

TSSSS-PCC-xxC

## 10G SFP+ Direct Attach Cable

### Description

SFP+ Direct Attach Cables are compliant with the SFF-8431, SFF-8432 and SFF-8472 specifications. Various choices of wire gauge are available from 30 to 24 AWG with various choices of cable length (up to 7 m).

### Features

- Compliant with SFF-8431, 8432 and 8472
- Up to 10.3125Gbps data rate per channel
- Up to 7 m transmission
- Single 3.3V power supply
- Temperature Range: 0 °C to 70 °C
- RoHS compliant



### Applications

- Low EMI radiation Switches, servers and routers
- Data Center networks
- Storage area networks
- High performance computing
- Medical diagnostics and networking
- Test and measurement equipment

### Recommended Operation Condition

Parameters	Symbol	Min.	Max.	Unit
Operating Case Temperature	Topc	0	70	degC
Storage Temperature	Tst	-40	85	degC
Relative Humidity (non-condensation)	RS	35	60	%
Supply Voltage	Vcc3	3.135	3.465	V
Voltage on LVTTTL Input	Vilvttl	-0.3	Vcc3+0.2	V
Power Supply Current	Icc3	-	15	mA
Total Power Consumption	Pd	-	0.05	W

#### Notes:

Stress or conditions exceed the above range may cause permanent damage to the device.

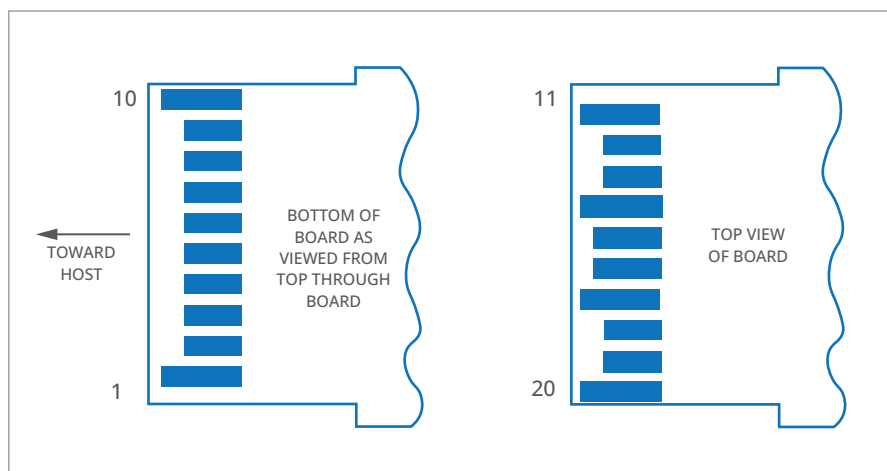
This is a stress rating only and functional operation of the device at these or any other conditions above those listed in the operational sections of this specification is not applied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

## Pin Definition

Pin	Symbol	Name/Description
1	VeeT <sup>[1]</sup>	Transmitter Ground
2	Tx_FAULT <sup>[2]</sup>	Not used
3	Tx_DIS <sup>[3]</sup>	Not used
4	SDA <sup>[2]</sup>	2-wire Serial Interface Data Line
5	SCL <sup>[2]</sup>	2-wire Serial Interface Clock Line
6	MOD_ABS <sup>[4]</sup>	Module Absent. Grounded within the module
7	RS0 <sup>[5]</sup>	Not used
8	RX_LOS <sup>[2]</sup>	Loss of Signal indication. Logic 0 indicates normal operation
9	RS1 <sup>[5]</sup>	Not used
10	VeeR <sup>[1]</sup>	Receiver Ground
11	VeeR <sup>[1]</sup>	Receiver Ground
12	RD-	Receiver Inverted DATA out. AC Coupled
13	RD+	Receiver DATA out. AC Coupled
14	VeeR <sup>[1]</sup>	Receiver Ground
15	VccR	Receiver Power Supply
16	VccT	Transmitter Power Supply
17	VeeT <sup>[1]</sup>	Transmitter Ground
18	TD+	Transmitter DATA in. AC Coupled
19	TD-	Transmitter Inverted DATA in. AC Coupled
20	VeeT <sup>[1]</sup>	Transmitter Ground

