

Data Sheet

25G SFP28 Active Optical Cable

P/N: WST-S28-AOC-xxxC



Features:

- Hot Pluggable SFP28 Cable end
- Supports auto-rate detection for both 25.78125Gb/s and 10.3125Gb/s operation
- Low Power Dissipation, Max 0.8W Each End
- Operating Case Temperature: 0°C~70°C
- SFF-8419: Low Speed Electrical
- SFF-8432: Pluggable Module
- SFF-8472: Management Interface
- GR-468: Reliability Qualification
- IEEE 802.3by: Physical Layer Specifications and Management Parameters
- ROHS-6: Environment Safety
- eCPRI Specification V2.0

Applications:

- Ethernet for 25/10GBASE-SR
- InfiniBand EDR, FDR, QDR
- Proprietary Interconnections

General Product Characteristics

Parameter	Value	Unit	Comments
Module Form Factor	SFP28	As defined by SFF-8432	Module Form Factor
Maximum Aggregate Data Rate	25.78125	Gb/s	
Standard Cable Lengths	3, 5, 7, 10, 15	meters	Other lengths can be available upon request
Protocols Supported	InfiniBand, Ethernet		
Electrical Interface and Pin-out	20-pin edge connector		Pin-out as defined by SFF-8419
Standard Optical Cable Type	Multimode OM3(≤70m) Multimode OM4(<100m)		
Maximum Power Consumption per End	0.8	Watts	Varies with output voltage swing and pre-emphasis settings

Management Interface	Serial, I ² C-based, 400 kHz maximum frequency		As defined by SFF-8472
BER	<10 ⁻¹²		PRBS: 31, input signal swing 800mV differential

Absolute Maximum Ratings

Exceeding the limits below may damage the active optical cable permanently.

Parameter	Symbol	Min.	Typ.	Max.	Unit.	Note
Maximum Supply Voltage	V _{cc}	-0.5		3.6	V	
Storage Temperature	T _{sto}	-40		85	°C	
Case Operating Temperature	T _{ex}	0		70	°C	
Relative Humidity	RH	0		85	%	1

Notes:

1. No-condensing.

PARAMETERS

Parameter	Symbol	Min.	Typ.	Max.	Unit.	Note
Supply Voltage	V _{cc}	3.14		3.46	V	
Power Consumption	P _{Con}			0.8	W	
Bit Rate	BR	10.3125	25.78125		Gb/s	1
Bit Error Ratio	BER			10 ⁻¹²		2
Center wavelength	λ _c	840		860	nm	3
Number of Lanes		1				
Management Interface		Serial, I ² C-based, maximum frequency 400 kHz				4
Logic Input Voltage High	V _{ih}	2		V _{cc} +0.3	V	
Logic Input Voltage Low	V _{il}	-0.3		0.8	V	

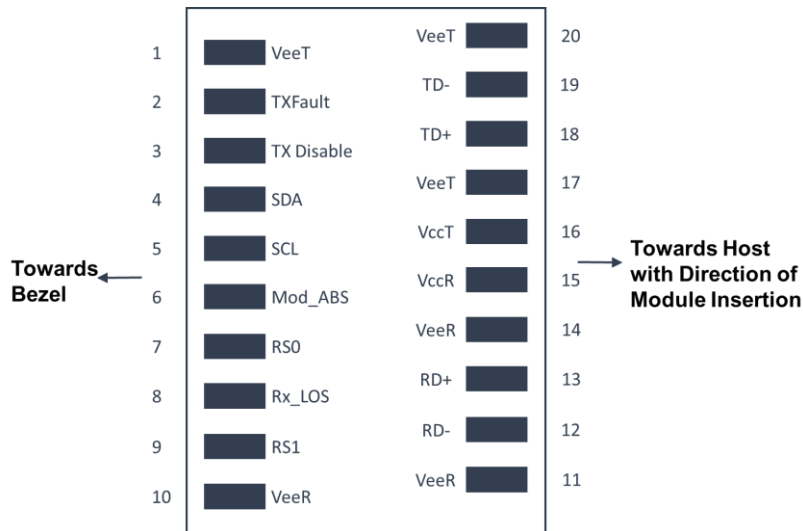
Notes:

