



FTH-S01T-B23Y-020D

QSFP28 100GBase-LR1, ELM laser/PIN receiver, BiDi, SMF, 20km



Picture 1 Transceiver QSFP28 100G 20km

Description

FTH-S01T-B23Y-020D series QSFP28 transceiver can be used to setup a reliable, high speed (up to 100Gbps) serial data link over single-mode fibers. Maximum link span can reach up to 20km. This module is commonly used in today's datacenter interconnections and high-speed cores of computer networks over long distance. Transmission is established over one fiber, where one CWDM channel. Outstanding immunity to EMI interferences (thanks to case made from metal alloys) and great overall performance allows for deployment of high port density systems. Casing made fully from metal alloys ensures very good EMI immunity. Module is fully compliant with QSFP28 MSA and IEEE 802.3ba 100GBASE-LR specification. Host device can access module internal EEPROM memory and DDMI via I2C interface. Built-in digital diagnostic interface (DOM, DDMI) allows a network administrator to monitor each channel's parameters such as: transmitted and received optical power, temperature, supply voltage and laser current. Those information and data are very helpful e.g. in prediction and prevention of connection failures. A module is available in various dedicated versions, which can be compatible with devices from vendors such as Cisco, Juniper, Alcatel-Lucent and Huawei.

Applications

- 100GBASE-ER1 & 100G Ethernet
- Telecom networking
- Data Center



Key features

- LC Simplex connector
- Transmission distance up to 20km*
- Supports single 53,125GB optical lane
- Supports 106,25Gb/s aggregate bit rate
- Fully compliant with QSFP28 MSA and SFF-8661, SFF-8636
- Hot-Pluggable
- RoHS-6 compliant
- Class 1 laser safety
- Low power consumption (4,5W)
- Metal case for low EMI
- Operating case temperature: 0~70°C

Specification

Supported transmission technology

Ethernet

Speed supported for Ethernet technology

106,25Gbps

Speed supported for Fibre Channel technology

-

Transmission medium

Single-mode fiber 9/125µm

Transmission distance*

20km

Receptacle type

LC Simplex

Wavelength

TX: 1271nm; RX: 1331nm

Output power

+2,8dBm~+6,8dBm

Receiver sensitivity

-7,6dBm(OMA)

Power supply voltage

3,3V

Power Dissipation

4,5W

Operating environment – temperature

0~70°C

Operating environment - humidity

15~85% non-condensing

Dimensions

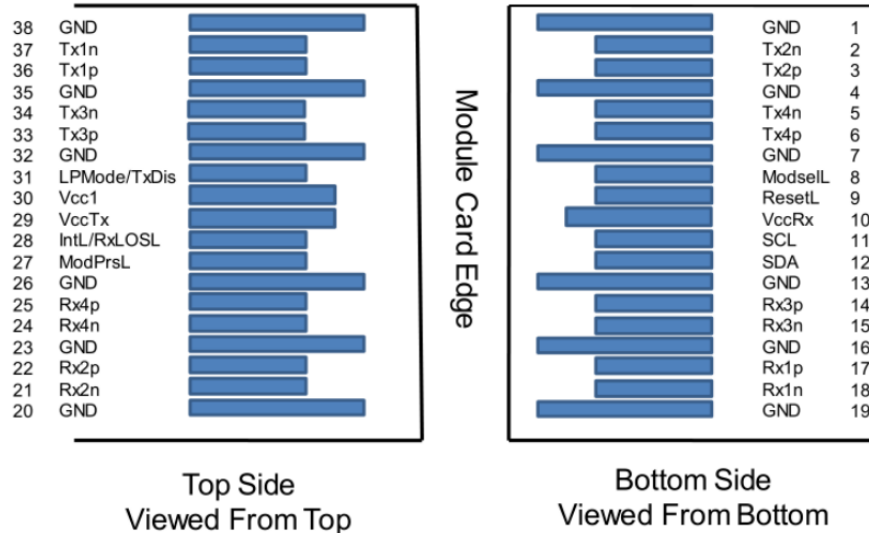
Compliant with QSFP28 Multi-Source Agreement

* - transmission distance depends on optical link attenuation



Detailed technical specification

Pin Description



Picture 2 MSA compliant Connector

Pin	Name	Function/Description	Notes
1	GND	Transmitter Ground (Common with Receiver Ground)	1
2	Tx2-	Transmitter Inverted Data Input	-
3	Tx2+	Transmitter Non-Inverted Data Input	-
4	GND	Transmitter Ground (Common with Receiver Ground)	1
5	Tx4-	Transmitter Inverted Data Input	-
6	Tx4+	Transmitter Non-Inverted Data Input	-
7	GND	Transmitter Ground (Common with Receiver Ground)	1
8	ModSelL	Module Select	-
9	ResetL	Module Reset	-
10	VccRx	3.3V Power Supply Receiver	-
11	SCL	2-Wire serial Interface Clock	-
12	SDA	2-Wire serial Interface Data	-
13	GND	Transmitter Ground (Common with Receiver Ground)	1
14	Rx3+	Receiver Non-Inverted Data Output	-
15	Rx3-	Receiver Inverted Data Output	-
16	GND	Transmitter Ground (Common with Receiver Ground)	1
17	Rx1+	Receiver Non-Inverted Data Output	-
18	Rx1-	Receiver Inverted Data Output	-
19	GND	Transmitter Ground (Common with Receiver Ground)	1
20	GND	Transmitter Ground (Common with Receiver Ground)	1
21	Rx2-	Receiver Inverted Data Output	-



