



Features

- Compliant with SFF-8431 and SFF-8432
- Supports data rates up to 11.1 Gb/s
- Power Level 1 : 0.5W per cable end
- 100 Ohm differential impedance
- Retractable pin latch
- EEPROM signature
- Pull to Release latch design
- 360° cable braid crimp
- Enhanced EMI skirt design
- Color options for strain relief and pull tab
- Linear design for use with EDCs
- AC-coupled inputs and outputs
- Lengths up to 10m
- 30AWG to 24AWG cable available

Applications

- Networking – servers, routers and hubs
- Telecommunication equipment
- Network Interface Cards (NIC's)
- 10 Gigabit Ethernet and Gigabit Ethernet
- Fiber channel: 1, 2, 4 and 8 GFC
- Fiber Channel over Ethernet (FCoE)
- InfiniBand standard

Absolute Maximum Ratings

Parameter	Symbol	Min.	Typ.	Max.	Units	Note
Relative Humidity (non-condensation)	RS			85	%	
Supply Voltage	VCC3	3.15	3.30	3.45	V	

Operating Conditions

Parameter	Symbol	Min.	Typ.	Max.	Units
Operating Case Temperature	Topc	-40		85	°C
Power Supply Current	Icc3		70	80	mA
Total Power Consumption	Pd			0.5	W
Differential Input Voltage Swing	V DIFF	100		1800	mVp-p
Differential Output Voltage Swing	V DIFF			600	mVp-p
Data Output Rise Time/Fall Time	Tr, Tf			120	ps

Transceiver Electrical Characteristics

V_{CC} = 3.15 V to 3.45 V, T_C = -40°C to 85 °C

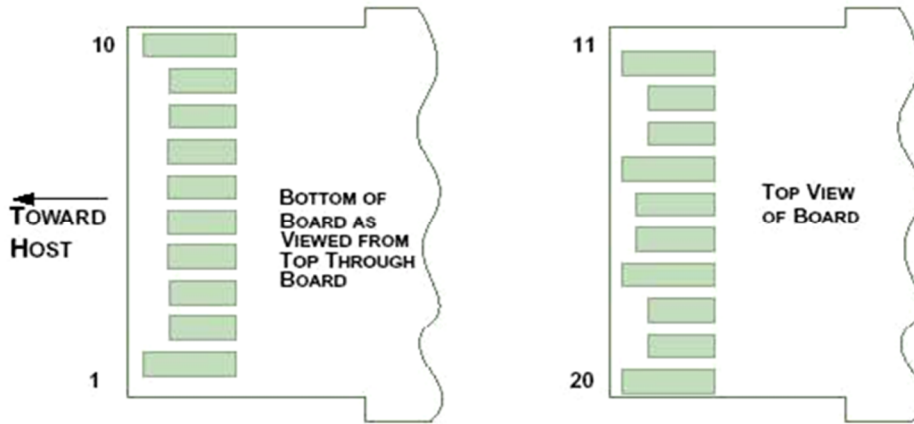
Parameter	Symbol	Min.	Typ.	Max.	Units	Notes
Reference Differential Input Impedance	<i>Z_d</i>		100		Ω	
Termination Mismatch	<i>ΔZM</i>			5	%	
Input AC Common Mode Voltage				25	mV (RMS)	
Differential Input S- parameter	<i>SDD11</i>	< -12 + 2 × SQRT(f), with f in GHz.			dB	0.01-4.1GHz
		< -6.3 + 13 × log ₁₀ (f/5.5), with f in GHz			dB	4.1-11.1GHz
Reflected Differential to Common Mode Conversion	<i>SCD11</i>			-10	dB	0.01-11.1GHz
Total Jitter				0.40	UI	
Deterministic Jitter				0.15	UI	

Receiver Electrical Characteristics

V_{CC} = 3.15 V to 3.45 V, T_C = -40°C to 85 °C

Parameter	Symbol	Min.	Typ.	Max.	Units	Notes
Reference Differential Input Impedance	Z _d		100		Ω	
Termination Mismatch	ΔZM			5	%	
Output AC Common Mode Voltage				15	mV (RMS)	
Differential Output S- parameter	S _{DD22}	$< -12 + 2 \times \text{SQRT}(f)$, with f in GHz			dB	0.01-4.1GHz
		$< -6.3 + 13 \times \log_{10}(f/5.5)$, with f in GHz			dB	4.1-11.1GHz
Common Mode Output Reflection Coefficient	S _{CD22}	$< -7 + 1.6 \times f$, with f in GHz.			dB	0.01-2.5GHz
				-3	dB	2.5-11.1GHz
Total Jitter				0.38	UI	
Deterministic Jitter				0.64	UI	

