



10.3Gb/s SFP+ Passive Cable

APCP01-SSCxxx-yy



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ATOP's Small Form Factor Pluggable SFP+ to SFP+ Passive Derict Attached Copper Cables. The Passive DAC cables are high performance, cost effective. It can support 10G Ethernet, 8g fibre channel and InfiniBand short distance interconnection scenarios Application

Product Features

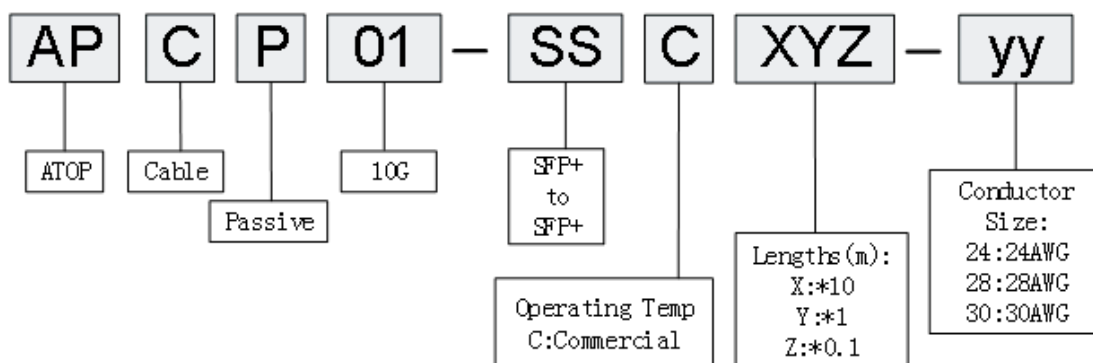
- ✓ Support hot-pluggable
- ✓ Available in lengths from 0.5m to 10m
- ✓ Low insertion loss and low crosstalk
- ✓ Single 3.3V power supply
- ✓ RoHS Compliant and Lead-Free
- ✓ Compliant with SFF-8472
- ✓ Compliant with SFP+ MSA: SFF-8431
- ✓ Wire/Cable Type Twin ax

Applications

- ✓ 10GbE
- ✓ 8G Fiber Channel
- ✓ Switch/Switch/Hub
- ✓ Data center, cloud service



Product Selection



Part Number	Lengths	Conductor Size	Note
APCP01-SSC005-yy	0.5m	24/26/28/30 AWG	1,2
APCP01-SSC010-yy	1m	24/26/28/30 AWG	1,2
APCP01-SSC015-yy	1.5m	24/26/28/30 AWG	1,2
APCP01-SSC020-yy	2m	24/26/28/30 AWG	1,2
APCP01-SSC025-yy	2.5m	24/26/28/30 AWG	1,2
APCP01-SSC030-yy	3m	24/26/28/30 AWG	1,2
APCP01-SSC050-yy	5m	24/26/28/30 AWG	1,2
APCP01-SSC070-yy	7m	24/26/28/30 AWG	1,2
APCP01-SSC100-yy	10m	24/26/28/30 AWG	1,2

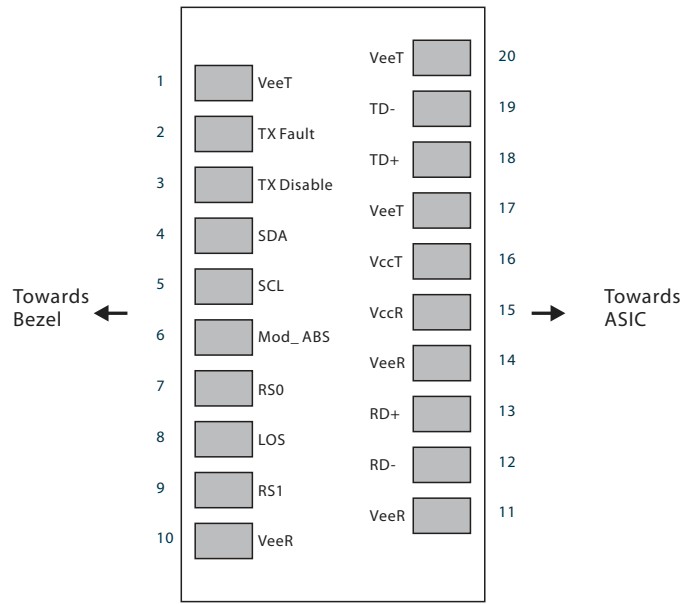
Note:

