QSFP+ High-Speed Copper Cable Assemblies

TE Connectivity's QSFP+ direct attach copper cable assemblies are a high-speed, cost-effective alternatives to fiber optics in Ethernet, Fibre Channel and InfiniBand technology applications. The cable assemblies enable hardware OEM's and data center operators to achieve higher port density and configurability at low costs--while helping to reduce power consumption. The QSFP copper cable form factor uses 8 differential pairs that provide 4 data transmission channels. The cable assemblies meet or exceed the industry MSA for signal integrity performance.

The TE QSFP+ cable assembly portfolio includes a wide range of options for simplified cable management. In addition to the standard 30, 28 and 26 AWG QDR TurboTwin offerings, TE offers fine gauge 33 AWG 8-pair cable assemblies. These slim versions satisfy the need for ultra-thin, light-weight, highly flexible cabling solutions for use in high density intra-rack applications.

For applications that require high flex cycle life, TE offers QSFP+ cable assemblies built with Madison Cable brand InfiniTwist bulk cable. These cables use twisted parallel-pair cable technology to improve bend radii, limit conductor pistoning and increase the dynamic flex cycle life.

TE offers passive and active versions of QSFP+ straight and breakout copper cable assemblies.

te.com/products/QSFP

TE connectivity

APPLICATIONS

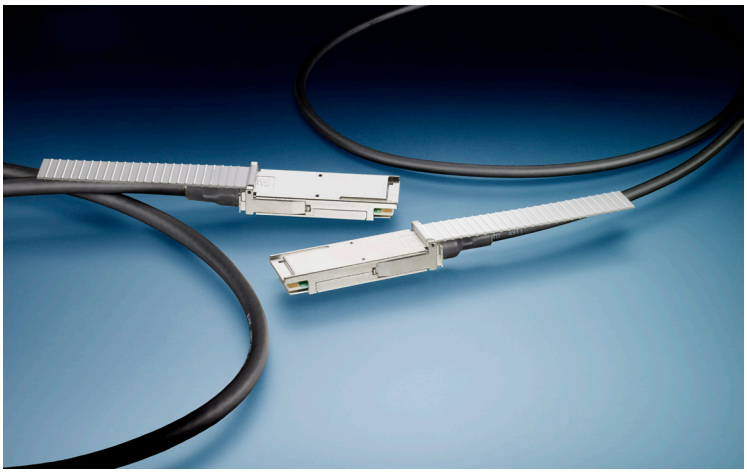
- Switches & Networking
- Enterprise storage
- Telecommunication equipment
- Network interface cards (NICs)

INDUSTRY STANDARDS

- 40 Gigabit Ethernet
- InfiniBand QDR/FDR
- Fibre Channel / Fibre Channel over Ethernet (FCoE)
- Serial Attached SCSI (SAS)
- SONET/SDH
- SFF-8635

KEY FEATURES AND BENEFITS

- Compatible with IEEE 802.3ba and Infiniband QDR/FDR
- Supports data rates of 40 Gbps and 56 Gbps
- Offers 3x the port density over SFP form factors
- Optimized design minimizes insertion loss and cross talk
- Low power consumption
- Compliant with RoHS
- Enhanced EMI suppression
- Pull-to-release slide latch design
- 26 AWG through 33 AWG
- Available in passive and active versions
- Uses Madison Cable brand TurboTwin parallel pair and InfiniTwist twisted parallel pair cables



