QSFPDD-200G-PDAC3M-C

MSA and TAA Compliant 200GBase-CU QSFP-DD to QSFP-DD Direct Attach Cable (Passive Twinax, 3m)

Features

- Compliant with QSFP-DD MSA Specification Rev 3.4
- SFF-8679 electrical interface compliant
- SFF-8636 management interface support
- Compliant with IEEE802.3Bj, By, IEEE802.3CD Standard
- Support 25G (PAM4) electrical data rates/channel
- I2C for EEPROM communication
- Pull to Release latch design
- Excellent EMI/EMC performance 360-degree cable shield termination
- Advantage dual side pre-solder automated assembly technologies
- Low loss, stronger mechanical features, more flexible
- QSFP-DD modules will be backwards compatible, allowing them to support existing QSFP modules and provide flexibility for end users and system designers
- ROHS Compliant

Applications

- Data center & Networking Equipment
- Servers/Storage Devices
- High Performance Computing (HPC)
- Switches/Routers

Product Description

This is an MSA compliant 200GBase-CU QSFP-DD to QSFP-DD direct attach cable that operates over passive copper with a maximum reach of 3m. It has been programmed, uniquely serialized, and data-traffic and application tested to ensure it is 100% compliant and functional. Our direct attach cables are built to comply with MSA (Multi-Source Agreement) standards. We stand behind the quality of our products and proudly offer a limited lifetime warranty.

ProLabs' QSFP-DD direct attach cables are RoHS compliant and lead-free.

TAA refers to the Trade Agreements Act (19 U.S.C. & 2501-2581), which is intended to foster fair and open international trade. TAA requires that the U.S. Government may acquire only "U.S. – made or designated country end products."

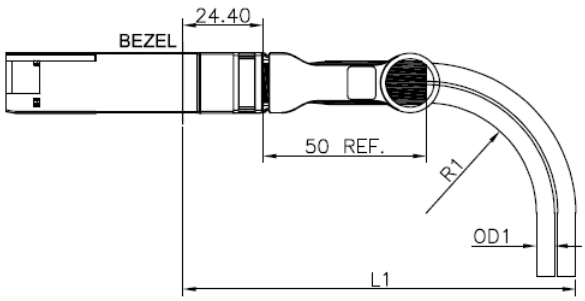
Wiring Table

PORT1	
SHELL	
GND(TX)	P1
TX2n−	P2
TX2p+	P3
GND(TX)	P4
TX4n−	P5
TX4p+	P6
GND(TX)	P7
GND(RX)	P13
RX3p+	P14
RX3n−	P15
GND(RX)	P16
RX1p+	P17
RX1n−	P18
GND(RX)	P19
GND(RX)	P20
RX2n−	P21
RX2p+	P22
GND(RX)	P23
RX4n−	P24
RX4p+	P25
GND(RX)	P26
GND(TX)	P32
TX3p+	P33
TX3n−	P34
GND(TX)	P35
TX1p+	P36
TX1n−	P37
GND(TX)	P38

PORT2	
SHELL	
P20	GND
P21	RX2n−
P22	RX2p+
P23	GND
P24	RX4n−
P25	RX4p+
P26	GND
P32	GND
P33	TX3p+
P34	TX3n−
P35	GND
P36	TX1p+
P37	TX1n−
P38	GND
P1	GND
P2	TX2n−
P3	TX2p+
P4	GND
P5	TX4n−
P6	TX4p+
P7	GND
P13	GND
P14	RX3p+
P15	RX3n−
P16	GND
P17	RX1p+
P18	RX1n−
P19	GND

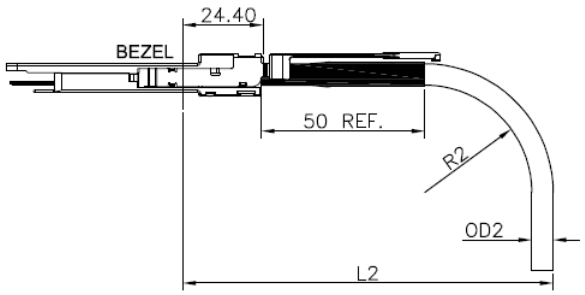
PORT1	
SHELL	
GND(TX)	P39
TX6n−	P40
TX6p+	P41
GND(TX)	P42
TX8n−	P43
TX8p+	P44
GND(TX)	P45
GND(RX)	P51
RX7p+	P52
RX7n−	P53
GND(RX)	P54
RX5p+	P55
RX5n−	P56
GND(RX)	P57
GND(RX)	P58
RX6n−	P59
RX6p+	P60
GND(RX)	P61
RX8n−	P62
RX8p+	P63
GND(RX)	P64
GND(TX)	P70
TX7p+	P71
TX7n−	P72
GND(TX)	P73
TX5p+	P74
TX5n−	P75
GND(TX)	P76

