REV:A0

LPQQAA31-M(L)xxC

DSFP56 100Gb/s Active Optical Cable DDM

PRODUCT FEATURES

- Electrical interface compliant to DSFP Module Specification Rev. 1.0
- Maximum link length of 70m on OM3 MMF and 100m on OM4 MMF
- Hot-pluggable DSFP form factor
- Power consumption less than 2.2W
- RoHS compliant and lead-free
- Support Digital Diagnostic Monitor interface
- +3.3V Single power supply
- Case operating temperature Commercial: 0°C to +70°C

APPLICATIONS

- 100GBASE-SR2 Ethernet
- Servers, switches, storage and host card adapters
- Other optical links

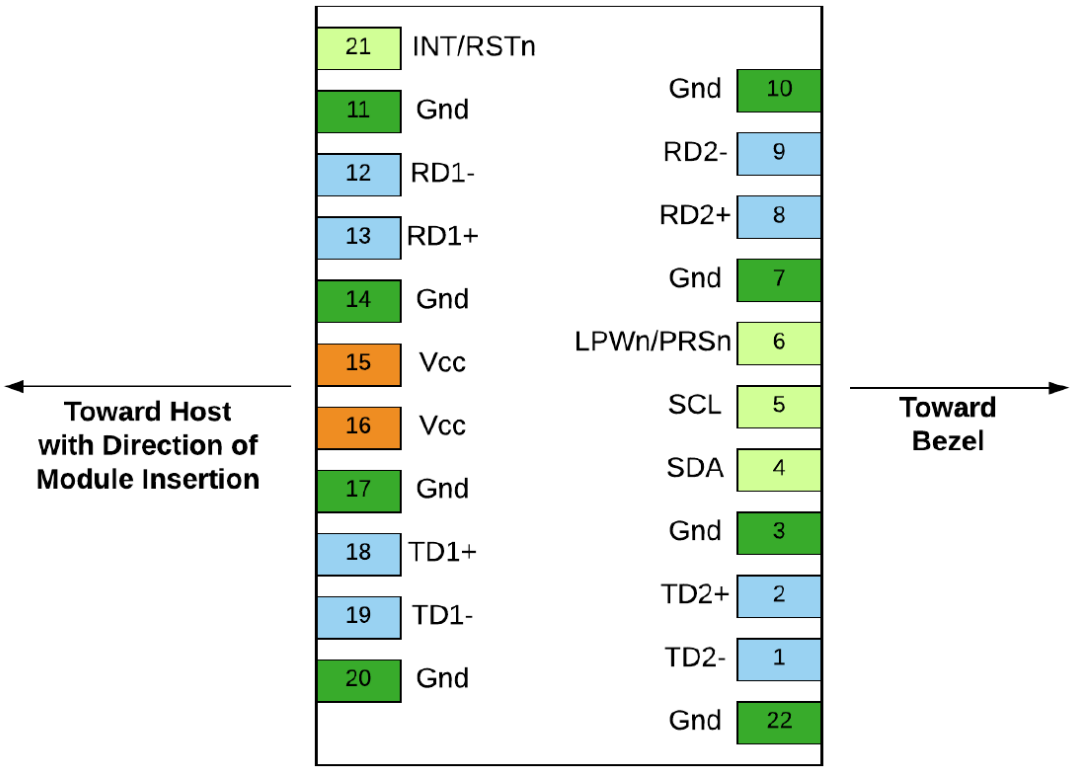
Compliance

- DSFP MSA
- CMIS V4.0
- RoHS

Ordering information

Package	Product part NO.	Distance	Temperature Range
DSFP56	LPQQAA31-L03C	0.3-metercable	Commercial:0~70℃
DSFP56	LPQQAA31-M01C	1-metercable	Commercial:0~70℃
DSFP56	LPQQAA31-M03C	3-metercable	Commercial: 0~70℃
DSFP56	LPQQAA31-M05C	5-metercable	Commercial: 0~70℃
DSFP56	LPQQAA31-M06C	6-metercable	Commercial: 0~70℃
DSFP56	LPQQAA31-M10C	10-metercable	Commercial: 0~70℃
DSFP56	LPQQAA31-M15C	15-metercable	Commercial: 0~70℃
DSFP56	LPQQAA31-M20C	20-metercable	Commercial: 0~70℃
DSFP56	LPQQAA31-M25C	25-metercable	Commercial: 0~70℃
DSFP56	LPQQAA31-M30C	30-metercable	Commercial: 0~70℃
DSFP56	LPQQAA31-M50C	50-metercable	Commercial: 0~70℃
DSFP56	LPQQAA41-S10C	100-metercable	Commercial: 0~70℃
*For availability of additional cable lengths, please contact Oubochao			

