signal
5	<i>MOD_DEF (1)</i>	SCL Serial Clock Signal
6	<i>MOD_DEF (0)</i>	TTL Low
7	<i>RATE_SELECT</i>	Open Circuit
8	<i>RX_LOS</i>	Receiver Loss of Signal, TTL High, open collector
9	<i>R_{GND}</i>	Receiver Ground
10	<i>R_{GND}</i>	Receiver Ground
11	<i>R_{GND}</i>	Receiver Ground
12	<i>RX-</i>	Receive Data Bar, Differential PECL, ac coupled
13	<i>RX+</i>	Receive Data, Differential PECL, 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, Differential PCEL, ac coupled
19	<i>TX-</i>	Transmit Data Bar, Differential PCEL, ac coupled
20	<i>T_{GND}</i>	Transmitter Ground