

## OP-S25G-AXX 25G SFP28 to SFP28 AOC Cable

### Features :

- Electrical interface compliant to SFF-8431
- 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
- Operating case temperature Commercial: 0°C to +70 °C
- Power consumption less than 1W
- +3.3V single power supply
- RoHS compliant



### Applications

- 25GBASE-SR Ethernet
- Servers, switches, storage and host card adapters

### Absolute Maximum Ratings

Parameter	Symbol	Min.	Typical	Max.	Unit	Notes
Supply Voltage	V <sub>CC3</sub>	-0.5	-	+3.6	V	
Storage Temperature	T <sub>s</sub>	-40	-	+85	°C	
Operating Humidity	RH	5	-	85	%	1

### Recommended Operating Condition

Parameter	Symbol	Min.	Typical	Max.	Unit	Notes
Operating Case Temperature	T <sub>C</sub>	0	-	+70	°C	
Power Supply Voltage	V <sub>CC</sub>	3.14	3.3	3.47	V	
Power Supply Current	I <sub>CC</sub>	-	-	300	mA	
Power Dissipation	P <sub>d</sub>	-	-	1.0	W	
Bit Rate	BR	8.5	25.78125	-	Gbps	
Fiber Bend Radius	R <sub>b</sub>	3	-	-	cm	

## Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Units	Notes	
<b>Transmitter</b>							
Differential Data Input Swing	$V_{in,P-P}$	200	-	1600	mV <sub>PP</sub>		
Input Differential Impedance	$Z_{IN}$	90	100	110	$\Omega$		
Tx_Fault	Normal Operation	$V_{OL}$	0	-	0.8	V	
	Transmitter Fault	$V_{OH}$	2.0	-	$V_{CC}$	V	
Tx_Disable	Normal Operation	$V_{IL}$	0	-	0.8	V	
	Laser Disable	$V_{IH}$	2.0	-	$V_{CC}+0.3$	V	
<b>Receiver</b>							
Differential Date Output	$V_{out}$	400	-	800	mV		
Output Differential Impedance	$Z_D$	90	100	110	$\Omega$		
Rx_LOS	Normal Operation	$V_{OL}$	0	-	0.8	V	
	Lose Signal	$V_{oH}$	2.0	-	$V_{CC}$	V	

## Optical Characteristics

Parameter	Symbol	Unit	Min	Typ	Max	Notes
<b>Optical transmitter Characteristics</b>						
Bit Rate	BR	Gbps	8.5	25.78125	-	
Center Wavelength Range	$\lambda_c$	nm	820	850	880	
Average Launch power Tx_off	P <sub>off</sub>	dBm	-	-	-45	
Launch Optical Power	P <sub>0</sub>	dBm	-6.0		2.4	1
Extinction Ratio	ER	dB	2	-	-	
Spectral Width(RMS)	RMS	nm	-	-	0.65	
<b>Optical Receiver Characteristics</b>						
Bit Rate	BR	Gbps	8.5	25.78125		
Bit Error Rate	BER		-	-	E-12	
Damage threshold	DT	dBm	3.4	-	-	
Overload Input Optical Power	P <sub>IN</sub>	dBm	2.4	-	-	2
Center Wavelength Range	$\lambda_c$	nm	820	-	880	
Receiver Sensitivity in Average Power	Sen	dBm	-	-	-5.2	3
Los Assert	LosA	dBm	-30	-	-	
Los De-Assert	LosD	dBm	-	-	-13	
Los Hysteresis	LosH	dB	0.5			

**Note:**

1. Coupled into 50/125 MMF.
2. Measured with PRBS  $2^{31}-1$  test pattern  
 @25.78125Gbps.BER= $E-12$  3. BER= $1 \times 10^{-12}$ ; PRBS $2^{31}-1$   
 1@25.78125Gbps.