PORT2	
SHELL	
P58	GND(RX)
P59	RX6n−
P60	RX6p+
P61	GND(RX)
P62	RX8n−
P63	RX8p+
P64	GND(RX)
P70	GND(TX)
P71	TX7p+
P72	TX7n−
P73	GND(TX)
P74	TX5p+
P75	TX5n−
P76	GND(TX)
P39	GND(TX)
P40	TX6n−
P41	TX6p+
P42	GND(TX)
P43	TX8n−
P44	TX8p+
P45	GND(TX)
P51	GND(RX)
P52	RX7p+
P53	RX7n−
P54	GND(RX)
P55	RX5p+
P56	RX5n−
P57	GND(RX)



ASSEMBLY BEND RADIUS & INSTALL RADIUS

U–QSFP–DD			
CABLE GUAGE	DIAMETER"OD1"	MIN. BEND RADIUS"R1"	MIN. BEND SPACE"L1"
28AWG	7.9mm	39.5mm	130mm



ASSEMBLY BEND RADIUS & INSTALL RADIUS

U–QSFP–DD			
CABLE GUAGE	DIAMETER"OD2"	MIN. BEND RADIUS"R2"	MIN. BEND SPACE"L2"
28AWG	7.9mm	39.5mm	122mm

Mechanical Structure Characteristics of Plug

- Raw Cable -- Support 28AWG, 8 Pairs, 100ohm, PVC Jacket, RoHS2.0.
- PCBA – U-QSFP-DD PCBA, 76P Au 30u" Min
- Acetate Tape -- Acetate Tape, Black
- HST -- Heat shrink tube, OD13mm, Black
- Copper Foil -- Double-sided conductive, W=8.5mm
- Upper shell -- ZN Alloy, NI 120U" over 280U" min.
- Bottom shell -- ZN Alloy, NI 120U" over 280U" min.
- Lock-- Stainless steel
- Spring -- Left-handed rotation, SWP-B
- Pull Tap -- SUS301 + PA66, Black
- Rivet -- Stainless Steel
- Anti-Static Cap—PVC, Blue, Anti-Static

