100Gb/s Active Optical Cable with breakout from 100G QSFP28 to 4x 25G SFP28

Luxglo AOC is a 4x25 Gb/s parallel active optical cable for storage, data, and high-performance computing interconnectivity. It transmits four separate streams of 25Gb/s data over ribbon cables in a point-to-multipoint configuration. The cable contains a QSFP28 module on one end and four separate SFP28 modules at the other ends. Designed with MSA-compliant QSFP28 and SFP28 high-density connectors, these cables are compact, lightweight, and low power. With reaches up to 100 meters, the active optical cable is ideally suited for high-density 25G Ethernet, InfiniBand QDR, and other datacom and high-performance computing applications.

Features

- Available in lengths of 1 to 100m
- 4 independent full-duplex channels up
- To 25Gbps data rate per wavelength
- Hot-pluggable electrical interface
- RoHS compliant and Lead Free
- 850nm VCSEL transmitter
- PIN photo-detector receiver
- Low power consumption < 2.5W (QSFP28), <1W (SFP28)
- Commercial operating temperature optional

Applications

- IEEE 802.3by 25GBASE-SR
- IEEE 802.3bm 100GBASE-SR4
- Servers, switches, storage and host card adapter

Regulatory Compliance

- ESD to the Electrical PINs: compatible with MIL-STD-883 Method 3015
- Immunity compatible with EN 61000-4-3
- EMI compatible with FCC Part 15 Class B
- RoHS compliant with RoHS 2.0(2015/863/EU)-amending

Pin Descriptions

A QSFP28 End

Pin	Symbol	Name	Ref.
1	GND	Ground	
2	Tx2n	Transmitter Inverted Data Input, CML-I	
3	Tx2p	Transmitter Non-Inverted Data output, CML-I	
4	GND	Ground	
5	Tx4n	Transmitter Inverted Data Input, CML-I	
6	Tx4p	Transmitter Non-Inverted Data output, CML-I	
7	GND	GND	
8	ModSelL	The ModSelL is an input pin. When held low by the host, the module responds to 2-wire serial communication commands. The ModSelL allows the use of multiple QSFP+ modules on asingle 2-wire interface bus. When the ModSelL is "High", the module shall not respond to or acknowledge any 2-wire interface communication from the host. ModSelL signal input node must be biased to the "High" state in the module	
9	ResetL	The ResetL pin must be pulled to Vcc in the QSFP+ module. A low level on the ResetL pin for longer than the minimum pulse length (t_Reset_init) initiates a complete module reset, returning all user module settings to their default state. Module Reset Assert Time (t_init) starts on the rising edge after the low level on the ResetL pin is released.	
10	VccRx	+3.3V Power Supply Receiver	
11	SCL	2-Wire Serial Interface Clock	
12	SDA	2-Wire Serial Interface Data	
13	GND	GND	
14	Rx3p	Receiver Non-Inverted Data Output, CML-O	
15	Rx3n	Receiver Inverted Data Output, CML-O	
16	GND	GND	
17	Rx1p	Receiver Non-Inverted Data Output, CML-O	
18	Rx1n	Receiver Inverted Data Output, CML-O	
19	GND	Ground	
20	GND	Ground	
21	Rx2n	Receiver Inverted Data Output, CML-O	
22	Rx2p	Receiver Non-Inverted Data Output, CML-O	
23	GND	Ground	
24	Rx4n	Receiver Inverted Data Output, CML-O	
25	Rx4p	Receiver Non-Inverted Data Output, CML-O	

26	GND	Ground	
27	ModPrsL	Module Present, connect to GND	
28	IntL	"The IntL pin is an open collector output and must be pulled to host supply voltage on the host board. The INTL pin is de-asserted "High" after completion of reset, when byte 2 bit 0 (Data Not Ready) is" read with a value of '0' and the flag field is read.	
29	VccTx	+3.3 V Power Supply transmitter	
30	Vcc1	+3.3 V Power Supply	
31	LPMode	The LPMode pin shall be pulled up to Vcc in the QSFP28 module. This function is affected by the LPMode pin and the combination of the Power_over-ride and Power_set softwarecontrol bits (Address A0h, byte 93 bits 0,1).	
32	GND	Ground	
33	Tx3p	Transmitter Non-Inverted Data Input, CML-I	
34	Tx3n	Transmitter Inverted Data Output, CML-I	
35	GND	Ground	
36	Tx1p	Transmitter Non-Inverted Data Input, CML-I	
37	Tx1n	Transmitter Inverted Data Output, CML-I	
38	GND	Ground	

