

100G QSFP28 Direct Attach Active Copper Cables GQS-AC101-xxC

Features

- 4-channel full-duplex active copper cable
- SFF-8665 compliant QSFP28 connectors
- SFF-8636 compliant I2C management interface
- IEEE 802.3bj 100GBASE-CR4 compliant
- Data rate up to 100Gbps (4x 25Gbps)
- Copper link length from 5m to 10m (active limiting)
- Excellent signal integrity, low insertion loss and low crosstalk
- Operating case temperature range: 0°C to +70°C
- Single 3.3V supply voltage
- ROHS compliant



Applications

- 100G Ethernet 100GBASE-CR4
- InfiniBand 4x EDR
- SAS, servers, hubs, switches and routers

Product Description

The 100G QSFP28 direct attach active copper cable assemblies are a high performance and cost-effective I/O solution for LAN, HPC and SAN applications. The high speed cable assemblies meet and exceed 100G Ethernet, InfiniBand EDR and temperature requirements for performance and reliability. The cables are compliant with SFF-8436 specifications and provide connectivity between devices using QSFP28 ports.

Recommended Operating Conditions

Parameter	Symbol	Min	Typical	Max	Unit
Storage Ambient Temperature		-40		+85	°C
Operating Case Temperature	T _c	0		+70	°C
Power Supply Voltage	V _{CC3}	3.14	3.3	3.47	V
Data Rate Per Lane		1		25.78	Gb/s

High Speed Characteristics

Parameter	Symbol	Min	Typ	Max	Unit	Notes
Supply Voltage	Vcc1	3.15		3.45	V	
Supply Current	Icc			1010	mA	
Power Dissipation per cable end	P			3.5	W	
Maximum Data Rate per Lane	B			25.781	Gb/s	
Link Turn-On Time						
Transmit turn-on time				2000	ms	
Input electrical specifications (per Lane)						
Differential Voltage pk-pk				900	mV	
Common Mode Noise RMS				17.5	mV	
Differential Termination Resistance Mismatch				10	%	
Differential Return Loss				-12.05+f	dB	0.05≤f≤6
				-6.5+0.075	dB	6≤f≤19
Common Mode Return Loss				-9.05+f	dB	0.05≤f≤6
				-3.5+0.075	dB	6≤f≤19
Transition Time, 20 to 80%	Tr, Tf	10			ps	
Common Mode Voltage	Vcm	-0.3		2.8	V	
Eye Width at 1E-15 probability	EW15	0.46			UI	
Eye Height at 1E-15 probability	EH15	94			mV	
Output electrical specifications (per Lane)						
Differential Voltage pk-pk				900	mV	
Common Mode Voltage	Vcm	-350		2850	mV	
Common Mode Noise RMS				17.5	mV	
Differential Termination Resistance				10	%	
Differential Return Loss				-12.05+f	dB	0.05≤f≤6
				-6.5+0.075	dB	6≤f≤19
differential to common-mode return loss				-25+1.44f	dB	0.05≤f≤7
				15		
Transition Time, 20 to 80%	Tr, Tf	9.5			ps	
Vertical Eye Closure	VEC			5.5	dB	
Eye Width at 1E-15 probability	EW15	0.57			UI	
Eye Height at 1E-15 probability	EH15	228			mV	

Pin Descriptions

Pin	Logic	Symbol	Name/Description	Notes
1		GND	Ground	1
2	CML-I	Tx2n	Transmitter Inverted Data Input	
3	CML-I	Tx2p	Transmitter Non-Inverted Data Input	
4		GND	Ground	1
5	CML-I	Tx4n	Transmitter Inverted Data Input	
6	CML-I	Tx4p	Transmitter Non-Inverted Data Input	
7		GND	Ground	1
8	LVTTL-I	ModSelL	Module Select	
9	LVTTL-I	ResetL	Module Reset	
10		Vcc Rx	+3.3V Power Supply Receiver	2
11	LVCMOSI/O	SCL	2-wire serial interface clock	
12	LVCMOSI/O	SDA	2-wire serial interface data	
13		GND	Ground	1
14	CML-O	Rx3p	Receiver Non-Inverted Data Output	
15	CML-O	Rx3n	Receiver Inverted Data Output	
16		GND	Ground	1
17	CML-O	Rx1p	Receiver Non-Inverted Data Output	
18	CML-O	Rx1n	Receiver Inverted Data Output	
19		GND	Ground	1
20		GND	Ground	1
21	CML-O	Rx2n	Receiver Inverted Data Output	
22	CML-O	Rx2p	Receiver Non-Inverted Data Output	
23		GND	Ground	1
24	CML-O	Rx4n	Receiver Inverted Data Output	
25	CML-O	Rx4p	Receiver Non-Inverted Data Output	
26		GND	Ground	1
27	LVTTL-O	ModPrsL	Module Present	
28	LVTTL-O	IntL	Interrupt	
29		Vcc Tx	+3.3V Power supply transmitter	2
30		Vcc1	+3.3V Power supply	2
31	LVTTL-I	LPMMode	Low Power Mode	
32		GND	Ground	1
33	CML-I	Tx3p	Transmitter Non-Inverted Data Input	
34	CML-I	Tx3n	Transmitter Inverted Data Input	

35		GND	Ground	1
36	CML-I	TxIp	Transmitter Non-Inverted Data Input	
37	CML-I	TxIn	Transmitter Inverted Data Input	
38		GND	Ground	1

Note 1: GND is the symbol for signal and supply (power) common for the QSFP+ module. All are common within the QSFP+ module and all module voltages are referenced to this potential unless otherwise noted. Connect these directly to the host board signal-common ground plane.

Note 2: Vcc Rx, VccI and Vcc Tx are the receiver and transmitter power supplies and shall be applied concurrently. Requirements defined for the host side of the Host Edge Card Connector are listed in Table 6. Recommended host board power supply filtering is shown in Figure 4. Vcc Rx VccI and Vcc Tx may be internally connected within the QSFP+ Module module in any combination. The connector pins are each rated for a maximum current of 500mA.

Ordering information

Part Number	GQS-AC101-xxC					
Length (meter)	5	6	7	8	9	10
American Wire Gauge (AWG)	30	30	30	26	26	26

Note: diameter and distance can be customized.

Example:

GQS-AC101-05C: AWG30, 5 meters;

GQS-AC101-07C: AWG30, 7 meters;

GQS-AC101-10C: AWG26, 10 meters.

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