Pin Descriptions

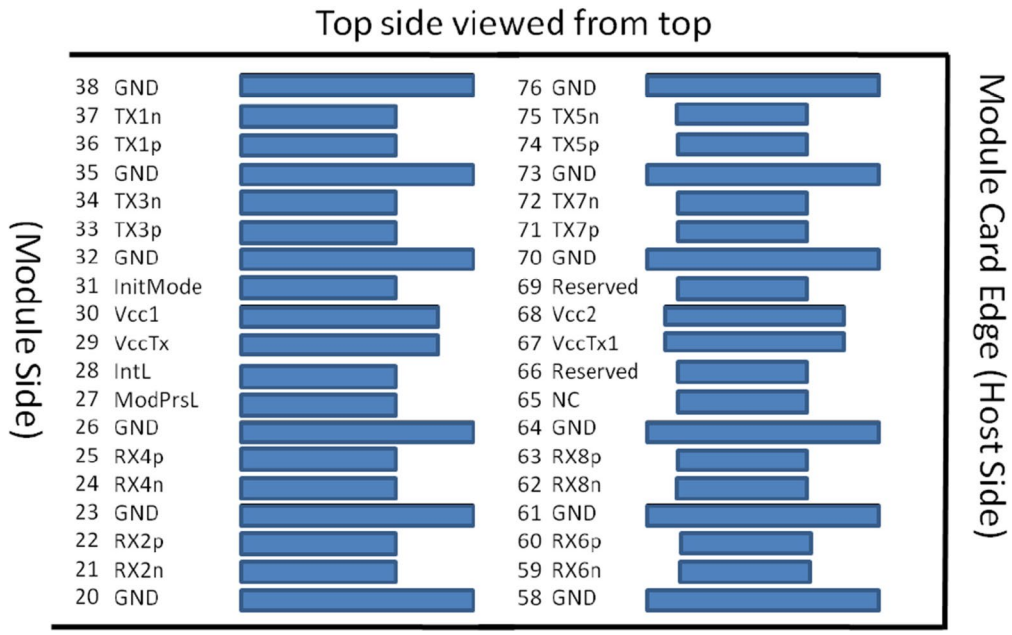
PIN	Logic	Symbol	Description	Notes
1		GND	Ground	1
2	CML-I	Tx2n	Transmitter Inverted Data Input	
3	CML-I	Tx2p	Transmitter Non-Inverted Data Input	
4		GND	Ground	1
5	CML-I	Tx4n	Transmitter Inverted Data Input	
6	CML-I	Tx4p	Transmitter Non-Inverted Data Input	
7		GND	Ground	1
8	LVTTL-I	ModSelL	Module Select	
9	LVTTL-I	ResetL	Module Reset	
10		VccRx	+3.3V Power Supply Receiver	2
11	LVCMOS-I/O	SCL	2-wire serial interface clock	
12	LVCMOS-I/O	SDA	2-wire serial interface data	
13		GND	Ground	1
14	CML-O	Rx3p	Receiver Non-Inverted Data Output	
15	CML-O	Rx3n	Receiver Inverted Data Output	
16		GND	Ground	1
17	CML-O	Rx1p	Receiver Non-Inverted Data Output	
18	CML-O	Rx1n	Receiver Inverted Data Output	
19		GND	Ground	1
20		GND	Ground	1
21	CML-O	Rx2n	Receiver Inverted Data Output	
22	CML-O	Rx2p	Receiver Non-Inverted Data Output	
23		GND	Ground	1
24	CML-O	Rx4n	Receiver Inverted Data Output	
25	CML-O	Rx4p	Receiver Non-Inverted Data Output	
26		GND	Ground	1
27	LVTTL-O	ModPrsL	Module Present	
28	LVTTL-O	IntL	Interrupt	
29		VccTx	+3.3V Power Supply Transmitter	2
30		Vccl	+3.3V Power Supply	2
31	LVTTL-I	InitMode	Initialization mode; In legacy QSFP applications, the InitMode pad is called LPMODE	
32		GND	Ground	1
33	CML-I	Tx3p	Transmitter Non-Inverted Data Input	
34	CML-I	Tx3n	Transmitter Inverted Data Input	
35		GND	Ground	1
36	CML-I	Tx1p	Transmitter Non-Inverted Data Input	
37	CML-I	Tx1n	Transmitter Inverted Data Input	
38		GND	Ground	1

