TITLE 50G SFP56 Active Optical Cable Transceiver	DOC No. RFD-20230301018-010	
	REVISION：01	AUTHORIZED BY：Albert Lin
	DATE：2023/02/22	CLASSIFICATION：Optical Transceiver

1. GENERAL

SFP56 AOC transceiver modules are designed for use in 50Gbps Ethernet links over 70m multi-mode fiber (OM3) and 100m MMF(OM4).

They are compliant with Small Form Factor Pluggable Multi-Sourcing Agreement (MSA).

Digital diagnostics functions are available via an I2C interface, as specified by the SFP MSA.

2. PRODUCT DESCRIPTION

- Up to 70m reach for OM3 (50/125um) and 100m for OM4/5(50/125um) MMF
- 850nm Oxide VCSEL laser
- 2 Wire Serial Interface for modulemanagement
- Single 3.3V power supply
- Low power dissipation<2W
- Operating temperature range: 0C ~70 C(commercial)
- Compliant with RoHS6
- Compliant with SFF-8472 Rev12.3

3. PRODUCT DESCRIPTION

3.1 PRODUCT NAME AND SERIES NUMBER(S)

50G SFP56 AOC Transceiver

Part Number	Data Rate	Wavelength (nm)	Distance	Media	Temp.
P6700FC0***M-1	50G	850nm	<100m	MMF	C

Note: xxx defines length of fiber cable, can be between 1~100(meters)

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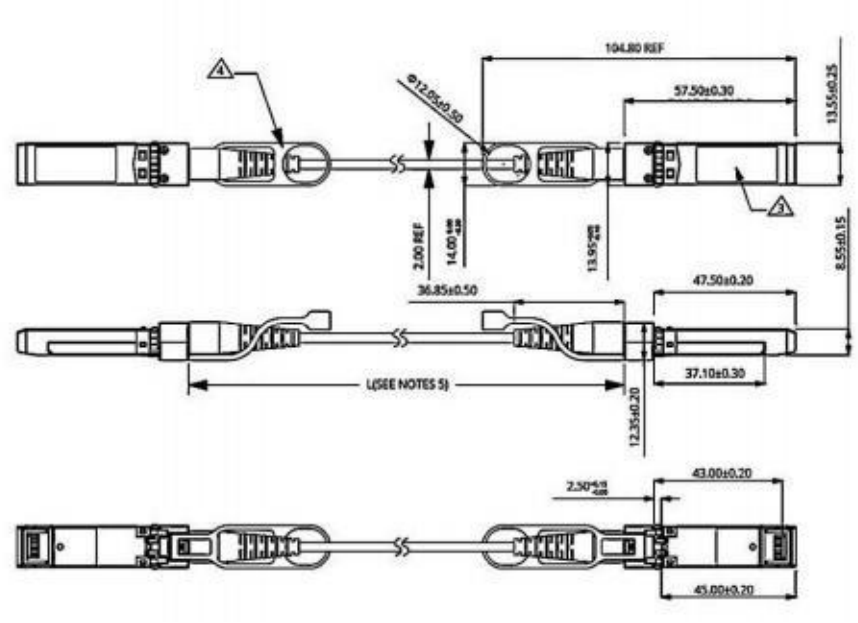
3.2 DIMENSIONS, MATERIALS, PLATINGS AND MARKING



Notes:

- Unit: mm
- Tolerance: φ0.1mm if not shown
- Label specification
- Latch color: black
- Tolerance of cable length

L	TOLERANCE
L ≤ 5M	±5CM
L > 5M	±1%

4. COMPLIANCE

- Data Center
- Ethernet

5. Absolute Maximum Ratings & Recommended Operating Conditions

Absolute Maximum Ratings					
Parameter	Symbol	Min.	Typical	Max.	Unit
Storage Temperature	T_S	-40	-	85	ºC
Storage Ambient Humidity	H_A	15	-	85	%
Maximum Supply Voltage	V_{CC}	-0.5	-	3.6	V

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Recommended Operating Conditions

Parameter	Symbol	Min.	Typical	Max.	Unit
Operating Case Temperature	Tc	0	-	70	°C
Bit Rate	BR	-	53.125	-	Gb/s
Pre-FEC Bit Error Ratio	BER	-	-	2.4E-4	-
Max Supported Link Length	L	-	-	70/100	m
Supply Voltage	Vcc	3.135	3.3	3.465	V
Module Power	-	-	-	2000	mW

