



SFP+10GBASE-T Copper Transceiver Small Form Pluggable (SFP+), 3.3V 10.5 Gbps Gigabit Ethernet



Features

- Up to 10 Gb/s bi-directional data links
- Data rates backward compatible to 1Gbps
- Hot-pluggable SFP 20PIN footprint
- I/O Connector designed for high speed differential signal applications
- Improved Pluggable Form-Factor (IPF) compliant for enhanced EMI/EMC performance
- Compatible to SFP+ MSA
- Temperature Range: 0 ~ 70 °C
- RoHS Compatible

Application

- 10G Ethernet and 10G Fiber Channel
- High capacity I/O in Storage Area Networks, Network Attached Storage, and Storage Servers
- Switched fabric I/O such as ultra high bandwidth switches and routers
- Data center cabling infrastructure
- High density connections between networking equipment

Description

APAC SFP+10GBASE-T copper transceiver is high performance, cost effective I/O solutions for 10G Ethernet and 10G Fiber Channel applications. SFP+10GBASE-T copper modules allow hardware manufactures to achieve high port density, configurability and utilization at a very low cast and reduced power budget. The high speed cable assemblies meet and exceed Gigabit Ethernet and Fiber Channel industry standard requirements for performance and reliability.

The transmitter pre-emphasis can be configured to best compensate for different cable lengths. Active copper assemblies are typically used in host systems that do not employ EDC. The passive SFP+ Cable which has no signal amplification designed in the cable assembly is a low cost alternative for short reach applications. Electronic Dispersion Compensation (EDC) is typically used on the host board designs when passive copper cable assemblies are utilized.



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Ordering Information

	PART NUMBER	Product Description
Passive	SFPM-PEC-10G-01	SFP+ Direct Attach Passive Cable, 30AWG 1m
	SFPM-PEC-10G-02	SFP+ Direct Attach Passive Cable, 30AWG 2m
	SFPM-PEC-10G-03S	SFP+ Direct Attach Passive Cable, 30AWG 3m
	SFPM-PEC-10G-03	SFP+ Direct Attach Passive Cable, 24AWG 3m
	SFPM-PEC-10G-05	SFP+ Direct Attach Passive Cable, 24AWG 5m
Active	SFPM-AEC-10G-03	SFP+ Direct Attach Active Cable, 30AWG 3m
	SFPM-AEC-10G-05	SFP+ Direct Attach Active Cable, 30AWG 5m
	SFPM-AEC-10G-07	SFP+ Direct Attach Active Cable, 30AWG 7m
	SFPM-AEC-10G-10	SFP+ Direct Attach Active Cable, 24AWG 10m

Absolute Maximum Ratings

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	NOTE
Operating Current	I_{OP}			400	mA	
Maximum Voltage	V_S	-0.5		6	V	1

Notes:

- 1) For electrical interface

Recommended Operating Conditions

PARAMETER	SYMBOL	MIN	TYP.	MAX	UNITS	NOTE
Data Rate	DR		10.3125		Gb/s	Passive
		0.155		11	Gb/s	Active
Bit Error Rate	BER			10^{-12}		1
Operating Temperature	T_{OP}	0	100	70	°C	2
Storage Temperature	T_{STO}	-40		85	°C	3
Input Voltage	V_{CC}	3.14	3.3	3.46	V	4
Supply Current	I_{CC}		100	300	mA	4

Note:

- 1) IEEE 802.3ae.
- 2) Case temperature
- 3) Ambient temperature
- 4) For electrical power interface