**Recommended Host Board Power Supply Circuit**

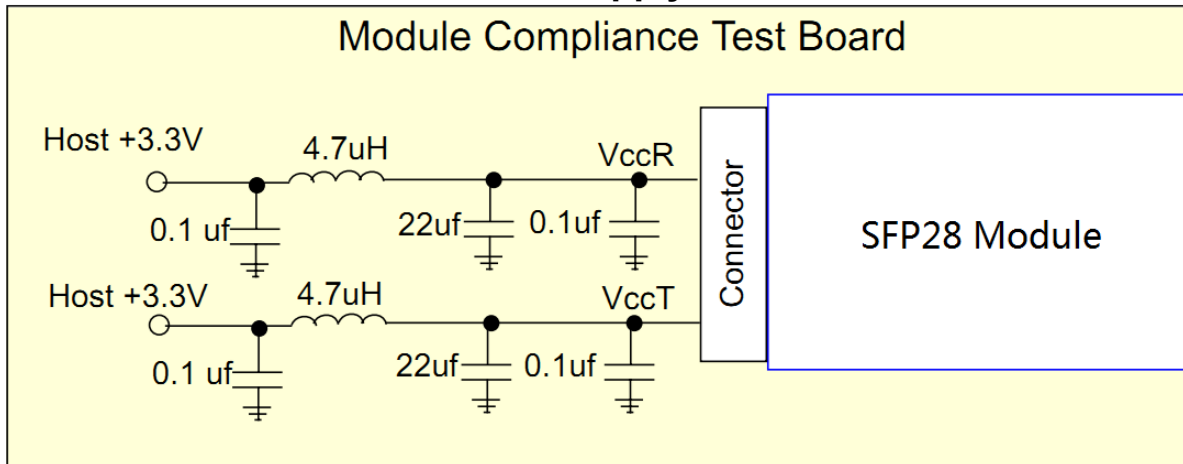


Figure 1, Recommended Host Board Power Supply Circuit

**Recommended Interface Circuit**

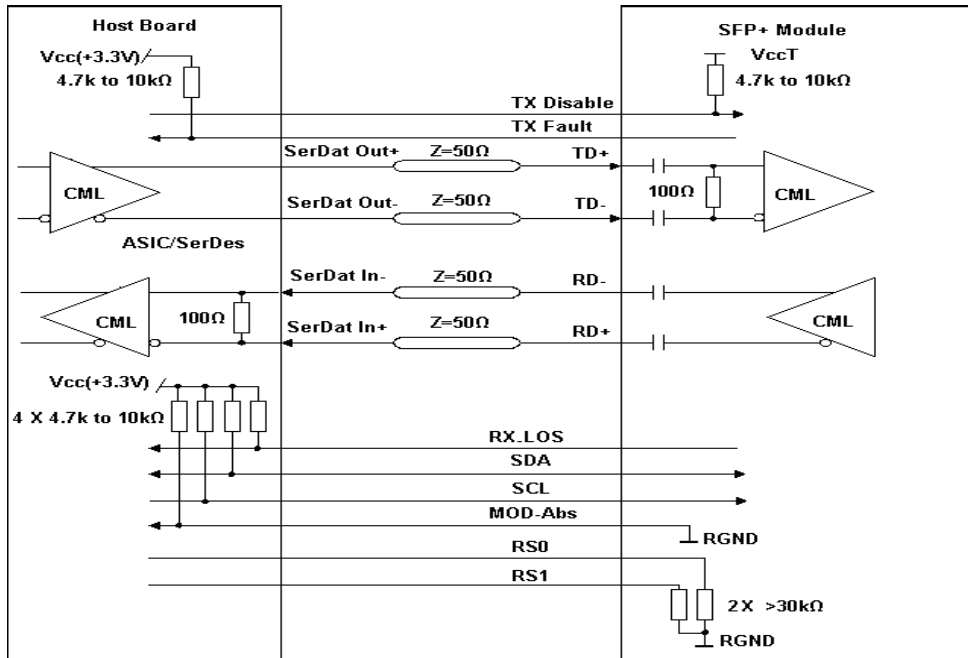


Figure 2, Recommended Interface Circuit

## Pin arrangement

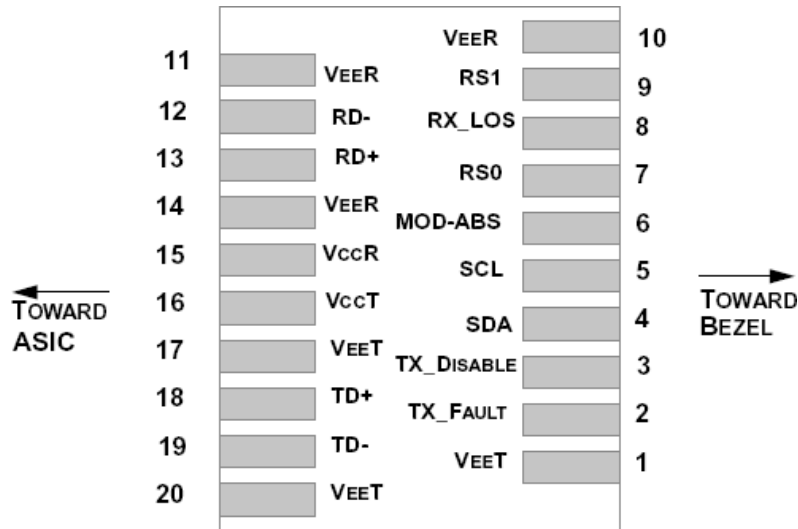


Figure 3, Pin View

Table 6-Pin Function Definitions

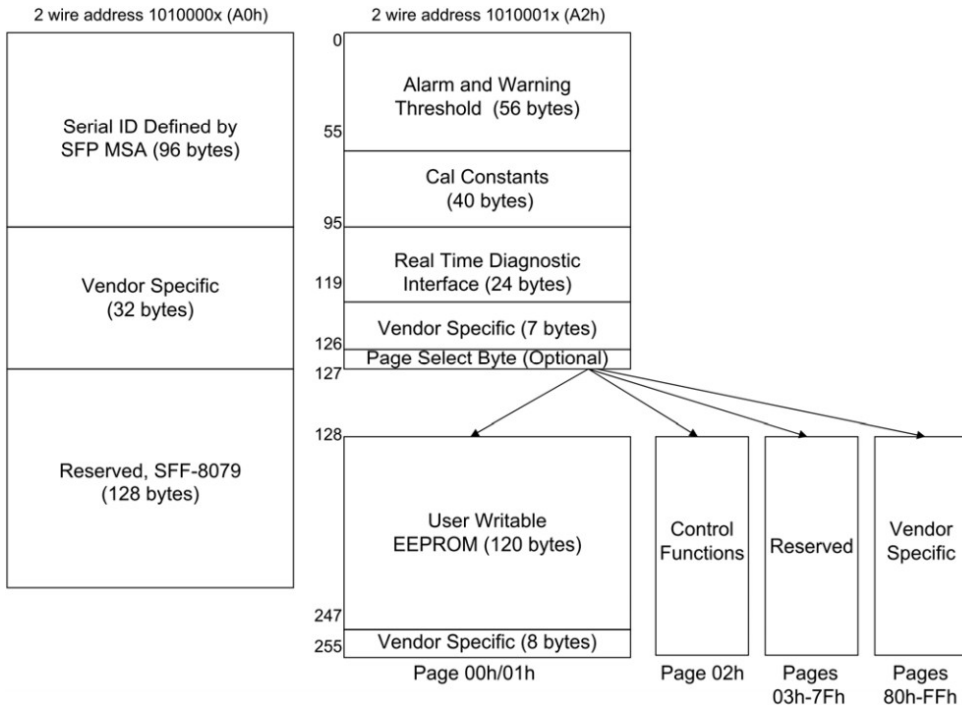
Pin	Symbol	Name/Description	Notes
1	VEET	Module Transmitter Ground	1
2	TX_FAULT	Module Transmitter Fault	2
3	TX_DISABLE	Transmitter Disable; Turns off transmitter laser output	3
4	SDA	2-Wire Serial Interface Data Line (MOD-DEF2)	
5	SCL	2-Wire Serial Interface Clock (MOD-DEF1)	
6	MOD_ABS	Module Absent, connected to V <sub>EE</sub> T or V <sub>EE</sub> R in the module	2
7	RS0	Rate Select 0, optionally controls SFP+ module receiver	4
8	RX_LOS	Receiver Loss of Signal Indication (In FC designated as Rx_LOS and in Ethernet designated as NOT Signal Detect)	2
9	RS1	Rate Select 1, optionally controls SFP+ module transmitter	4
10	V <sub>EE</sub> R	Module Receiver Ground	1
11	V <sub>EE</sub> R	Module Receiver Ground	1
12	RD-	Receiver Inverted Data Output	
13	RD+	Receiver Non-Inverted Data Output	
14	V <sub>EE</sub> R	Module Receiver Ground	1
15	V <sub>CC</sub> R	Module Receiver 3.3 V Supply	
16	V <sub>CC</sub> T	Module Transmitter 3.3 V Supply	
17	V <sub>EE</sub> T	Module Transmitter Ground	1
18	TD+	Transmitter Non-Inverted Data Input	
19	TD-	Transmitter Inverted Data Input	
20	V <sub>EE</sub> T	Module Transmitter Ground	1

