TSSDS-NAAEA1C Optical Transceiver

Multi-mode 25G SFP28 SR Optical Transceiver, With Diagnostic Monitoring

Features

- Duplex SFP28 Transceiver
- MDC connector receptacle
- Data Rate up to 25.78125 Gb/s
- 850nm VCSEL laser and PIN photo-detector
- Maximum link length of 70m on OM3 MMF and 100m on OM4 MMF
- Digital diagnostics functions are available via the I2C interface
- Single 3.3V Power Supply and Power Dissipation < 1.5W
- Operating Case Temperature: 0°C~+70°C
- RoHS compliant

Applications

- 25GE SR Lite
- 100G SR4 fan out to 4x25GE SR
- eCPRI

Production Description

The TSSDS-NAAEA1C is a Single-Channel, Pluggable, Fiber-Optic SFP28 for 25.78Gbps SR Applications. It is a high performance module for short-range data communication and interconnect applications which operate at 25.78Gbps up to 70m using OM3 fiber and 100m using OM4.

This module is designed to operate over multimode fiber systems using a nominal wavelength of 850nm. The electrical interface uses a 20 contact edge type connector. The optical interface uses MDC receptacle.

Absolute Maximum Rating

These values represent the damage threshold of the module. Stress in excess of any of the individual Absolute Maximum Ratings can cause immediate catastrophic damage to the module even if all other parameters are within Recommended Operating Conditions.

8 Jinxiu Middle Road, Pingshan, Shenzhen, Guangdong, 518118, P. R. China
+86 755 32983688 | info@china-tscom.com | www.china-tscom.com

Parameters	Symbol	Min.	Max.	Unit
Power Supply Voltage	VCC	-0.5	+3.6	V
Storage Temperature	Tc	-40	+85	°C
Relative Humidity	RH	0	85	%

Recommended Operating Environment

Recommended Operating Environment specifies parameters for which the electrical and optical characteristics hold unless otherwise noted.

Parameter	Symbol	Min.	Typical	Max	Unit
Power Supply Voltage	VCC	3.15	3.30	3.45	V
Operating Case Temperature (Standard)	T_{Ca}	0		70	°C

Electrical Characteristics

The following electrical characteristics are defined over the Recommended Operating Environment unless otherwise specified.

Parameter	Symbol	Min.	Typical	Max	Unit	Notes
Data Rate	DR	-	25.78125	-	Gbps	
Transmitter						
Single Ended Output Voltage Tolerance		-0.3	-	4.0	V	
Common mode voltage tolerance		15	-	-	mV	
Input differential impedance	Rin	-	100	-	Ω	
Differential Input Voltage swing	Vin	300	-	1100	mV	
Tx Fault	VoL	-0.3		0.4	V	At 0.7mA
Receiver						
Single Ended Output Voltage Tolerance		-0.3	-	4.0	V	
Differential Output Swing	Vout	500	-	800	mV	
Output differential impedance	Rout		100		Ω	

Optical Characteristics

The following optical characteristics are defined over the Recommended Operating Environment unless otherwise specified.

Parameter	Symbol	Min.	Typical	Max	Unit	Notes
Transmitter						
Center Wavelength	λ	820	850	880	nm	
RMS spectral width	Pm	-	-	0.6	nm	1

Average Optical Power	Po	-8.4	-	2.4	dBm	2
Extinction Ratio	ER	2.0	-	-	dBm	3
Optical Modulation Amplitude	OMA	-6.4	-	3	dB	
Optical Return Loss Tolerance	ORL	-	-	12	dB	
Receiver						
Center Wavelength	λ	820		880	nm	
Receiver Sensitivity@25.78Gb/s	Psens1	-	-	-5.2	dBm	3
Receiver Overload	Pmax	2.4	-	-	dBm	
LOS Asserted	Lsa	-30	-	-	dBm	
LOS De-Asserted	Lda	-	-	-13	dBm	
LOS Hysteresis	Lh	0.5	-	-	dB	

Note:

[1] Trade-offs are available between spectral width, center wavelength and minimum OMA.