22	Rx2+	Receiver Non-Inverted Data Output	-
23	GND	Transmitter Ground (Common with Receiver Ground)	1
24	Rx4-	Receiver Inverted Data Output	-
25	Rx4+	Receiver Non-Inverted Data Output	-
26	GND	Transmitter Ground (Common with Receiver Ground)	1
27	ModPrsL	Module Present	-
28	IntL/RxLOSL	Interrupt	-
29	VccTx	3.3V power supply transmitter	-
30	Vcc1	3.3V power supply	-
31	LPMoDe/TxDis	Low Power Mode	-
32	GND	Transmitter Ground (Common with Receiver Ground)	1
33	Tx3+	Transmitter Non-Inverted Data Input	-
34	Tx3-	Transmitter Inverted Data Input	-
35	GND	Transmitter Ground (Common with Receiver Ground)	1
36	Tx1+	Transmitter Non-Inverted Data Input	-
37	Tx1-	Transmitter Inverted Data Input	-
38	GND	Transmitter Ground (Common with Receiver Ground)	1

Notes:

1. The module signal grounds are isolated from the module case.

Electrical parameters

Parameter	Symbol	Min.	Typ.	Max.	Unit
Power Dissipation	P _D			4.5	W
Module Supply Current	I _{cc}			1435	mA

Transmitter parameters

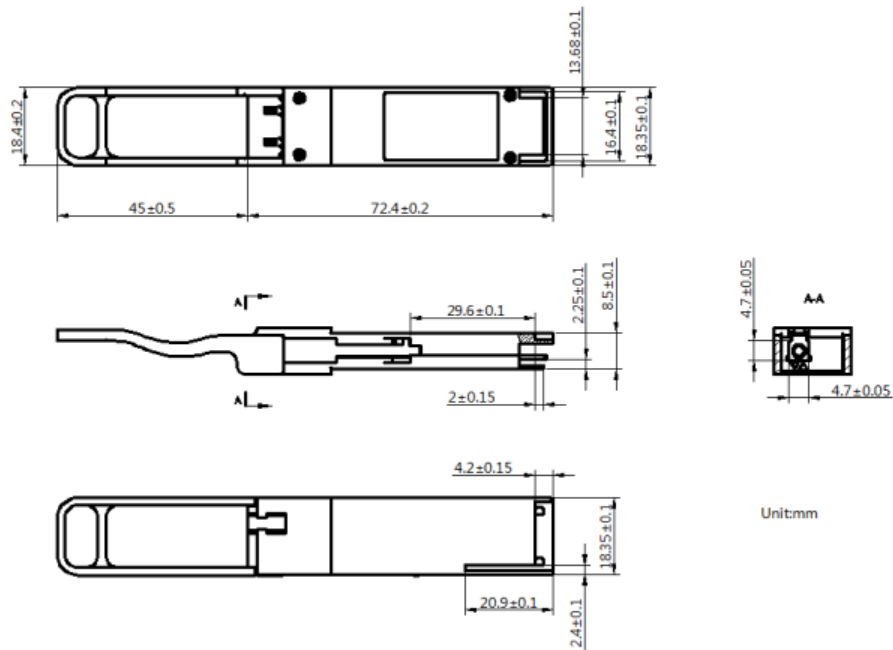
Parameter	Unit	min	type	max	Note
Transmit wavelength	nm	1264,5	1271	1277,5	
Launch Optical Power(Average)	dBm	-0,2		6,6	
Launch Optical Power(OMA)	dBm	2,8		6,8	
Extinction Ratio(ER)	dB	3,5			
RIN OMA	dB/Hz			-136	
Optical Return Loss Tolerance	dB			15,3	
P _{out} @TX-Disable Asserted	P _{off}			-15	



Receiver parameters

Parameter	Unit	min	type	max	Note
Center Wavelength	nm	1324,5	1271	1337,5	
Receiver sensitivity (OMA)	dB			-7,6	TECQ < 1,4 dB 1,4 ≤ TECQ ≤ 3,9 dB
Receiver reflectance	dBm			-26	
LOS Assert	dBm	-18			
LOS De-Assert	dBm			-12	
LOS Hysteresis	dB	0,5			

Mechanical specification



Picture 3 Mechanical Dimensions



Recommended environment conditions

Parameter	Symbol	Min	Typ	Max	Unit
Operating Temperature Range	T	0		70	°C
Supply Voltage	V _{CC}	3,135	3,3	3,465	V
Relative Humidity	RH	15	-	85	%
Link Distance with				20	km

Ordering information

FTH-S01T-B23Y-020D– QSFP28, 100G, BiDi, TX:1271nm, RX:1331nm, 20km, single-mode, LC Simplex, **DDMI**, commercial temperature (0~70°C)

For further information regarding host device PCB layout recommendation, power supply requirements, EEPROM memory map, DDMI specification please check:

[SFF-8436 - Technical specification for QSFP transceiver](#) and [SFF-8665 - Technical specification for QSFP28 transceiver](#)

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