Pin Assignment



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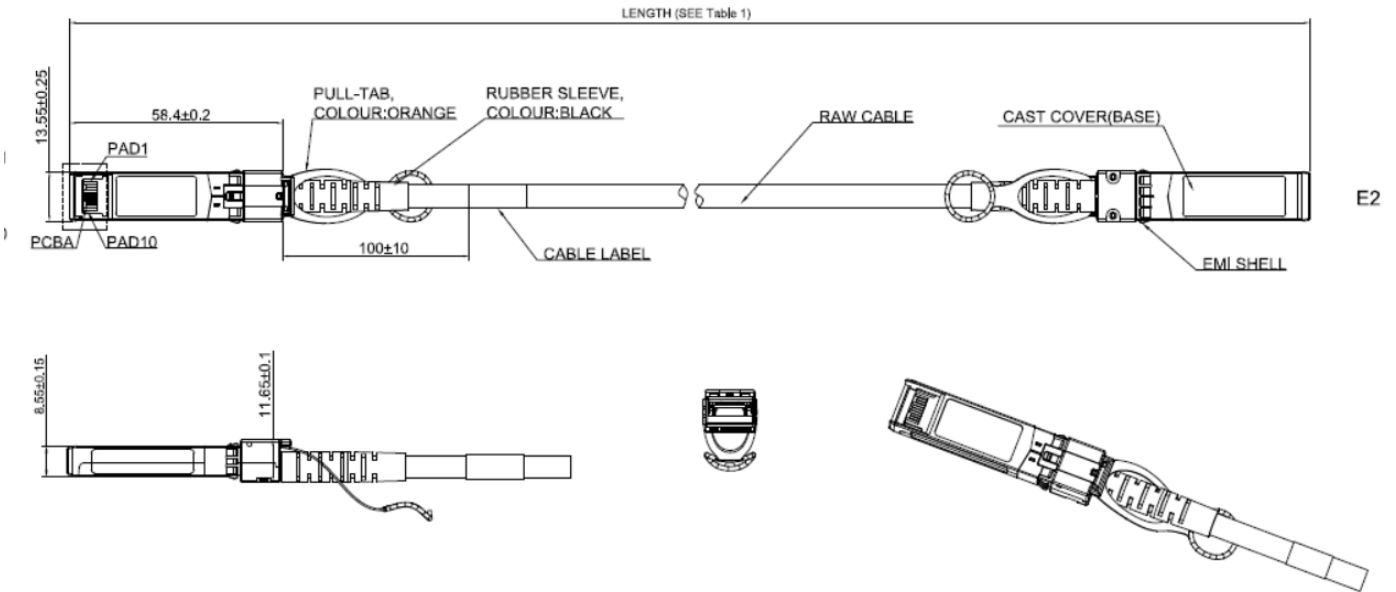
Pin Descriptions

PIN	Logic	Symbol	Description	Note
1		VeeT	Module Transmitter Ground	1
2	LVTTL-O	Tx_Fault	Transmitter Fault	2
3	LVTTL-I	Tx_Disable	Transmitter Disable	3
4	LVTTL-I/O	SDA	MOD-DEF2 2-wire serial interface data line	4
5	LVTTL-I/O	SCL	MOD-DEF1 2-wire serial interface clock line	4
6		Mod_Abs	Module Absent	5
7	LVTTL-I	RS0	Rate Select Zero	
8	LVTTL-O	Rx_LOS	Module Receiver Loss of Signal	2
9	LVTTL-I	RS1	Rate Select One	
10		VeeR	Module Receiver Ground	1
11		VeeR	Module Receiver Ground	1
12	CML-O	RD-	Receiver Inverted Data Output	
13	CML-O	RD+	Receiver Non-Inverted Data Output	
14		VeeR	Module Receiver Ground	1
15		VccR	Module Receiver 3.3V Supply	
16		VccT	Module Transmitter 3.3V Supply	
17		VeeT	Module Transmitter Ground	1
18	CML-I	TD+	Transmitter Non-Inverted Data Input	
19	CML-I	TD-	Transmitter Inverted Data Input	
20		VeeT	Module Transmitter Ground	1