**Note:**

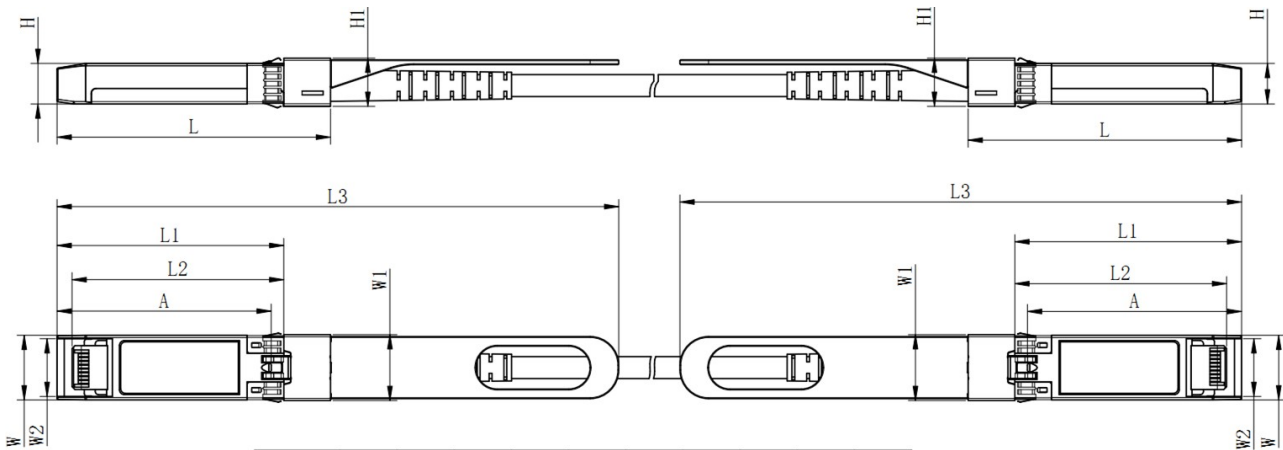
1. The module ground pins are isolated from the module case.

2. The pins shall be pulled up with 4.7K-10Kohms to a voltage between 3.14V and 3.46V on host board.
3. The pin is pulled up to VCCT with a 4.7K-10KΩ resistor in the module.
4. See SFF-8472 Rev12.2 Table 10-2.

## Monitoring Specification



## Mechanical Dimension



	L	L1	L2	L3	W	W1	W2	H	H1	A
MAX	57.6	47.7	44.55	119.9	13.8	14.0	12.3	8.7	10.3	45.25
Typical	57.4	47.5	44.35	117.9	13.55	13.8	12.1	8.5	10.1	45
MIN	57.2	47.3	44.15	115.9	13.3	13.6	11.9	8.4	9.9	44.65

**Table 7-Cable Mechanical Specifications**

Parameter	Value	Units
Diameter	3	mm
Minimum bend radius	30	mm
Length tolerance	Length < 1 m: +5 / -0	cm
	1 m ≤ length ≤ 4.5 m: +15 / -0	cm
	5 m ≤ length ≤ 14.5 m: +30 / -0	cm
	Length ≥ 15.0 m: +2% / -0	m

**Order Information**

Part Number	Product Description
OP-S25G-A1	25G SFP28 to SFP28 Active Optical Cable 1m
OP-S25G-A2	25G SFP28 to SFP28 Active Optical Cable 2m
OP-S25G-A3	25G SFP28 to SFP28 Active Optical Cable 3m
OP-S25G-A5	25G SFP28 to SFP28 Active Optical Cable 5m
OP-S25G-A7	25G SFP28 to SFP28 Active Optical Cable 7m
OP-S25G-A10	25G SFP28 to SFP28 Active Optical Cable 10m
OP-S25G-A30	25G SFP28 to SFP28 Active Optical Cable 30m
OP-S25G-A50	25G SFP28 to SFP28 Active Optical Cable 50m
OP-S25G-AXX	25G SFP28 to SFP28 Active Optical Cable Length Customize