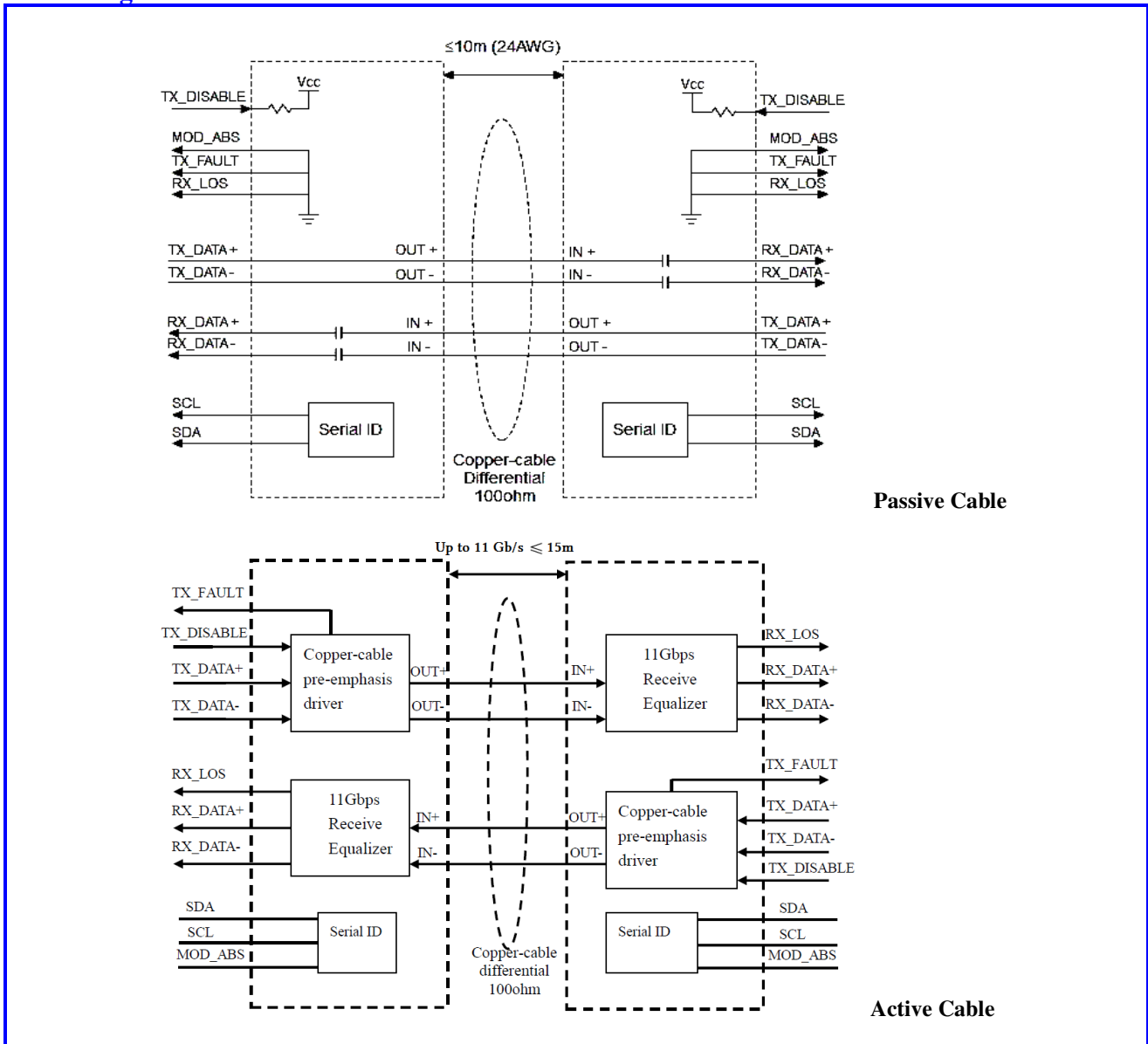


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Cable Mechanical Specifications

PARAMETER	SYMBOL	MIN	TYP.	MAX	UNITS	NOTE
Wire Gauge		30		24	AWG	
Cable Impedance	Z	95	100	105	Ohm	

