EDSP5X-xx

56G SFP56 Direct Attach Cable (DAC)

PRODUCT FEATURES

- **Up to 56 Gbps data rate**
- **Up to 3 meter transmission**
- **Hot-pluggable SFP 20PIN footprint**
- **Improved Pluggable Form Factor(IPF) compliant for enhanced EMI/EMC performance**
- **Compatible with IEEE 802.3bj and IEEE 802.3cd**
- **Compatible to SFF-8402 and SFF-8432**
- **Temperature Range: 0~ 70 °C**
- **RoHS Compatible**

APPLICATIONS

- **56G Ethernet**

Benefits

- **Cost-effective copper solution**
- **Lowest total system power solution**
- **Lowest total system EMI solution**
- **Optimized design for Signal Integrity**

DESCRIPTIONS

SFP56 Direct Attach Cables are compliant with SFF-8432 and SFF-8402 specifications. Various choices of wire gauge are available from 30 to 26 AWG with various choices of cable length (up to 3m).

SFP56 uses PAM4 signals for transmission, which doubles the rate. However, there are more stringent requirements for cable insertion loss. For detailed requirements, please see High Speed Characteristics.

The SFP56 passive cable assemblies are high performance, cost effective I/O solutions for 56G Ethernet. SFP56 copper cables allow hardware manufactures to achieve high port density, configurability and utilization at a very low cost and reduced power budget.

Ordering Information

Part No.	Description
EDSP5X-x-30	56G SFP56 Direct Attach Cable (DAC) 1~2M 30AWG
EDSP5X-x-26	56G SFP56 Direct Attach Cable (DAC) 3M 26AWG

Notes:

1. where "x" denotes cable length in meters. Examples are as follows:
2. x = 1 for 1m,

High Speed Characteristics

Parameter	Symbol	Min	Typical	Max	Unit	Note
Differential Impedance	TDR	90	100	110	Ω	
Insertion loss	SDD21	-16.06			dB	At 13.28 GHz
Differential Return Loss	SDD11 SDD22			See 1	dB	At 0.05 to 4.1 GHz
				See 2	dB	At 4.1 to 19 GHz
Common-mode to common-mode output return loss	SCC11 SCC22			-2	dB	At 0.2 to 19 GHz
Differential to common-mode return loss	SCD11 SCD22			See 3	dB	At 0.01 to 12.89 GHz
				See 4		At 12.89 to 19 GHz
Differential to common Mode Conversion Loss	SCD21-IL			-10	dB	At 0.01 to 12.89 GHz
				See 5		At 12.89 to 15.7 GHz
				-6.3		At 15.7 to 19 GHz

Notes:

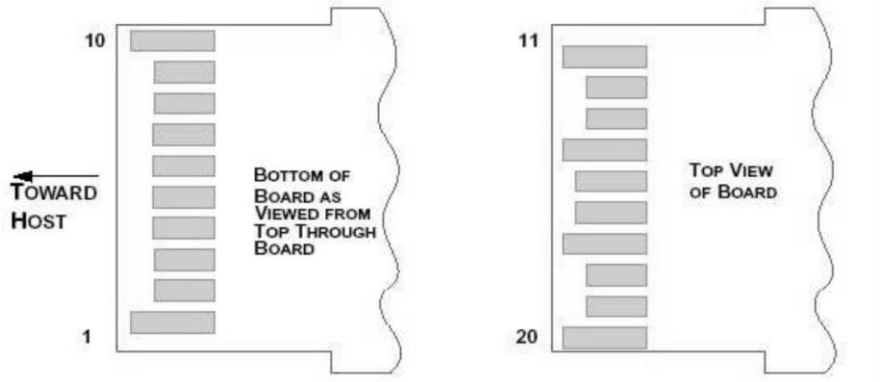
1. Reflection Coefficient given by equation SDD11(dB) < -16.5 + 2 × SQRT(f), with f in GHz
2. Reflection Coefficient given by equation SDD11(dB) < -10.66 + 14 × log10(f/5.5), with f in GHz
3. Reflection Coefficient given by equation SCD11(dB) < -22 + (20/25.78)*f, with f in GHz
4. Reflection Coefficient given by equation SCD11(dB) < -15 + (6/25.78)*f, with f in GHz
5. Reflection Coefficient given by equation SCD21(dB) < -27 + (29/22)*f, with f in GHz