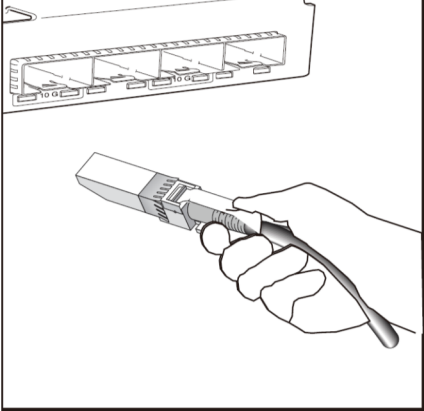
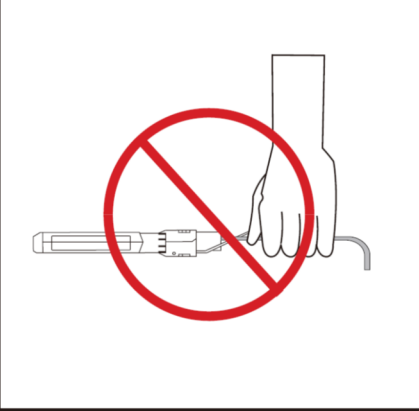
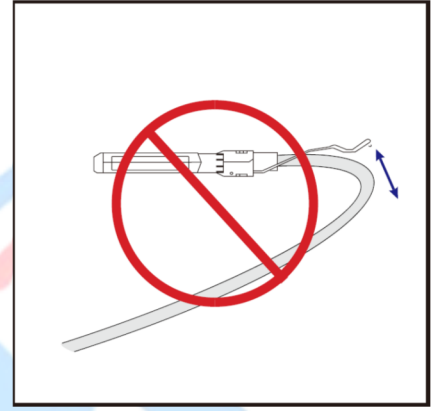
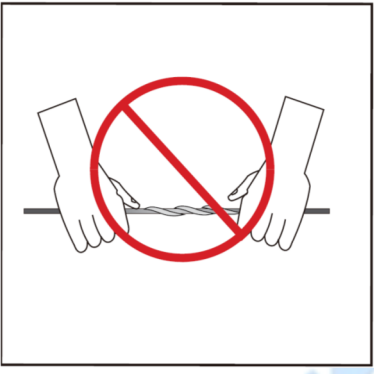
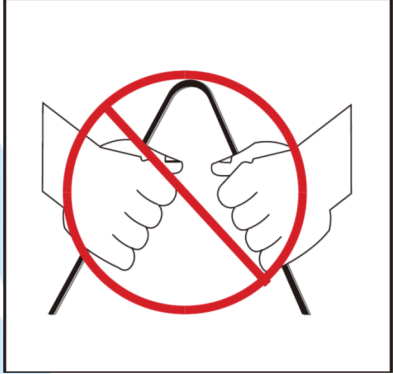
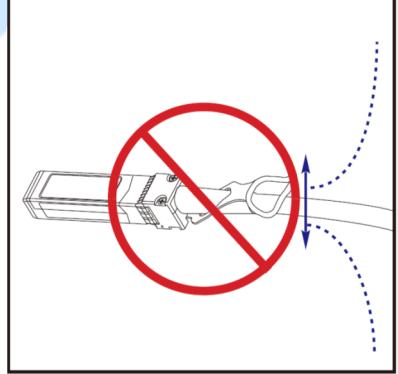
Notes:

- 1.The module signal ground pins, VeeR and VeeT, shall be isolated from the module case.
- 2.This pin is an open collector/drain output pin and shall be pulled up with 4.7-10k to Vcc_Host on the host board. Pull ups can be connected to multiple power supplies, however the host board design shall ensure that no module pin has voltage exceeding module VccT/R + 0.5 V.
- 3.This pin is an open collector/drain input pin and shall be pulled up with 4.7-10k to VccT in the module.
4. See 2-wire Electrical Specifications .
5. This pin shall be pulled up with 4.7-10k to Vcc_Host on the host board.