### Notes:

- [1] Module circuit ground is isolated from module chassis ground within the module.
- [2] Should be pulled up with 4.7k - 10k ohms on host board to a voltage between 3.15V and 3.6V.
- [3] Tx\_Disable is an input contact with a 4.7 kΩ to 10 kΩ pullup to VccT inside the module.
- [4] Mod\_ABS is connected to VeeT or VeeR in the SFP+ module. The host may pull this contact up to Vcc\_Host with a resistor in the range 4.7 kΩ to 10 kΩ. Mod\_ABS is asserted "High" when the SFP+ module is physically absent from a host slot.
- [5] RS0 and RS1 are module inputs and are pulled low to VeeT with > 30 kΩ resistors in the module.



## General Product Characteristics

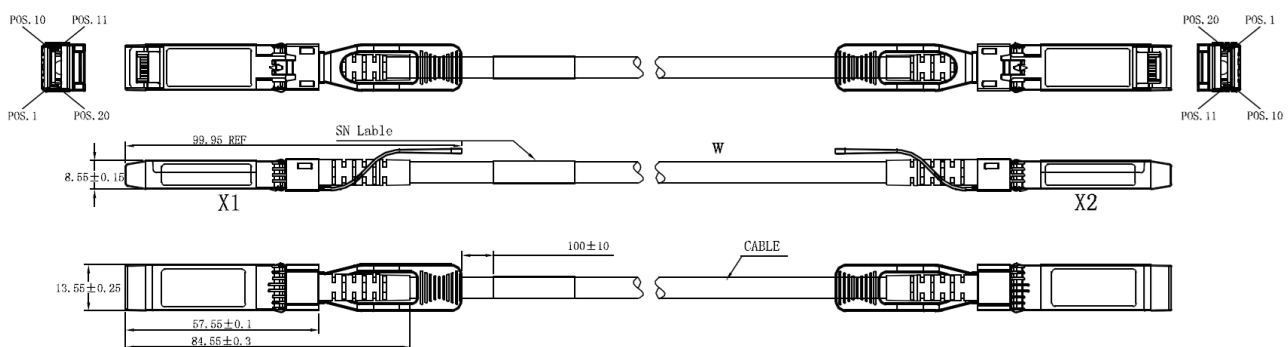
SFP+ DAC Specifications	
Number of Lanes	Tx & Rx
Channel Data Rate	10.3125 Gbps
Operating Temperature	0 °C to 70 °C
Storage Temperature	-40 °C to 85 °C
Supply Voltage	3.3V nominal
Electrical Interface	20 pins edge connector
Management Interface	Serial, I2C

## High Speed Characteristics

Parameter	Symbol	Min.	Typical	Max.	Unit	Notes
Differential Impedance	Zd	90	100	110	Ω	-
Differential Input Return Loss	SDDXX	$< -12 + 2 * \text{SQRT}(f)$ with f in GHz			dB	0.01-4.1GHz
		$< -6.3 + 13 * \log_{10} f / 5.5$ with f in GHz			dB	4.1-11.1GHz
Common Mode Output Return Loss	SCCXX	$< -7 + 1.6 * f$ with f in GHz			dB	0.01-2.5GHz
		-	-	-3	dB	2.5-11.1GHz
Difference Waveform Distortion Penalty	dWDPc	-	-	6.75	dB	-
VMA Loss	L	-	-	4.4	dB	-
VMA Loss to Crosstalk Ratio	VCR	32.5	-	-	dB	-

## Mechanical Dimensions

The connector is compatible with the SFF-8432 specification.



Length (m)	Cable AWG
1	30
3	30
5	24
7	24

## Regulatory Compliance

Feature	Test Method	Test Method
Electrostatic Discharge (ESD) to the Electrical Pins	MIL-STD-883C Method 3015.7	Class 1 (>2000 Volts)
Electromagnetic Interference (EMI)	FCC Class B	Compliant with Standards
	CENELEC EN55022 Class B	
	CISPR22 ITE Class B	
RF Immunity (RFI)	IEC61000-4-3	Typically Show no Measurable Effect from a 10V/m Field Swept from 80 to 1000MHz
RoHS Compliance	RoHS Directive 2011/65/EU and it's Amendment Directives 6/6	RoHS 6/6 compliant