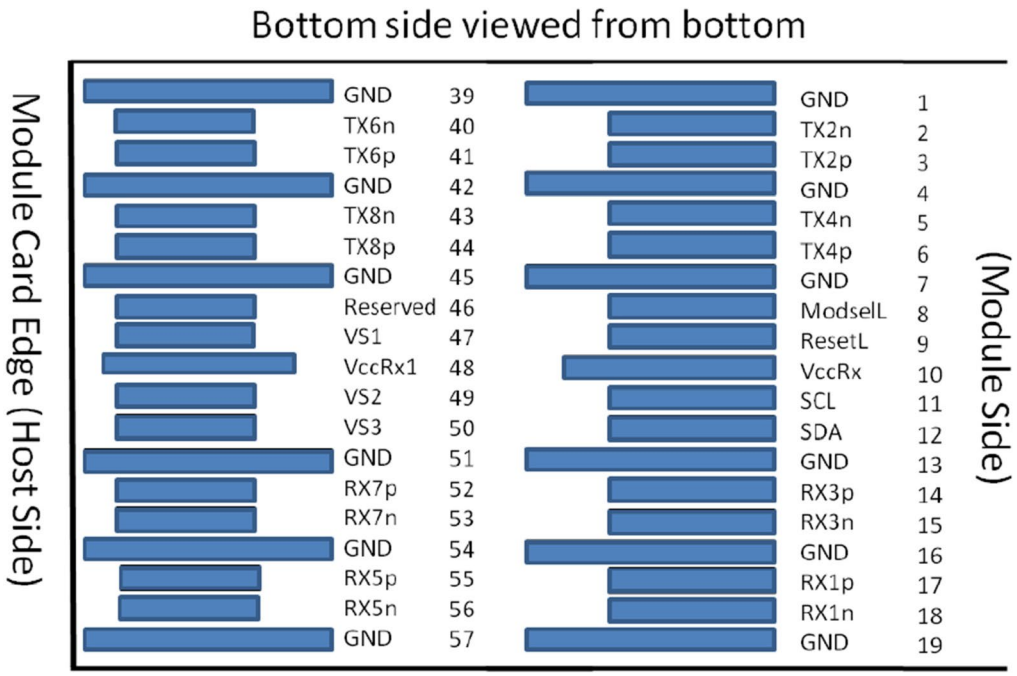
PIN		Symbol	Description	Notes
39		GND	Ground	1
40	CML-I	Tx6n	Transmitter Inverted Data Input	
41	CML-I	Tx6p	Transmitter Non-Inverted Data Input	
42		GND	Ground	1
43	CML-I	Tx8n	Transmitter Inverted Data Input	
44	CML-I	Tx8p	Transmitter Non-Inverted Data Input	
45		GND	Ground	1
46		Reserved	For future use	3
47		VSl	Module Vendor Specific 1	3
48		VccRx1	3.3V Power Supply	2
49		VS2	Module Vendor Specific 2	3
50		VS3	Module Vendor Specific 3	3
51		GND	Ground	1
52	CML-O	Rx7p	Receiver Non-Inverted Data Output	
53	CML-O	Rx7n	Receiver Inverted Data Output	
54		GND	Ground	1
55	CML-O	Rx5p	Receiver Non-Inverted Data Output	
56	CML-O	Rx5n	Receiver Inverted Data Output	
57		GND	Ground	1
58		GND	Ground	1
59	CML-O	Rx6n	Receiver Inverted Data Output	
60	CML-O	Rx6p	Receiver Non-Inverted Data Output	
61		GND	Ground	1
62	CML-O	Rx8n	Receiver Inverted Data Output	
63	CML-O	Rx8p	Receiver Non-Inverted Data Output	
64		GND	Ground	1
65		NC	No Connect	3
66		Reserved	For future use	3
67		VccTx1	3.3V Power Supply	2
68		Vcc2	3.3V Power Supply	2
69		Reserved	For future use	3
70		GND	Ground	1
71	CML-I	Tx7p	Transmitter Non-Inverted Data Input	
72	CML-I	Tx7n	Transmitter Inverted Data Input	
73		GND	Ground	1
74	CML-I	Tx5p	Transmitter Non-Inverted Data Input	
75	CML-I	Tx5n	Transmitter Inverted Data Input	
76		GND	Ground	1

Notes:

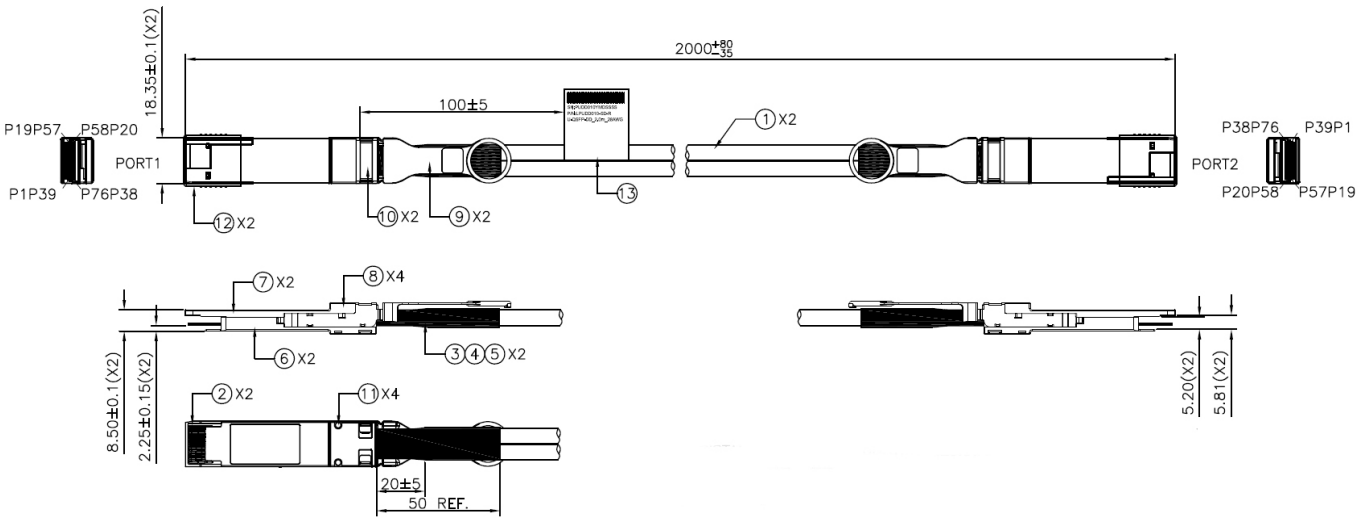
1. QSFP-DD uses common ground (GND)for all signals and supply (power). All are common within the QSFP-DD module and all module voltages are referenced to this potential unless otherwise noted. Connect these directly to the host board signal-common ground plane.
2. VccRx, VccRx1, Vcc1, Vcc2, VccTx and VccTx1 shall be applied concurrently. Requirements defined for the host side of the Host Card Edge Connector are listed in Table 6. VccRx, VccRx1, Vcc1, Vcc2, VccTx and VccTx1 may be internally connected within the module in any combination. The connector Vcc pins are each rated for a maximum current of 1000 mA.
3. All Vendor Specific, Reserved and No Connect pins may be terminated with 50 ohms to ground on the host. Pad 65 (No Connect) shall be left unconnected within the module. Vendor specific and Reserved pads shall have an impedance to GND that is greater than 10 kOhms and less than 100 pF.
4. Plug Sequence specifies the mating sequence of the host connector and module. The sequence is 1A, 2A, 3A, 1B, 2B, 3B. (see Figure 2 for pad locations) Contact sequence A will make, then break contact with additional QSFP-DD pads. Sequence 1A, 1B will then occur simultaneously, followed by 2A, 2B, followed by 3A,3B.