1, yy=30,28,26,24, present wire size AWG

2, 24 AWG is default

Pin Descriptions

Pin	Symbol	Name/Description	Ref.
1	VeeT	Transmitter Ground (Common with Receiver Ground)	
2	TX Fault	Transmitter Fault. LVTTTL-O	
3	TX Disable	Transmitter Disable. Laser output disabled on high or open. LVTTTL-I	
4	SDA	2-Wire Serial Interface Data Line(Same as MOD-DEF2 in INF-8074i). LVTTTL-I/O	
5	SCL	2-Wire Serial Interface Data Line(Same as MOD-DEF2 in INF-8074i). LVTTTL-I	
6	Mod_ABS	Module Absent, Connect to VeeT or VeeR in Module.	
7	RS0	Rate Select 0, optionally controls SFP+ module receiver LVTTTL-I	
8	LOS	Loss of Signal indication. Logic 0 indicates normal operation. LVTTTL-O	
9	RS1	Rate Select 1, optionally controls SFP+ module transmitter. LVTTTL-I	
10	VeeR	Receiver Ground (Common with Transmitter Ground)	
11	VeeR	Receiver Ground (Common with Transmitter Ground)	
12	RD-	Receiver Inverted DATA out. AC Coupled. CML-O	
13	RD+	Receiver Non-inverted DATA out. AC Coupled. CML-O	
14	VeeR	Receiver Ground (Common with Transmitter Ground)	
15	VccR	Receiver Power Supply	
16	VccT	Transmitter Power Supply	
17	VeeT	Transmitter Ground (Common with Receiver Ground)	
18	TD+	Transmitter Non-Inverted DATA in. AC Coupled. CML-I	
19	TD-	Transmitter Inverted DATA in. AC Coupled. CML-I	
20	VeeT	Transmitter Ground (Common with Receiver Ground)	



Pin-out of Connector Block on Host Board

Signal Integrity

ITEM	REQUIREMENT	TEST CONDITION																														
Cable Impedance	105+5/-5Ω																															
Differential Impedance	Paddle Card Impedance 100±10Ω	Rise time of 35ps (20% - 80%).																														
Cable Termination Impedance	100±15Ω																															
[Differential (Input/Output) Return loss SDD11/SDD22]	Return loss(f) ≥ $\begin{cases} 10 & 0.01 \leq f < 4.1 \\ 6.3-13\log_{10}(f/5.5) & 4.1 \leq f \leq 11.1 \end{cases}$ Where f is the frequency in GHz Return loss(f) is the return loss at frequency f	0.01GHz ≤ f ≤ 11.1GHz SFF-8431 Rev.4.1																														
(Differential Insertion Loss Max.)																																
	<table border="1"> <thead> <tr> <th>AWG \ F</th> <th>600MHz</th> <th>1.25GHz</th> <th>2.5GHz</th> <th>5.0GHz</th> </tr> </thead> <tbody> <tr> <td>30(1m)Max</td> <td>2.5dB</td> <td>3.5dB</td> <td>4.5dB</td> <td>6.5dB</td> </tr> <tr> <td>30(2m)Max</td> <td>3.8dB</td> <td>5.3dB</td> <td>6.8dB</td> <td>9.8dB</td> </tr> <tr> <td>30(3m)Max</td> <td>5.0dB</td> <td>7.0dB</td> <td>9.0dB</td> <td>13.0dB</td> </tr> <tr> <td>26(5m)Max</td> <td>5.5dB</td> <td>7.0dB</td> <td>10.5dB</td> <td>15.0dB</td> </tr> <tr> <td>24(10m)Max</td> <td>7.0dB</td> <td>10.0dB</td> <td>14.0dB</td> <td>20.0dB</td> </tr> </tbody> </table>	AWG \ F	600MHz	1.25GHz	2.5GHz	5.0GHz	30(1m)Max	2.5dB	3.5dB	4.5dB	6.5dB	30(2m)Max	3.8dB	5.3dB	6.8dB	9.8dB	30(3m)Max	5.0dB	7.0dB	9.0dB	13.0dB	26(5m)Max	5.5dB	7.0dB	10.5dB	15.0dB	24(10m)Max	7.0dB	10.0dB	14.0dB	20.0dB	
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Differential Insertion Loss (SDD21 Max.)		0.01GHz ≤ f ≤ 11.1GHz																														
MDNEXT(multiple disturber near-end crosstalk)	≥26dB @5GHz	0.01GHz ≤ f ≤ 11.1GHz																														
Insertion Loss Deviation	-0.7-0.2*10 ⁻³ f ≤ ILD ≤ 0.7+0.2*10 ⁻³ f (f is the frequency in MHz)	0.01GHz ≤ f ≤ 5.0GHz																														

Other Electrical Performance

ITEM	REQUIREMENT	TEST CONDITION
Low Level Contact Resistance	70milliohms Max. From initial.	EIA-364-23:Apply a maximum voltage of 20mV And a current of 100 mA.
Insulation Resistance	10Mohm(Min.)	EIA364-21:AC 300V 1 minute
Dielectric Withstanding Voltage	DC 500V 1 minute disruptive discharge.	EIA-364-20:Apply a voltage of 500 VDC for 1 minute between adjacent terminals And between adjacent terminals and ground.