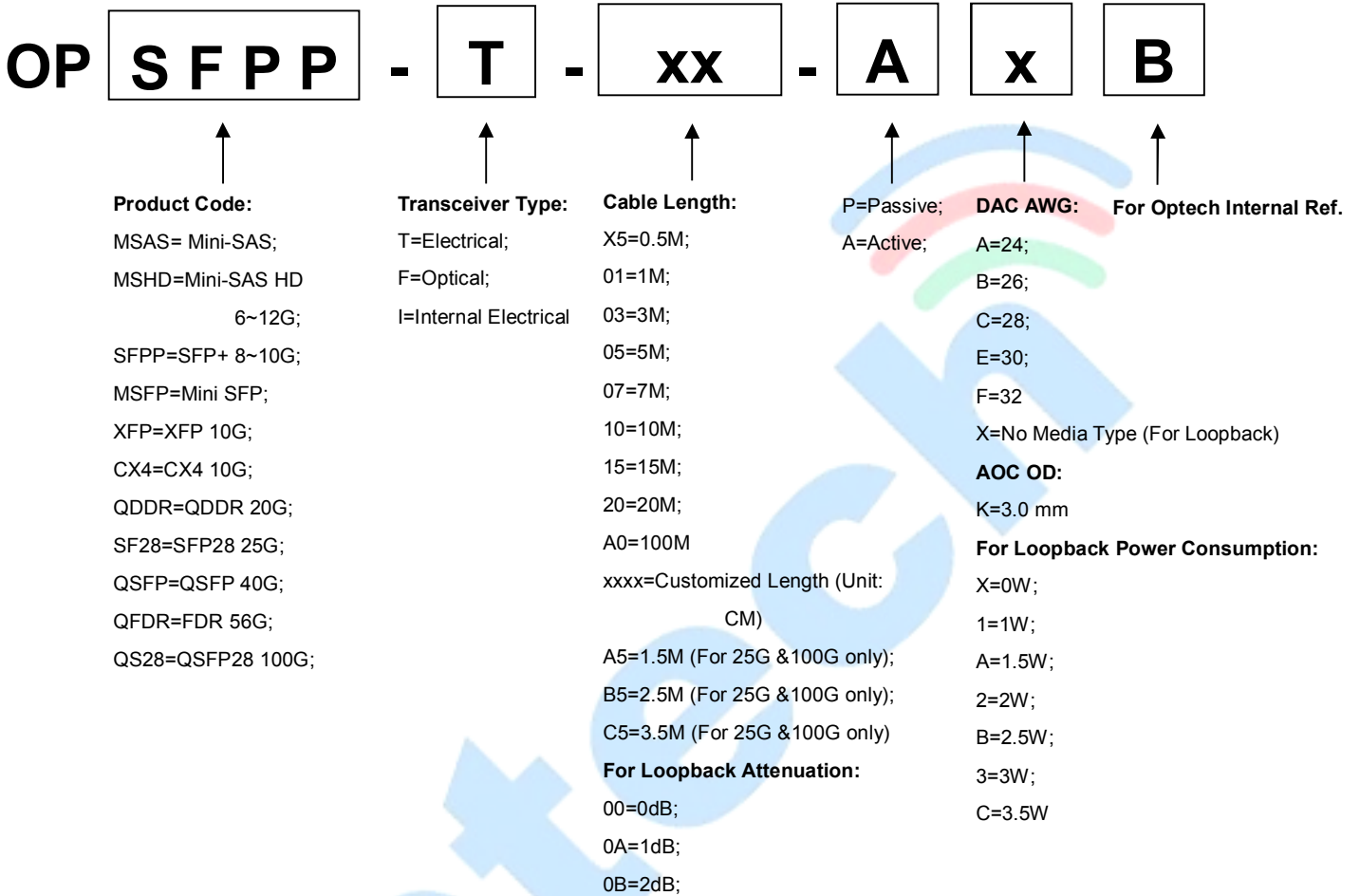
Dimensions



Important Notice

		
<p>Holding the SFP+ connector by its sides, insert the connector into the port on the switch</p>	<p>Do not handle by cable</p>	<p>DO NOT Over-bend the cable behind the connector</p>
		
<p>DO NOT twist the cable</p>	<p>DO NOT kink the cable</p>	<p>DO NOT bend up and down the cable</p>

Ordering Information



Part Number	Model Number	Length (M)	AWG	Voltage	Temperature
OPSFPP-T-01-AEB	Active Copper	1	30	3.3V	0°C to 70 °C
OPSFPP-T-02-AEB	Active Copper	2	30	3.3V	0°C to 70 °C
OPSFPP-T-03-AEB	Active Copper	3	30	3.3V	0°C to 70 °C
OPSFPP-T-05-AEB	Active Copper	5	30	3.3V	0°C to 70 °C

Note: All information contained in this document is subject to change without notice.