Electrical Pin-out Details




Bottom side viewed from bottom
Module Card Edge (Host Side)
(Module Side)
GND 39
TX6n 40
TX6p 41
GND 42
TX8n 43
TX8p 44
GND 45
Reserved 46
VS1 47
VccRx1 48
VS2 49
VS3 50
GND 51
RX7p 52
RX7n 53
GND 54
RX5p 55
RX5n 56
GND 57
GND 1
TX2n 2
TX2p 3
GND 4
TX4n 5
TX4p 6
GND 7
ModselL 8
ResetL 9
VccRx 10
SCL 11
SDA 12
GND 13
RX3p 14
RX3n 15
GND 16
RX1p 17
RX1n 18
GND 19

Mechanical Specifications



Item	Name	Description	Quantity	Unit
1	**Raw Cable**	28AWG, 8 Pairs, 100ohm, PVC Jacket	A/R	mm
2	**PCBA**	U-QSFP-DD PCBA, 76P Au 30u" Min	2	PCS
3	**Acetate Tape**	Acetate Tape, Black	A/R	mm
4	**HST**	Heat shrink tube, OD13mm, Black	A/R	mm
5	**Copper Foil**	Double-sided conductive, W=8.5mm	A/R	mm
6	**Bottom Shell**	ZN Alloy, NI 120U" over 280U" min.	2	PCS
7	**Top Shell**	ZN Alloy, NI 120U" over 280U" min.	2	PCS
8	**Spring**	Left-handed rotation, SWP-B	4	PCS
9	**Pull Tap**	SUS301 + PA66, Black	2	PCS
10	**Lock**	Stainless Steel	2	PCS
11	**Rivet**	Stainless Steel	4	PCS
12	**Anti-Static Cap**	PVC, Blue, Anti-Static	2	PCS
13	**Label**	PP, LXW=57x26mm, White	1	PCS

Notes:

1. 100% conductor test, test condition, voltage 5V, insulation resistance 10MΩ, conductor resistance 2Ω Max.
2. 100% High-frequency test according to IEEE802.3bj Standard
3. Differential Impedance:
   Rise Time: 35ps (20%~80%)
   Raw Cable: 100 +10/-5 ohm
   Cable termination: 100 ± 10 ohm
4. 100% EEPROM Check, 100% Latch Function Check
5. All materials comply with RoHS 2.0

Electrical Test Characteristics

Item		Requirement	Test Condition
Differential Impedance	**Cable Impedance**	100 +10/-5 Ω	Rise time of 35ps (at the SMA) (20 % - 80 %).
	Paddle Card Impedance	100 ± 10 Ω	
	Cable Termination Impedance	100 +10 / -15 Ω	