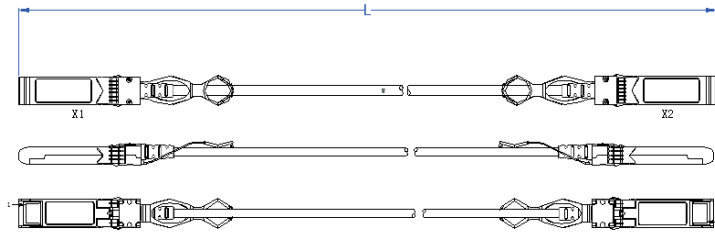
Environment Performance

ITEM	REQUIREMENT	TEST CONDITION
Operating Temp. Range	0°C to +70°C	Cable operating temperature range.
Storage Temp. Range (in packed condition)	-40°C to +80°C	Cable storage temperature range in packed condition.
Thermal Cycling Non-Powered	No evidence of physical damage	EIA-364-32D, Method A, -25 to 90C, 100 cycles, 15 min. dwells
Salt Spraying	48 hours salt spraying after shell corrosive area less than 5%.	EIA-364-26
Mixed Flowing Gas	Pass electrical tests per 3.1 after stressing. (For connector only)	EIA-364-35 Class II, 14 days.
Temp. Life	No evidence of physical damage	EIA-364-17C w/ RH, Damp heat 90°C at 85% RH for 500 hours then return to ambient
Cable Cold Bend	4H, No evidence of physical damage	Condition: -20°C ±2°C , mandrel diameter is 6 times the cable diameter.

Mechanical and Physical Characteristics

ITEM	REQUIREMENT	TEST CONDITION
Vibration	Pass electrical tests per 3.1 after stressing.	Clamp & vibrate per EIA-364-28E,TC-VII, test condition letter – D, 15 minutes in X, Y & Z axis.
Cable Flex	No evidence of physical damage	Flex cable 180° for 20 cycles ($\pm 90^\circ$ from nominal position) at 12 cycles per minute with a 1.0kg load applied to the cable jacket. Flex in the boot area 90° in each direction from vertical. Per EIA-364-41C
Cable Plug Retention in Cage	90N Min. No evidence of physical damage	Pull on cable jacket approximately 1 ft behind cable plug. No functional damage to cable plug below 90N. Per SFF-8432 Rev 5.0
Cable Retention in Plug	90N Min. No evidence of physical damage	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
Mechanical Shock	Pass electrical tests Per 3.1 after stressing.	Clamp and shock per EIA-364-27B, TC-G,3 times in 6 directions, 100g, 6ms.
Cable Plug Insertion	18N Max.(SFP28)	Per SFF-8432 Rev 5.0
Cable plug Extraction	12.5N Max. (SFP28)	Measure without the aid of any cage kick-out springs. Place axial load on de-latch to de-latch plug. Per SFF-8432 Rev 5.0
Durability	50 cycles, No evidence of physical damage	EIA-364-09, perform plug & unplug cycles: Plug and receptacle mate rate: 250times/hour. 50times for module (CONNECTOR TO PCB)

Mechanical Specifications



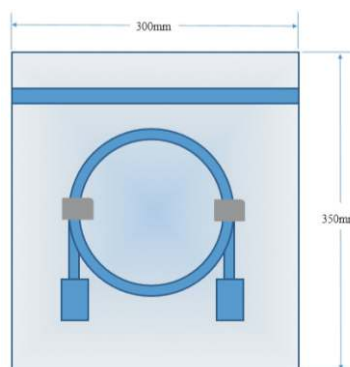
Starting	End	Remark
X1. 12	X2. 19	Pair
X1. 13	X2. 18	
X1. 18	X2. 13	Pair
X1. 19	X2. 12	
X1:1, 2, 6 8, 10, 11, 14, 17, 20	X2:1, 2, 6 8, 10, 11, 14, 17, 20	Drain wire
X1:1, 4, 5 15, 16	X2:1, 4, 5 15, 16	EEPROM point at both ends

Package diagram

The connectors at both ends are protected by protective sleeves, and each high-speed cable is separately put into an anti-static bag.

<=3m: 200mm*300mm

>3m: 300mm*350mm



Revision History

Revision	Initiated	Reviewed	Approved	DCN	Release Date
Version1.0	Tangzhiqiang	Li Tao	Ding zheng	New Released.	Nov 19, 2019



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