Top Side Viewed from Top	Card Edge	Bottom Side Viewed from Bottom
38 GND		GND 1
37 TX1n		TX2n 2
36 TX1p		TX2p 3
35 GND		GND 4
34 TX3n		TX4n 5
33 TX3p		TX4p 6
32 GND		GND 7
31 LPMode		ModSelL 8
30 Vcc1		ResetL 9
29 VccTx		VccRx 10
28 IntL		SCL 11
27 ModPrsL		SDA 12
26 GND		GND 13
25 RX4p		RX3p 14
24 RX4n		RX3n 15
23 GND		GND 16
22 RX2p		RX1p 17
21 RX2n		RX1n 18
20 GND		GND 19

Pin-out of Connector Block on Host Board

B. SFP28 End

Pin	Symbol	Name	Ref.
1	VeeT	Transmitter Ground (Common with Receiver Ground in Module)	
2	TX Fault	Transmitter Fault.	
3	TX Disable	pulled to VccT with 4.7k to 10k ohm in Module	
4	SDA	2-Wire Serial Interface Data Line (Same as MOD-DEF2 in INF-8074i)	
5	SCL	2-Wire Serial Interface Data Line (Same as MOD-DEF2 in INF-8074i)	
6	Mod_ABS	Module Absent, Connect to VeeT or VeeR in Module.	
7	RS0	N/A	
8	LOS	pulled to VeeR in Module	
9	RS1	N/A	
10	VeeR	Receiver Ground	
11	VeeR	Receiver Ground	
12	RD-	Receiver Inverted DATA out, AC Coupled,	
13	RD+	Receiver Non-inverted DATA out, AC Coupled,	
14	VeeR	Receiver Ground	
15	VccR	Receiver Power Supply	
16	VccT	Transmitter Power Supply	
17	VeeT	Transmitter Ground	
18	TD+	Transmitter Non-Inverted DATA in. DC Coupled,	
19	TD-	Transmitter Inverted DATA in. DC Coupled,	
20	VeeT	Transmitter Ground	
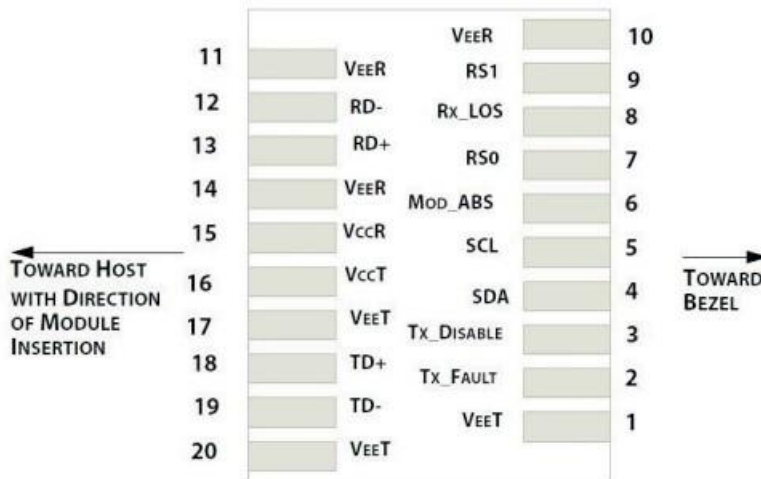
SFP28 Electrical Pad Layout

Absolute Maximum Ratings

Parameter	Symbol	Min	Typ	Max	Unit	Ref.
Maximum Supply Voltage	Vcc	-0.5		4	V	
Storage Temperature	TS	-40		85	°C	
Operating Humidity	RH	0		85	%	

Recommended Operating Conditions

Parameter	Symbol	Min	Typ	Max	Unit	Ref.
Case Operating Temperature	Vcc	3.13	3.30	3.47	V	
Power Supply Current	Icc			720	mA	QSFP28 End
	Icc			300	mA	SFP28 End
Case Operating Temperature	Tc	0		+70	°C	Commercial
Bit Rate Each Lane	Br	10		25.78	Gbps	

Cable Mechanical Specifications	Min	Typ	Max	Unit	Ref.
Minimum bend radius	60		3.47	mm	
Minimum bend radius within 100 mm of a module end	105			mm	
Diameter of common (non-broken-out) cable jacket	3	3.30	3.6	mm	
Diameter of broken-out cable jacket	1.8	2	2.2	mm	

Electrical Characteristics

| Parameter	Symbol	Min	Typ	Max	Unit	Ref.
Transmitter						
Input differential impedance	Rin	80	100	120	Ω	1
Differential data input swing	Vin, pp	120		850	mV	
TX Disable-High		Vcc – 0.8		Vcc	V	
TX Disable-Low		Vee		Vee+ 0.8	V	
TX Fault-High		Vcc – 0.8		Vcc	V	
TX Fault-Low		Vee		Vee+ 0.8	V	
Receiver						
Single ended data output swing	Vout, pp	300		850	mV	2
Data output rise time	Tr	30			ps	3
Data output fall time	Tf	30			ps	3
LOS-High		Vcc – 0.8		Vcc	V	
LOS-Low		Vee		Vee+0.8	V	