[2] The optical power is launched into MMF

[3] Measured with a PRBS 231-1 test pattern @25.78125Gbps; BER=5x10-5

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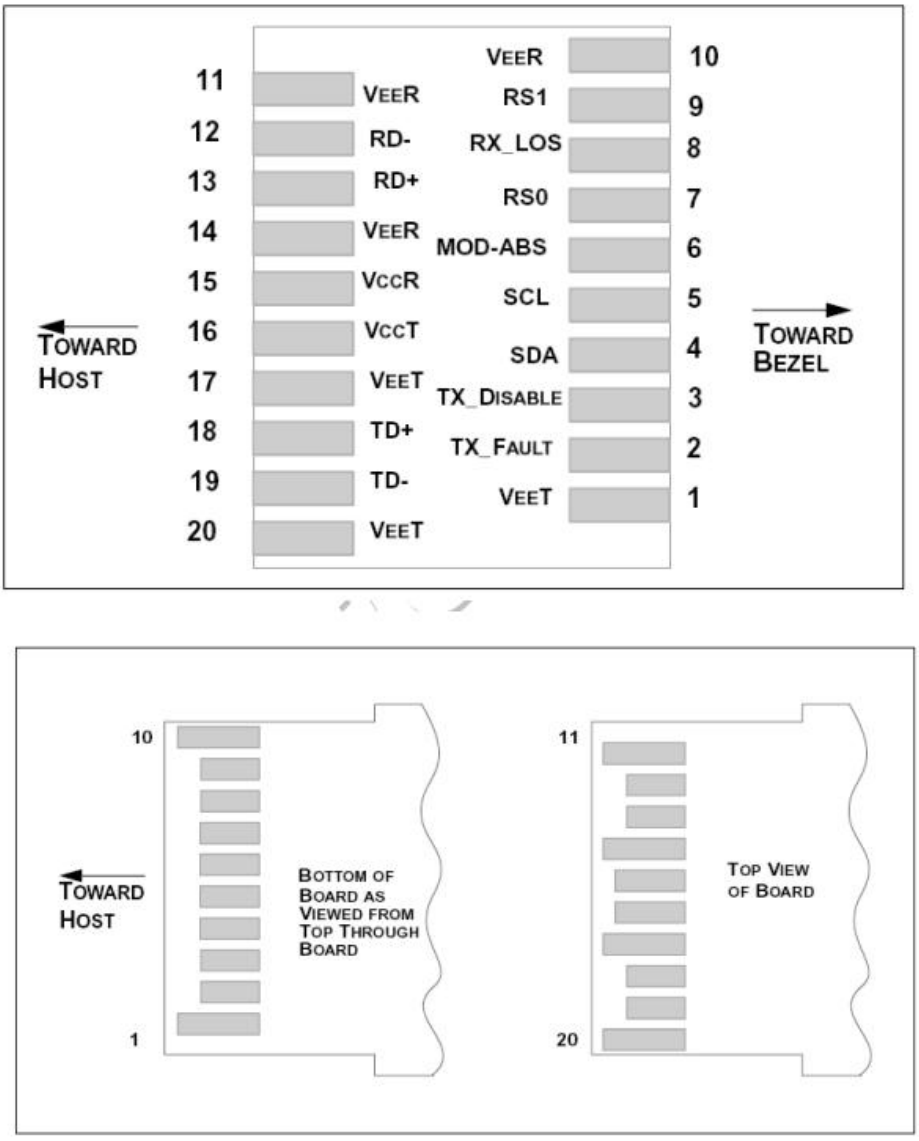
Sfp28 Transceiver Electrical Pad Layout



Pin Definition

Pin	Symbol	Name/Description
1	VEET [1]	Transmitter Ground
2	Tx_FAULT [2]	Transmitter Fault
3	Tx_DIS [3]	Transmitter Disable. Laser output disabled on high or open
4	SDA [2]	2-wire Serial Interface Data Line
5	SCL [2]	2-wire Serial Interface Clock Line
6	MOD_ABS [4]	Module Absent. Grounded within the module
7	RS0 [5]	Rate Select 0
8	RX_LOS [2]	Loss of Signal indication. Logic 0 indicates normal operation

9	RS1 [5]	Rate Select 1
10	VEER [1]	Receiver Ground
11	VEER [1]	Receiver Ground
12	RD-	Receiver Inverted DATA out. AC Coupled
13	RD+	Receiver DATA out. AC Coupled
14	VEER [1]	Receiver Ground
15	VCCR	Receiver Power Supply
16	VCCT	Transmitter Power Supply
17	VEET [1]	Transmitter Ground
18	TD+	Transmitter DATA in. AC Coupled
19	TD-	Transmitter Inverted DATA in. AC Coupled
20	VEET [1]	Transmitter Ground

Notes:

[1] Module circuit ground is isolated from module chassis ground within the module.