Notes:

1. *Tested with PRBS31Q pattern*
2. *Up to 70m reach for OM3 (50/ 125um) and 100m for OM4/5(50/ 125um) MMF*

Transmitter Operating Characteristic-Electrical

Parameter	Symbol	Min.	Typical	Max.	Unit	Note
Transmitter						
Input Differential Impedance	RIN	90	100	110	Ω	
Differential Data Input	VIN			900	mVp-p	
Tx Disable-High		Vcc-1.3		Vcc	V	
Tx Disable-Low		GND		GND+0.8	V	
Tx Fault-High		2.0		Vcc+0.3	V	
Tx Fault-Low		GND		GND+0.8	V	
Receiver						
Differential Data Output	VOD	300	-	900	mVp-p	
Near-end ESMW (Eye symmetry mask width)	-	0.265			UI	

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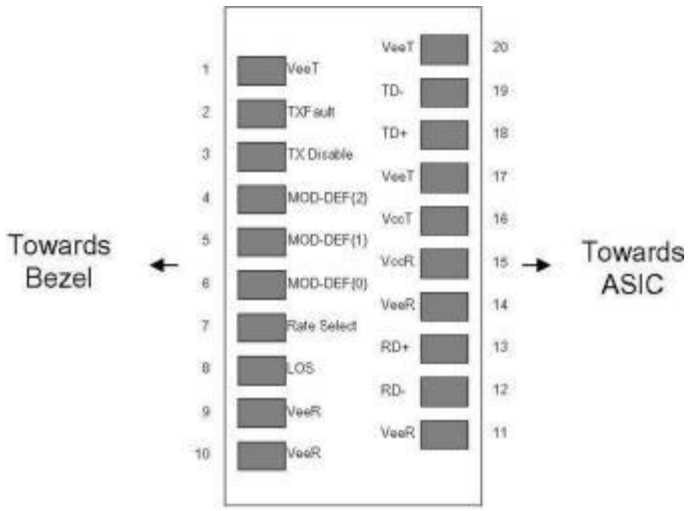
Near-end Eye height, differential (min)	-	70	-	-	mV	
Far-end ESMW (Eye symmetry mask width)	-	0.2			UI	
Far-end Eye height, differential (min)	-	30	-	-	mV	
LOS-High Fault	-	2	-	Vcc+0.3	V	
LOS-Low Normal	-	GND	-	GND+0.8	V	

6. Pin-out Definition



Pin Assignment

Pin	Symbol	Name/Description	Notes
1	VeeT	Transmitter Ground (Common with Receiver Ground)	1
2	TX Fault	Transmitter Fault.	-
3	TX Disable	Transmitter Disable. Laser output disabled on high or open.	2
4	MOD_DEF (2)	Module Definition 2. Data line for Serial ID.	3
5	MOD_DEF (1)	Module Definition 1. Clock line for Serial ID.	3

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6	MOD_DEF (0)	Module Definition 0. Grounded within the module.	3
7	Rate Select	No connection required	-
8	LOS	Loss of Signal indication. Logic 0 indicates normal operation.	4
9	VeeR	Receiver Ground (Common with Transmitter Ground)	1
10	VeeR	Receiver Ground (Common with Transmitter Ground)	1
11	VeeR	Receiver Ground (Common with Transmitter Ground)	1
12	RD-	Receiver Inverted DATA out. AC Coupled	-
13	RD+	Receiver Non-inverted DATA out. AC Coupled	-
14	VeeR	Receiver Ground (Common with Transmitter Ground)	1
15	VccR	Receiver Power Supply	-
16	VccT	Transmitter Power Supply	-
17	VeeT	Transmitter Ground (Common with Receiver Ground)	1
18	TD+	Transmitter Non-Inverted DATA in. AC Coupled.	-
19	TD-	Transmitter Inverted DATA in. AC Coupled.	-
20	VeeT	Transmitter Ground (Common with Receiver Ground)	1

Notes:

1. Circuit ground is internally isolated from chassis.

2. Laser output disabled on TX Disable >2.0V or open, enabled on TX Disable<0.8V.

3. Should be pulled up with a 4.7k - 10kohms resistor on host board to a voltage between 2.0V and Vcc+0.3V.

MOD_DEF (0) pulls line low to indicate module is present.