Other Electrical Performance Requirement

Item	Description	Test condition	Judgment
3.2.1	Insulation Resistance	EIA-364-21, DC 300V 1 minute.	Meet Spec. 10M ohm (Min.)
3.2.2	Dielectric Withstanding Voltage	EIA-364-20, apply a voltage of 300V DC for 1 minute between adjacent terminals, and between adjacent terminals and ground.	Meet Spec. NO disruptive discharge.
3.2.3	Low Level Contact Resistance (LLCR)	EIA-364-23, apply a maximum voltage of 20mV and a current of 100mA.	Meet Spec. 70 milliohms Max. From initial.
3.2.4	Continuity	Verify the continuous electrical path of all expected connections	No unexpected opens, shorts, or high resistance areas.

Mechanical Test Characteristics

#	Item	Industry Spec	Test Condition	Requirement
3.3.1	Vibration	EIA-364-28	Clamp & vibrate per EIA-364-28F,TC-VII, Test condition letter – D, 15 minutes in X, Y & Z axis.	No evidence of physical damage
3.3.2	Mechanical Shock	EIA-364-27C	Clamp and Shock per EIA-364-27C, TC-G,3 times in 6 directions, 100g, 6ms	No evidence of physical damage
3.3.3	Cable Flex	EIA-364-41C	Flex cable 180° for 20 cycles (±90° from nominal position) at 12 cycles per minute with a 1.0kg load applied to the cable jacket. Flex in the boot area 90º in each direction from vertical. Per EIA-364-41C	No evidence of physical damage
3.3.4	Cable Plug Retention in Cage	EIA-364-38B	Cable plug is clamped with the cable hanging vertically. A 90N load is applied (gradually) to the cable jacket for a 1-minute duration. Force to be applied axially with no damage to plug latch. Per EIA-364-38B	90N Min. No evidence of physical damage per QSFP-DD MSA
3.3.5	Cable Retention in Plug	EIA-364-38B	Cable plug is fixtured with the bulk cable hanging vertically. A 90N axial load is applied (gradually) to the cable jacket and held for 1 minute. Per EIA-364-38B	90N Min. No evidence of physical damage

3.3.6	Cable Plug Insertion	EIA-364-13B	Per EIA-364-13B	90N Max per QSFP-DD MSA
3.3.7	Cable Plug Extraction	EIA-364-13B	Place axial load on latch pull to de-latch plug. Per EIA-364-13B,	30N Max. per QSFP-DD MSA
3.3.8	Latch Pull Strength	EIA-364-38B	Per EIA-364-38B	90N Min. No evidence of physical damage
3.3.9	Durability	EIA-364-09	EIA-364-09, perform plug &unplug cycles: Plug and receptacle mate rate: 250times/hour. 50times for QSFP-DD module (CONNECTOR TO PCB)	50 cycles, No evidence of physical damage

Environmental Test Characteristics

#	Item	Industry Spec	Test condition	Requirement
3.4.1	Operating Temperature	/	Cable operating temperature range.	-20°C to +80°
3.4.2	Storage Temp. Range (in packed condition)	/	Cable storage temp. range in packed condition.	-40°C to +80°C
3.4.3	Thermal Shock	EIA-364-32D	EIA-364-32D: method A, TC-1, -55°C to 85°C,100 cycles	1. No Physical Damage 2. MeetΔLLCR 3. Meet 3.1 SDD21
3.4.4	Cyclic Temperature& Humidity	EIA-364-31	EIA-364-31 Method III, Test condition B	1. No Physical Damage 2. MeetΔLLCR 3. Meet 3.1 SDD21
3.4.5	Salt spraying	EIA-364-26B	48 hours salt spraying after shell corrosive area less than 5%	no physical crack
3.4.6	Mixed Flowing Gas	EIA-364-65	EIA-364-65 Class IIA 14 days	1. MeetΔLLCR 2. Meet 3.1 SDD21
3.4.7	Temperature Life	EIA-364-17B	EIA-364-17B, With 85±2℃ and 85±2% RH condition for 500 hours	1. No Physical Damage 2. MeetΔLLCR 3. Meet 3.1 SDD21 stressing
3.4.8	Cold bend	/	Condition: -20℃±2℃, mandrel diameter is 6 times the cable diameter.	4h, no physical crack
3.4.9	Flame Retardant Grade	VW-1	/	VW-1