I. Pin Diagram



Pin out of Connector Block on Host Board

II. Pin Descriptions

Contacts	Logic[1]	Symbol	Power Sequence Order	Name/Description	Note
case		case	See 2	Module case	
1	CML-I	TD2-	3rd	Transmitter Inverted Data Input Lane 2	
2	CML-I	TD2+	3rd	Transmitter Non-Inverted Data Input Lane 2	
3		Gnd	1st	Module Ground	5
4	LVTTL-I/O	SDA	3rd	2-wire Serial Interface Data Line	3
5	LVTTL-I/O	SCL	3rd	2-wire Serial Interface Clock	3
6	Multi-level-I/O	LPWn/PRSn	3rd	$\overline{\text{Low Power}}$ Mode/ $\overline{\text{Module Present}}$ (Mod_Abs)	
7		Gnd	1st	Module Ground	5
8	CML-O	RD2+	3rd	Receiver Non-Inverted Data Output Lane 2	
9	CML-O	RD2-	3rd	Receiver Inverted Data Output Lane 2	
10		Gnd	1st	Module Ground	5
11		Gnd	1st	Module Ground	5
12	CML-O	RD1-	3rd	Receiver Inverted Data Output Lane 1	4
13	CML-O	RD1+	3rd	Receiver Non-Inverted Data Output Lane 1	4
14		Gnd	1st	Module Ground	5
15		Vcc	2nd	Module 3.3 V Supply	
16		Vcc	2nd	Module 3.3 V Supply	
17		Gnd	1st	Module Ground	5
18	CML-I	TD1+	3rd	Transmitter Non-Inverted Data Input Lane 1	4
19	CML-I	TD1-	3rd	Transmitter Inverted Data Input Lane 1	4
20		Gnd	1st	Module Ground	5
21	Multi-level-I/O	INT/RSTn	3rd	Dual Function Module Interrupt and $\overline{\text{Reset}}$ Pin	
22		Gnd	1st	Module Ground	5

1. Labeling as inputs (I) and outputs (O) are from the perspective of the module.
2. The case makes electrical contact to the cage before any of the board edge contacts are made.
3. See 4.4 the 2-wire specifications.
4. Backward compatible with SFF-8431 SFI interface.
5. The module ground contacts Gnd recommended to be isolated from the module case by offering flexibility in the host EMI control strategy.

III. Absolute Maximum Ratings

Parameter	Symbol	Min.	Type	Max.	Unit	Ref.
Maximum Supply Voltage	Vcc	-0.5		3.6	V	
Storage Temperature	T_S	-40		85	℃	1
Case Operating Temperature	T_{OP}	0		70	℃	
Relative Humidity	RH	0		85	%	2

Notes:

1.Limited by the fiber cable jacket, not the active ends.