Pin Descriptions

Pin	Logic	Symbol	Name/Description	Notes
1		VeeT	Transmitter Ground	
2	LV-TTL-O	TX_Fault	N/A	1
3	LV-TTL-I	TX_DIS	Transmitter Disable	2
4	LV-TTL-I/O	SDA	Tow Wire Serial Data	
5	LV-TTL-I	SCL	Tow Wire Serial Clock	
6		MOD_DEF0	Module present, connect to VeeT	
7	LV-TTL-I	RS0	N/A	1
8	LV-TTL-O	LOS	LOS of Signal	2
9	LV-TTL-I	RS1	N/A	1
10		VeeR	Reciever Ground	
11		VeeR	Reciever Ground	
12	CML-O	RD-	Reciever Data Inverted	
13	CML-O	RD+	Reciever Data Non-Inverted	
14		VeeR	Reciever Ground	
15		VccR	Reciever Supply 3.3V	
16		VccT	Transmitter Supply 3.3V	
17		VeeT	Transmitter Ground	
18	CML-I	TD+	Transmitter Data Non-Inverted	
19	CML_I	TD-	Transmitter Data Inverted	
20		VeeT	Transmitter Ground	

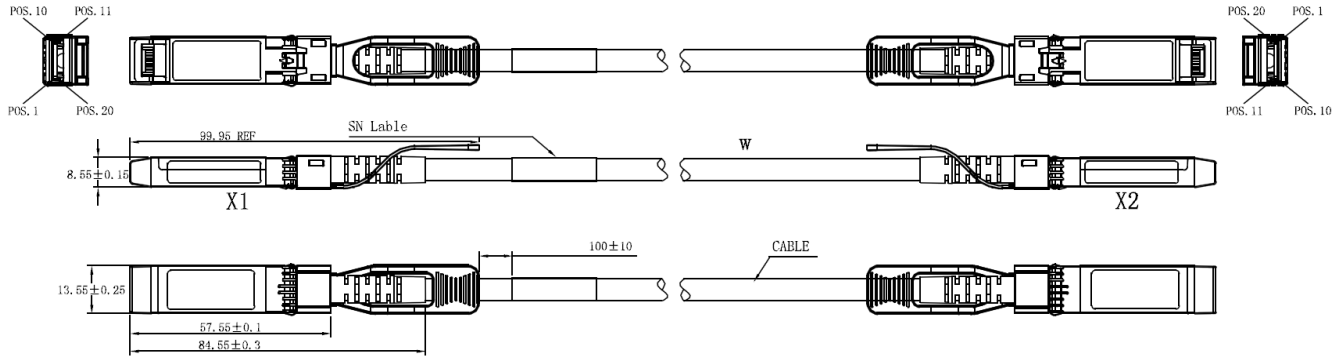
1. Signals not supported in SFP+ Copper pulled-downto VeeT with 30K ohms resistor

2. Passive cable assemblies do not support LOS and TX_DIS



Mechanical Specifications

The connector is compatible with the SFF-8432 specification.



Length (m)	Cable AWG
1	30
2	30/26
3	26

Regulatory Compliance

Feature	Test Method	Performance
Electrostatic Discharge (ESD) to the Electrical Pins	MIL-STD-883C Method 3015.7	Class 1(>2000 Volts)
Electromagnetic Interference(EMI)	FCC Class B CENELEC EN55022 Class B CISPR22 ITE Class B	Compliant with Standards
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 （EU ） 2015/863	RoHS （EU） 2015/863 compliant
REACH Compliance	REACH Regulation (EC) No 1907/2006	REACH (EC) No 1907/2006 compliant

Revision History

Version No.	Date	Description
1.0	February 8, 2016	Preliminary datasheet
2.0	October 11,2023	Product upgrades

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