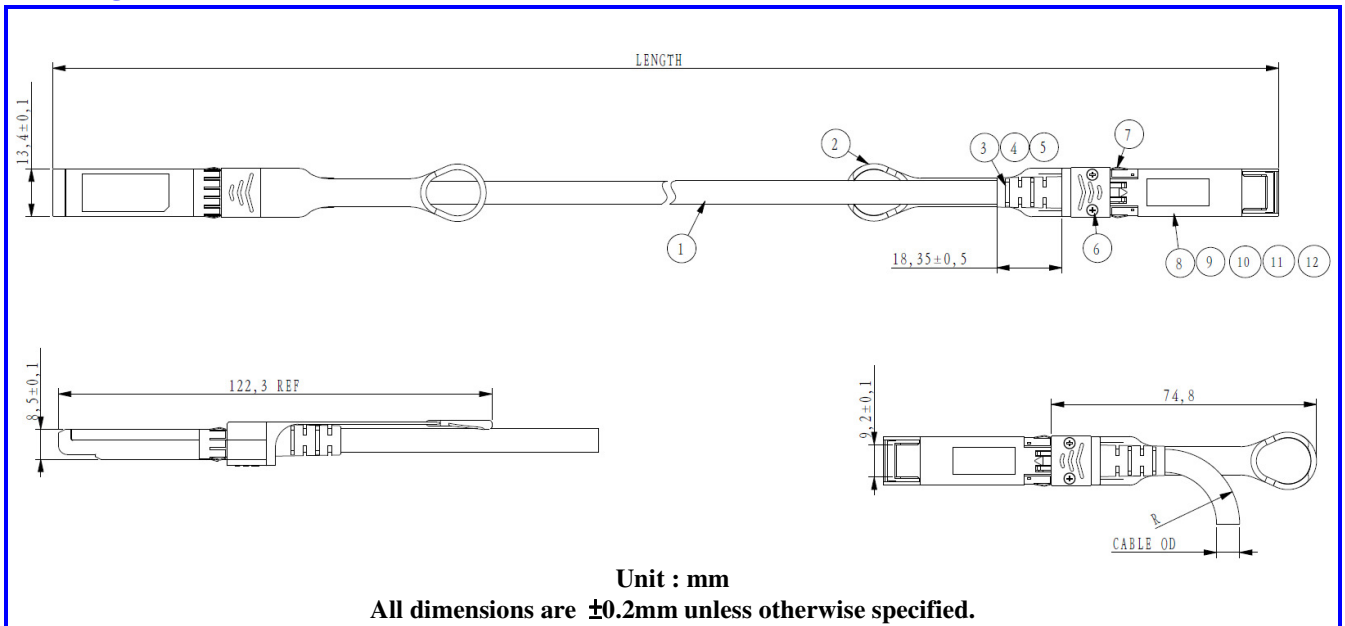
Block Diagram of Transceiver



Notes:

Active cable assembly has signal amplification and equalization in the assembly. Active copper assemblies are typically used in host systems that do not employ EDC. Active SFP+ cable assemblies also incorporate R_X LOS and T_X Disable features. Active cable assembly has built-in MCU, offer a number of additional host-management capabilities. I2C (Inter-IC bus protocol) interface and on-board EEPROM features enable the host to detect or configure specific performance characteristics.

Drawing Dimensions



ITEM	NAME	DESCRIPTION	Q'TY
1	RAW CABLE	2PAIRS BLACK, ROTH2.0	A/R
2	PULL TAB	PA66, BLUE 300C	2
3	PLASTIC BOOT	PVC, BLACK	2
4	COPPER RING	COPPER	2
5	ALUMINUM RING	ALUMNINUM ALLOY	2
6	SCREW	MILD STEEL	4
7	GROUNDING SPRINGS	SUS303	2
8	BOTTOM SHELL	Zn ALLOY, PLATED Ni OVER Cu	2
9	TOP SHELL	Zn ALLOY, PLATED Ni OVER Cu	2
10	PCB ASSEMBLY	SFP PCB, 20P, Au 30u"MIN	2
11	SPRING	HANDED ROTATION, SWPB	4
12	PULL ROD	SUS316	4



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Mating of SFP Transceiver to SFP Host Board Connector

The pads on the PCB of the SFP transceiver shall be designed for a sequenced mating as follows: First mate: Ground contacts. Second mate: Power contacts. Third mate: Signal contacts The SFP MSA specification for a typical contact pad plating for the PCB is 0.38 micrometers minimum hard gold over 1.27 micrometers minimum thick nickel. To ensure the long term reliability performance after a minimum of 500 insertion removal cycles, the contact plating of the transceiver is 0.762 micron (30 micro-inches) over 3.81 micron (150 micro-inches) of Ni on Cu contact pads.