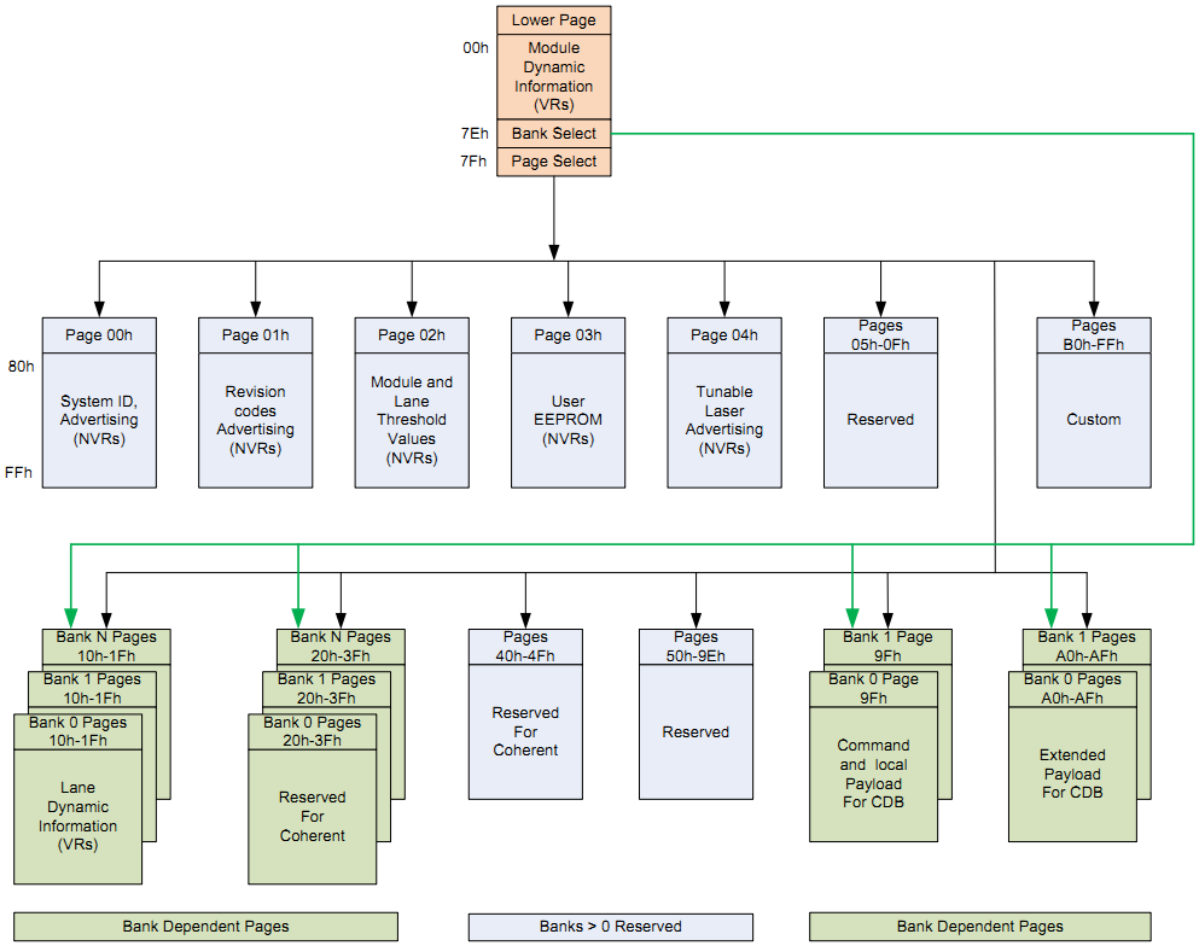
2.Non-condensing.