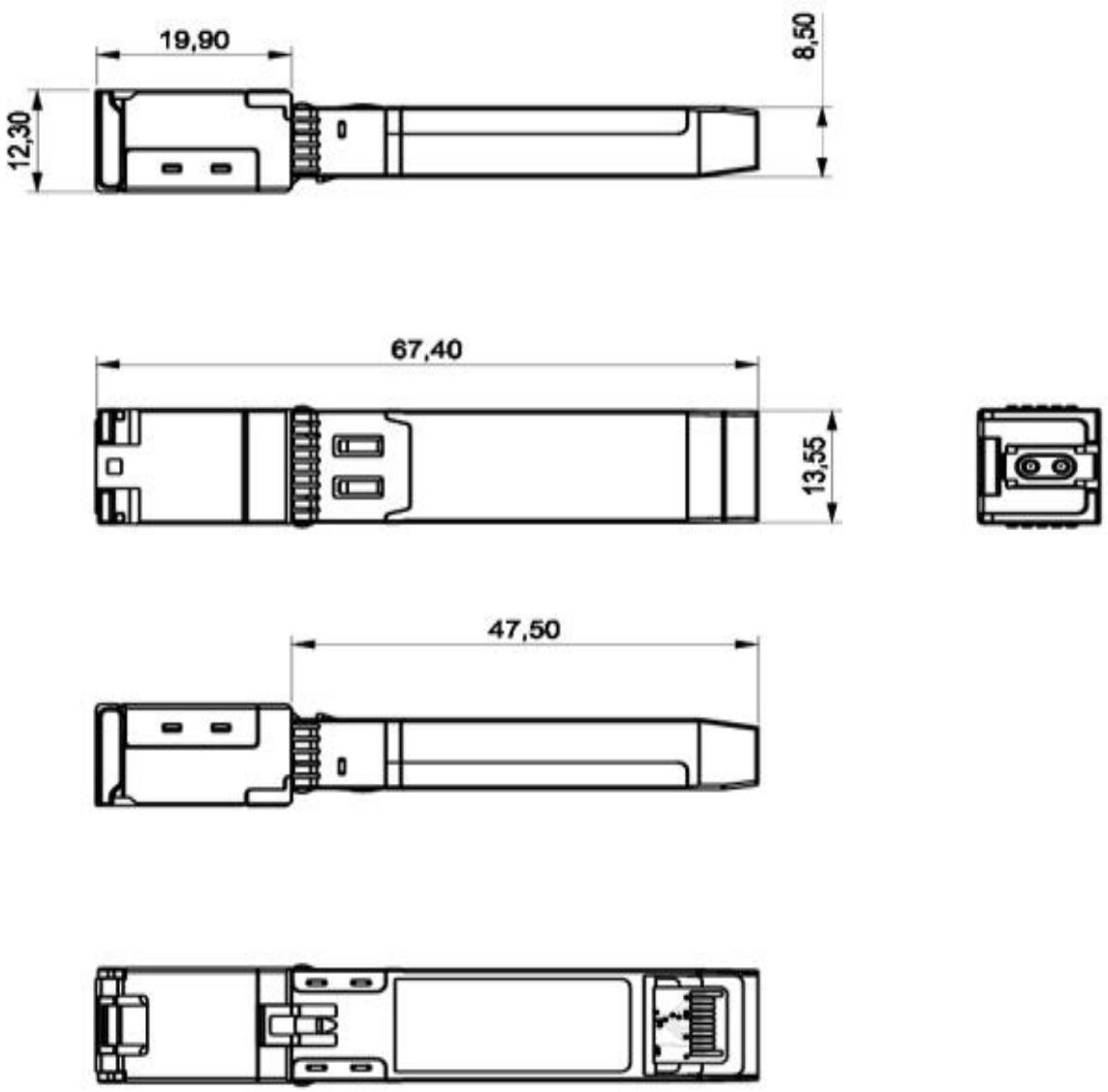
[2] Should be pulled up with 4.7k – 10k ohms on host board to a voltage between 3.15Vand 3.6V.

[3] Tx_Disable is an input contact with a 4.7 kΩ to 10 kΩ pullup to VCC T inside the module.

[4] Mod_ABS is connected to VeeT or VeeR in the SFP+ module. The host may pull this contact up to VCC _Host with a resistor in the range 4.7 kΩ to10 kΩ.Mod_ABS is asserted “High” when the SFP+ module is physically absent from a host slot.

[5] RS0 and RS1 are module inputs and are pulled low to VeeT with > 30 kΩ resistors in the module.

Mechanical



Unit：mm

Ordering Information

Part Number	Product Description
TSSDS-NAAEA1C	25G SFP28 SR Optical Transceiver 70m on OM3 MMF and 100m on OM4 MMF 0°C ~ +70°C

References

1. SFP28 MSA
2. Directive 2011/65/EU of the European Parliament and of the Council, “on the restriction of the use of certain hazardous substances in electrical and electronic equipment,” July 1, 2011.

Important Notice

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