Notes:
1. AC coupled
2. Into 100 ohm differential termination.
3. 20 – 80 %

Mechanical Specifications
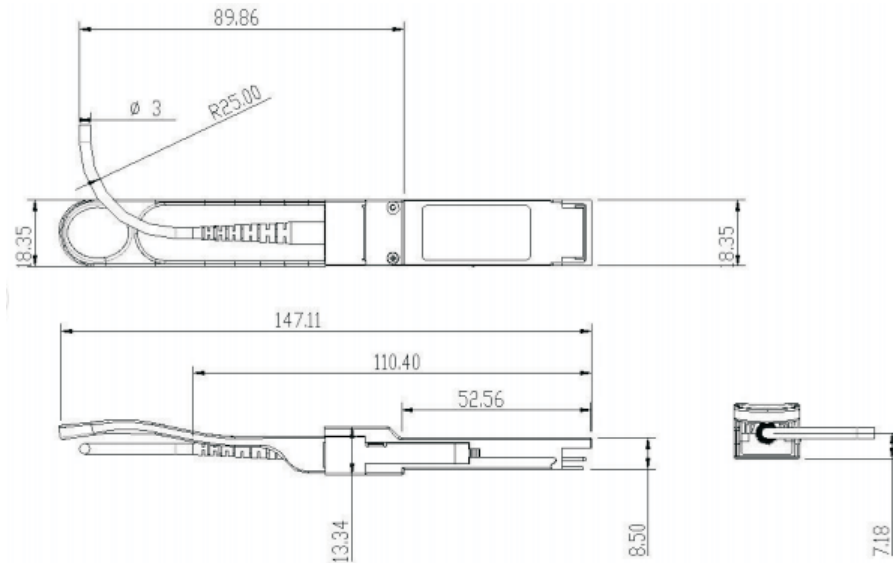
QSFP28 AOC end Mechanical Specifications
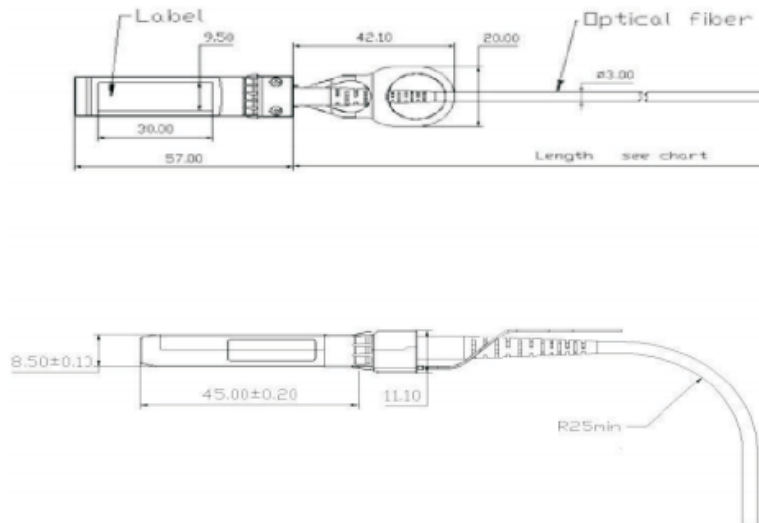
SFP28 AOC end Mechanical Specifications

Cable Length

Cable Length （Unit: m）	Tolerant （Unit: cm）
＜1.0	+5/-0
1.0~4.5	+15/-0
5.0~14.5	+30/-0
≥15.0	+2%/-0

Ordering Information

Cable Length （Unit: m）	Cable Length （Unit: m）
AOC-QSFP28+/4SFP28-001M	1M
AOC-QSFP28+/4SFP28-002M	2M
AOC-QSFP28+/4SFP28-003M	3M
AOC-QSFP28+/4SFP28-005M	5M
AOC-QSFP28+/4SFP28-007M	7M
AOC-QSFP28+/4SFP28-010M	10M
AOC-QSFP28+/4SFP28-015M	15M
AOC-QSFP28+/4SFP28-020M	20M
AOC-QSFP28+/4SFP28-025M	25M
AOC-QSFP28+/4SFP28-030M	30M
AOC-QSFP28+/4SFP28-040M	40M
AOC-QSFP28+/4SFP28-050M	50M
AOC-QSFP28+/4SFP28-070M	70M
AOC-QSFP28+/4SFP28-100M	100M
AOC-QSFP28+/4SFP28-xxxM	xxM (Up to 100M)

*For availability of additional cable lengths, please contact LUXGLO