IV. Electrical Characteristics (TOP = 0 to 70□C, VCC = 3.3 ± 5% Volts)

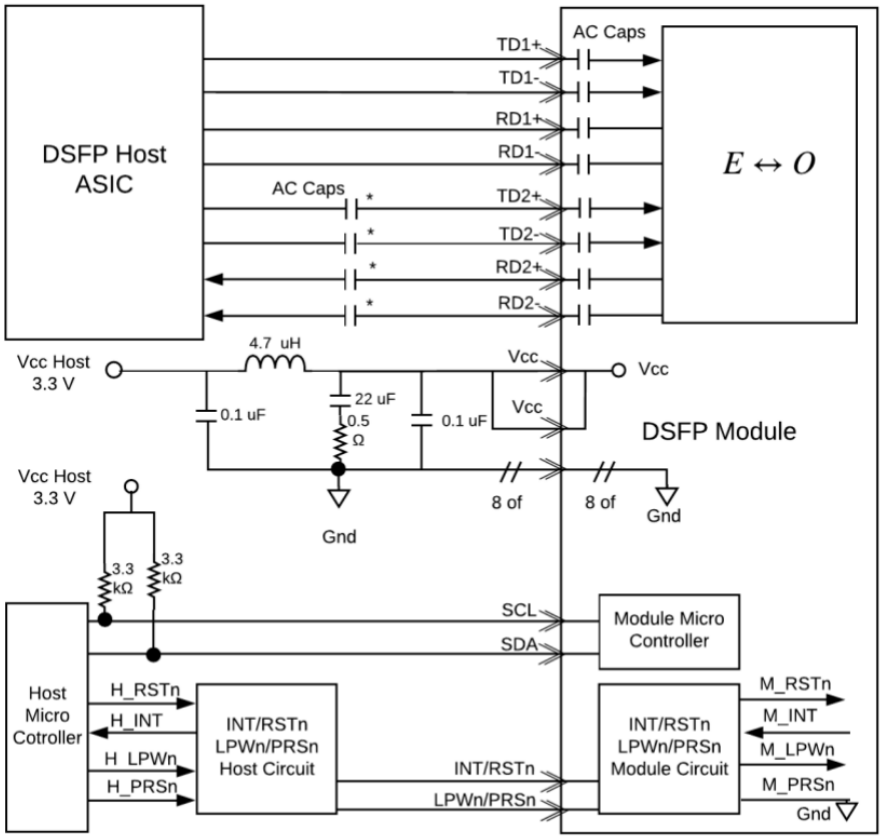
Parameter	Symbol	Min.	Type	Max.	Unit	Ref.
Power Supply Voltage	Vcc	3.135	3.3	3.465	V	
Power Supply Current	Icc	-		700	mA	
Transmitter						
Signaling rate (each lane)	SR	26.5625 ± 100 ppm			GBPS	
Differential data input voltage per lane	Vin,pp,diff	900	-	-	mV	
Differential termination mismatch	-	-	-	10	%	
Single-ended voltage tolerance range	-	-0.4	-	3.3	V	
DC common mode voltage	-	-350	-	2850	mV	
Receiver						
Signaling rate (each lane)	SR	26.5625 ± 100 ppm			GBd	
Error Bit Rate	BER	-	-	2.4E-4	/	1
Differential output voltage	-	-	-	900	mV	
Near-end ESMW (Eye symmetry mask width)	-	0.265	-	-	UI	
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	
Differential termination mismatch	-		-	10	%	
Transition time (min, 20% to 80%)	-	9.5	-	-	ps	
DC common mode voltage	-	-350	-	2850	mV	

Note: 1 PRBS31Q@26.5625Gbd PAM4

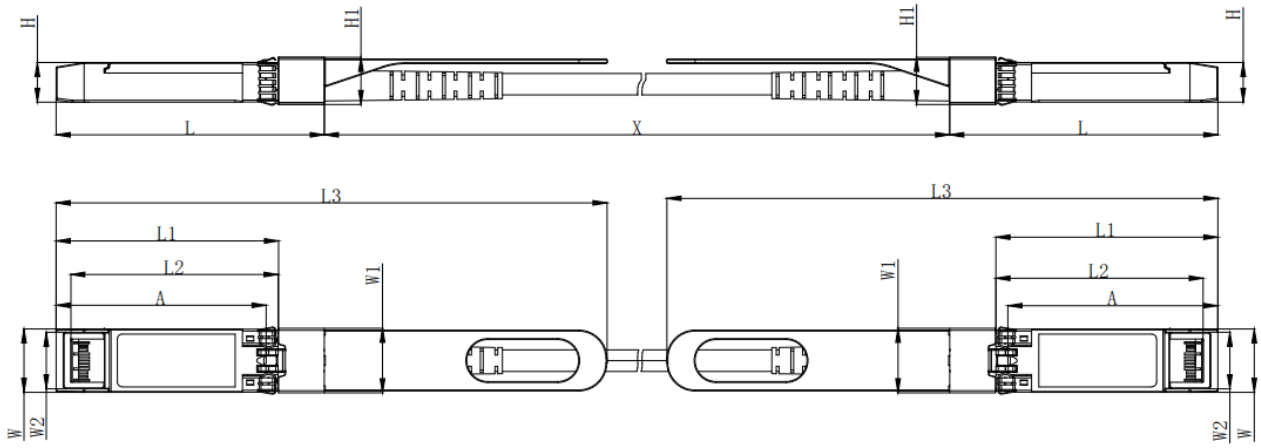
V. Digital Diagnostic Memory Map



VI. Recommended Interface Circuit



VII. Mechanical Dimensions



单位：mm

	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

DSFP wire mechanical drawing(Unit: mm)

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
Cable color	Aqua(OM3),Magenta(OM4)	

Appendix A. Document Revision

Version	Initiated	Reviewed	Revision	Release Date
A0	Lynn	Luke	New Release	2021-7-31