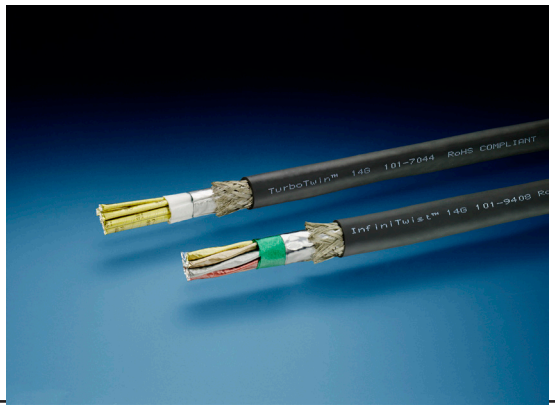
Part Number Selection Guide

Base P/N	Description	Data Rate	Cable Type	AWG	EQ	Cable Assembly Lengths (meters)															
						.5	1	1.5	2	2.5	3	3.5	4	5	6	7	8	9	10	11	12	13
2053638	QSFP+ QDR/CR4	10Gbps	TurboTwin	33	Passive	-30	-31	-32	-33	-34												
				30		-16	-1	-23	-2	-24	-3	-25										
				28									-4									
				26										-5								
2231705	QSFP+ QDR/CR4	10Gbps	InfiniTwist	30	Passive		-1															
				28					-2		-3											
				26									-4	-5								
2220639	QSFP+ QDR/CR4	10Gbps	TurboTwin	30	Active		-1		-2		-3		-4	-5	-6	-7						
				28													-8	-9	-10	-11	-12	-13
2053453	QSFP+ to [4] SFP+ break out	10Gbps	TurboTwin	30	Passive	-1	-2		-3		-4											
				28									-5									
				26										-6								
2231640	QSFP+ to [4] SFP+ break out	10Gbps	TurboTwin	30	Active		-1		-2		-3		-4	-5	-6	-7						
				28													-8	-9	-10	-11	-12	-13
2202165	QSFP+ FDR	14Gbps	TurboTwin	30	Passive		-1															
				28					-2		-3											
				26									-4									

Product Specifications

Bulk Cable

Bend Radius TurboTwin	3x OD Static
	5x OD Dyanmic
Cable OD TurboTwin	33AWG = 4.6mm
	30AWG = 6.5mm
	28AWG = 7.9mm
	26AWG = 8.9mm
Bend Radius InfiniTwist	2.5x OD Dyanmic/Static
Cable OD InfiniTwist	30AWG = 7.5mm
	28AWG = 8.1mm
	26AWG = 9.3mm
InfiniTwist Flex Life	1,500 cycles minimum in accordance with SFF-8417



Materials

PCB	ISOLA FR-408HR
Contact	30µ Gold plated contact pads
Backshell	Tin plated Zinc diecast
EMI Spring	Tin plated copper alloy
Latch	Tin plated Zinc diecast
Pull Tab	Molded thermoplastic pull tab
Bulk Cable	Flexible PVC jacket
	Aluminum/poly tape shielded pairs
	Tin plated copper braid outer shield

Electrical / Mechanical

Impedance	100Ω ± 10Ω
Data Rate	10Gbps and 14Gbps
Within Pair Skew	<10ps per meter
Pair-to-Pair Skew	<60ps per meter
Durability	100 cycles minimum
Mating Force	40N maximum
Unmating Force	30N maximum
Retention Force	90N maximum

Environmental

Operting Temp	0° to 70°C
Storage Temp	-40° to 80°C
Safety Certifications	RoHS compliant
	UL Type CL2
	CSA Certified

RELATED DOCUMENTS

- Product specification: 108-2286
- Qualification test report: 501-60067

Frequently Asked Questions

What are the performance requirements for the cable assembly? Has the customer adopted the performance requirements of the MSA?
TE QSFP copper passive and active cable assemblies meet the signal integrity requirements defined by the industry MSA. A fundamental requirement is the data rate as these cables are engineered for QDR and FDR data rates. We can also custom engineer cable assemblies to meet a customer's specific system requirements.

Are passive or active cable assembly required?
Passive cables have no signal amplification in the assembly and rely on host system Electronic Dispersion Compensation (EDC) for signal amplification/equalization. Active cable assemblies have signal amplification and equalization built into the assembly and are typically used in host systems that do not employ EDC.

What cable lengths and wire gauge are required?
Cable length and wire gauge are related to the performance characteristics of the cable assembly. Longer cable lengths require heavier wire gauge, while shorter cable lengths can utilize a smaller gauge cable. Smaller gauge cable assemblies provide many benefits to the data center operator, such as ease of routing, lighter weight and improved airflow.

Are there other special customer requirements?
Examples of special requirements include custom cable lengths, EEPROM programming, labeling and packaging. We can custom engineer cables to specific customer system architecture.

FOR MORE INFORMATION

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Part numbers in this brochure are RoHS Compliant*, unless marked otherwise.
*as defined www.te.com/leadfree

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