4. LOS is open collector output, which should be pulled up with a 4.7k – 10kohms resistor on host board to a voltage between 2.0V and Vcc+0.3V. Logic 0 indicates normal operation; logic 1 indicates loss of signal.

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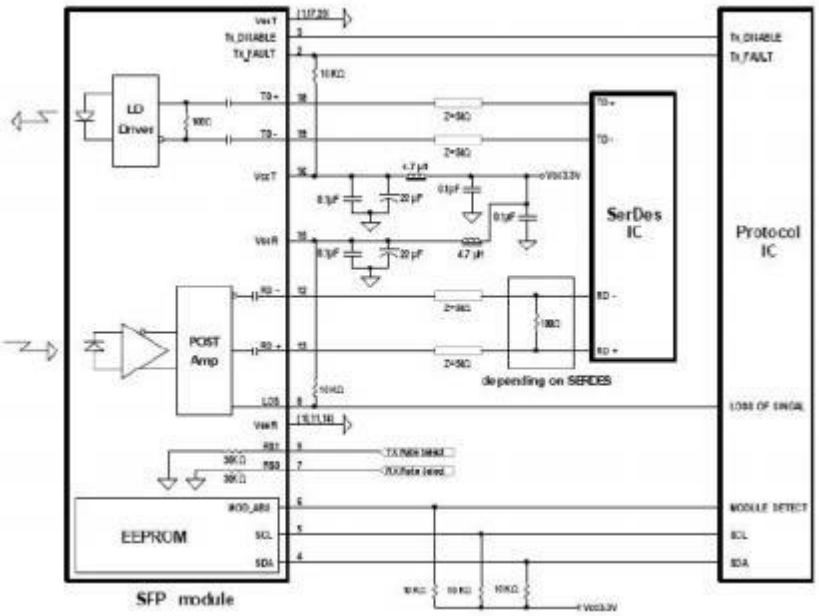
Recommended Interface Circuit



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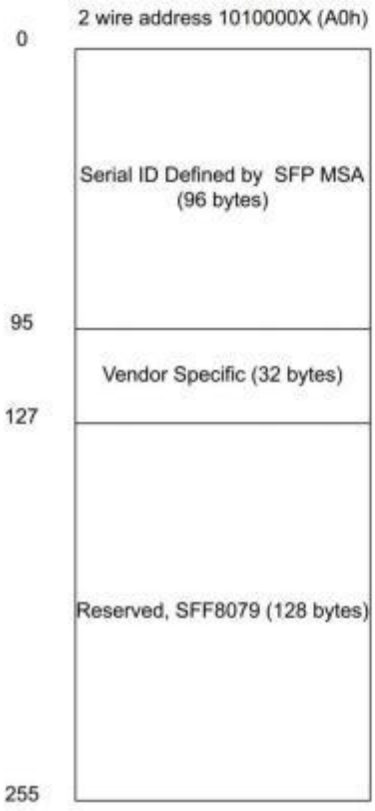
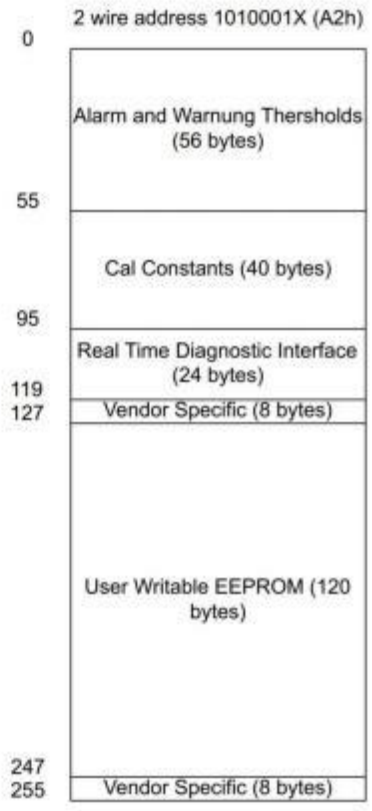
7. EEPROM INFORMATION





8. Modification History

Rev.	Comments	Date	Originator	Approval
01	Preliminary Draft	2023/02/22	Albert Lin	Mike Sun