1. Single lane
2. PRBS= 2³¹-1 @ 25.78125Gb/s
3. As defined by IEEE Std. 802.3by -2015
4. As defined by SFF-8672

Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit.	Ref.
Transceiver Power Supply Current	I_{cc}			230	mA	
Transceiver Power on Initialization Time	T_{init}			2000	ms	
Transmitter at TP1a						
Differential Data Input Voltage Peak to Peak Swing	$V_{in,pp}$			900	mV	
Common Mode Noise RMS				17.5	mV	
Differential Input Return Loss	SDD22	Per OIF CEI-28G-VSR and CAUI-4 Requirements			dB	
Common Mode to Differential Conversion and Differential to Common Mode Conversion	SDD22 SCD22				dB	
Common Mode Return Loss	SCC22				dB	
Transition Time, 20% to 80%	T_r, T_f	10			ps	
Common Mode Voltage	V_{cm}	-0.3		2.8	V	
Eye Width @ 1E-15 Probability	EW15	0.46			UI	
Eye Height @ 1E-15 Probability	EH15	94			mv	
Receiver at TP4						
Differential Data Output Voltage Peak to Peak Swing	V_{opp}	300		900	mV	
Differential Output Impedance	Z_{os}	90	100	110	Ohms	
Common Mode Voltage	V_{cm}	-0.35		2.85	V	
Common Mode Noise RMS				17.5	mV	
Differential Output Return Loss	SDD22	Per OIF CEI-28G-VSR and CAUI-4 Requirements			dB	
Common Mode to Differential Conversion and Differential to Common Mode Conversion	SDD22 SCD22					
Common Mode Return Loss	SCC22			-2	dB	
Transition Time, 20% to 80%	T_r, T_f	10			ps	
Eye Width @ 1E-15 Probability	EW15	0.57			UI	
Eye Height @ 1E-15 Probability	EH15	228			mV	

Pin Description



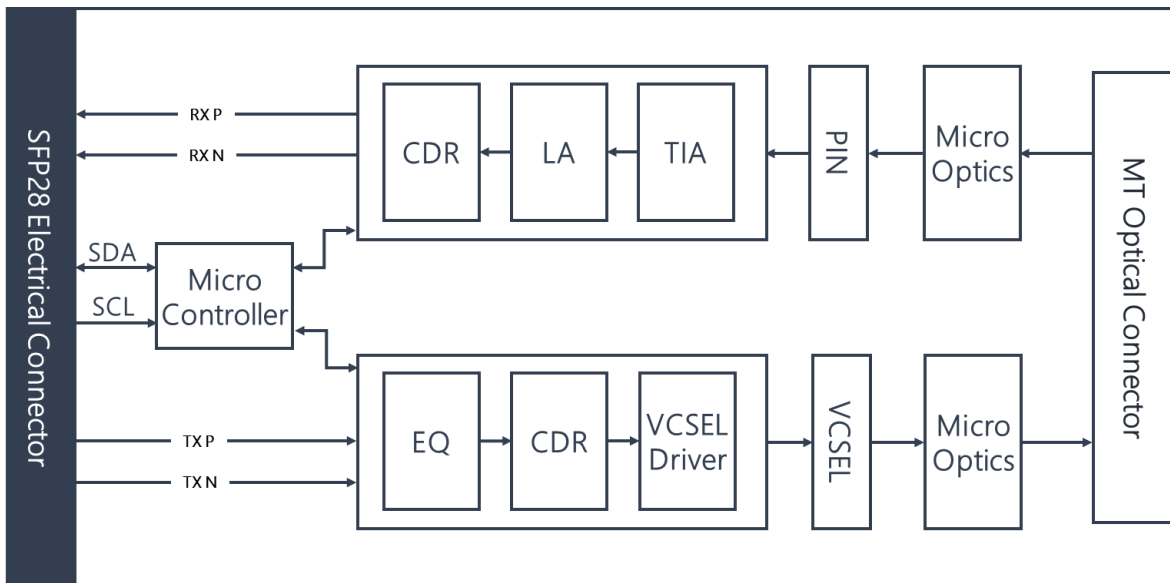
PIN	Symbol	Description	Ref.
1	Veet	Module Transmitter Ground	①
2	TX_Fault	Module Transmitter Fault	②
3	TX_Disable	Transmitter Disable, turns off the laser output	
4	SDA	2-wire Serial Interface Data Lane	
5	SCL	2-wire Serial Interface Clock	
6	Mod_ABS	Module Absent, connected To VeeT or VeeR in the module	
7	RS0	Rate Select 0, optionally controls SFP+ module Receiver	
8	RX_LOS	Receiver Loss of Signal Indication	
9	RS1	Rate Select 1, optionally controls SFP+ module transmitter	
10	VeeR	module receiver ground	①
11	VeeR	module receiver ground	①
12	RD-	Receiver inverted Data Output	
13	RD+	Receiver Non-inverted Data Output	
14	VeeR	Module Receiver ground	①
15	VccR	Module Receiver 3.3V Supply	
16	VccT	Module Transmitter 3.3V Supply	
17	VeeT	Module Transmitter Ground	①
18	TD+	Transmitter Non-inverted Data Input	

19	TD-	Transmitter Inverted Data Input	
20	VeeT	Module Transmitter Ground	①

Notes:

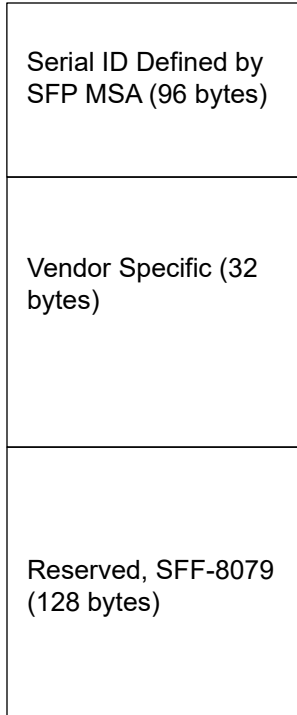
1. GND is the symbol for signal and supply (power) common for the module. All are common within the module and all module voltages are reference to this potential unless otherwise noted. Module circuit ground is isolated from module chassis ground within the module.
2. Open collector, should be pulled up with 4.7~10K ohms on the host board to a voltage between 3.15V and 3.6V

Recommended Host Board Schematic

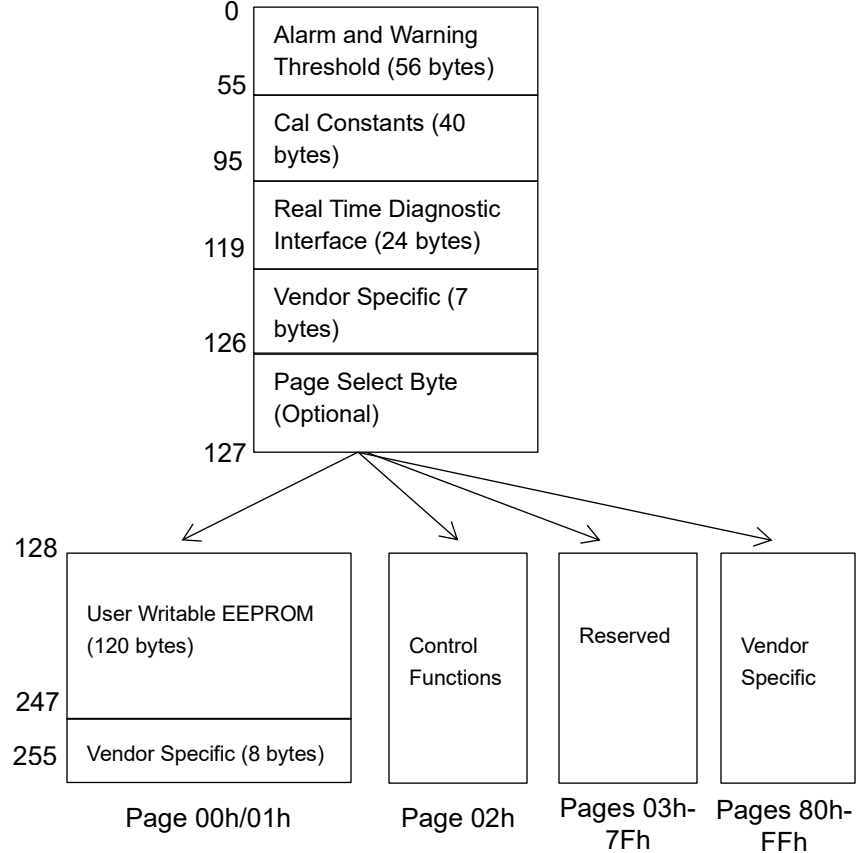


Memory map

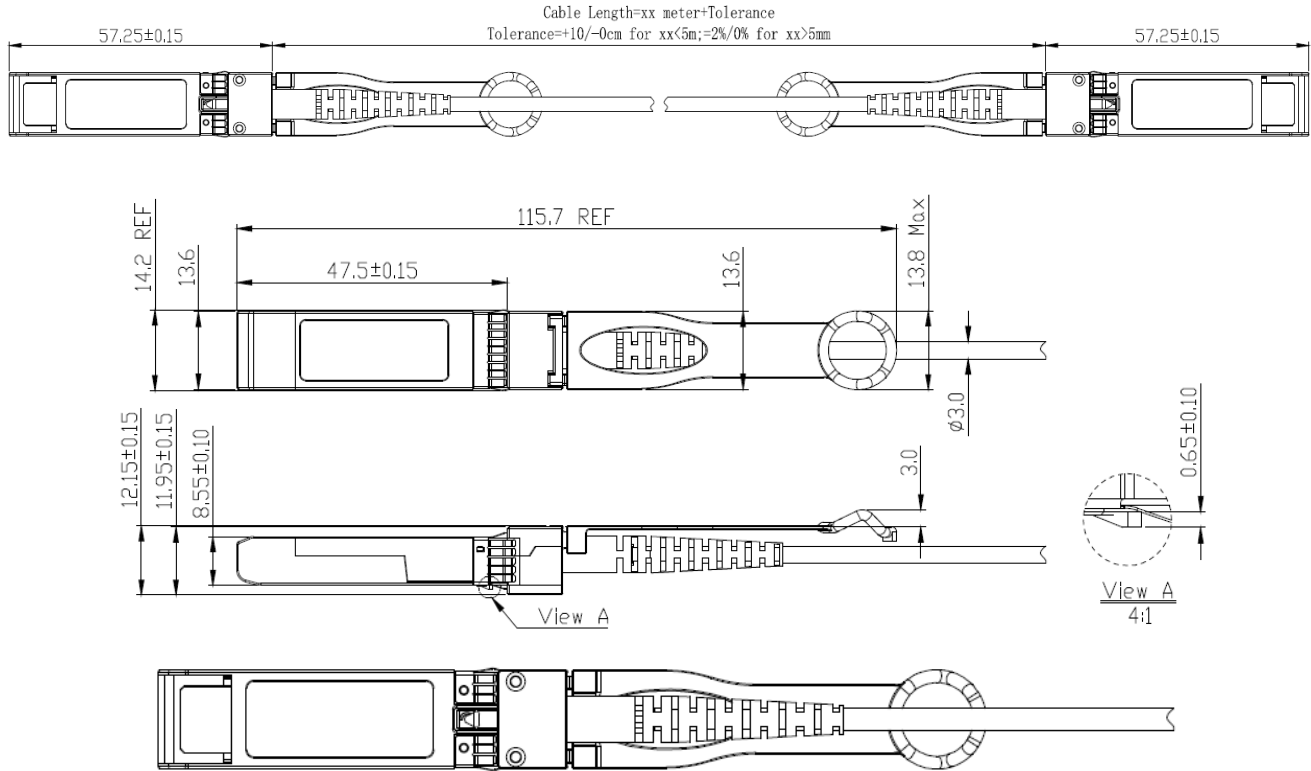
2wire address 1010000x (A0h)



2wire address 1010001x (A2h)



Mechanical Drawing



Unit: mm

Ordering Information

Part No	Specification						
	Package	Data rate	Fiber	Cable Type	Cable Length	Temp.	Application
WST-S28-AOC-013C	SFP28	25Gbps	OM3	Ribbon LSZH	1m	0~70°C	25GbE InfiniBand EDR, FDR, QDR
WST-S28-AOC-053C	SFP28	25Gbps	OM3	Ribbon LSZH	5m	0~70°C	25GbE InfiniBand EDR, FDR, QDR
WST-S28-AOC-103C	SFP28	25Gbps	OM3	Ribbon LSZH	10m	0~70°C	25GbE InfiniBand EDR, FDR, QDR
WST-S28-AOC-153C	SFP28	25Gbps	OM3	Ribbon LSZH	15m	0~70°C	25GbE InfiniBand EDR, FDR, QDR
WST-S28-AOC-203C	SFP28	25Gbps	OM3	Ribbon LSZH	20m	0~70°C	25GbE InfiniBand EDR, FDR, QDR
WST-S28-AOC-303C	SFP28	25Gbps	OM3	Ribbon LSZH	30m	0~70°C	25GbE InfiniBand EDR, FDR, QDR

Please contact our sales for more information.

Modification History

Revision	Date	Description	Originator	Review	Approved
V1.0	3-Dec-2019	New Issue	Ivy Chen	Wayne Liao	Wayne Liao
V1.1	26-Mar-2020	Update Feature	Ivy Chen	Wayne Liao	Wayne Liao



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