FTH-S01T-SWDL-080D

QSFP28 100GBase-ZR4, 4x LAN-WDM, single-mode, 80km

Picture 1 Transceiver QSFP28 100G 80km

Description

FTH-S01T-SWDL-080D 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 80km. This module is commonly used in today's datacenter interconnections and high-speed cores of computer networks over long distance. Transmission is established over pair of fibers, where four LAN-WDM channels (along with built-in multiplexer on TX side and demultiplexer on RX side) are used to carry the traffic (4x25Gbps lines combined together for 100Gbps throughput). 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-ZR4 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-ZR4 100G Ethernet
- Telecom networking

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QSFP28 Transceivers

Key features

- LC Duplex connector
- Transmission distance up to 80km*
- Supports 103.125Gb/s aggregate bit rate
- Throughput up to 4 x 25.78125Gb/s
- Fully compliant with QSFP28 MSA and SFF-8665, SFF-8636
- Hot-Pluggable
- RoHS-6 compliant
- Class 1 laser safety
- Low power dissipation (6.5W)
- Metal case for low EMI
- Operating case temperature: 0~70°C

Specification

Supported transmission technology
Ethernet

Speed supported for Ethernet technology
103.125Gbps

Speed supported for Fibre Channel technology
-

Transmission medium
Single-mode fiber 9/125µm

Transmission distance*
80km

Receptacle type
LC Duplex

Wavelength
TX: 1295.56nm, 1300.05nm, 1304.58nm, 1309.14nm

Output power
+2~+6.5dBm (per line)

Receiver sensitivity
-28dBm(per line)

Power supply voltage
3.3V

Power dissipation
6.5W

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

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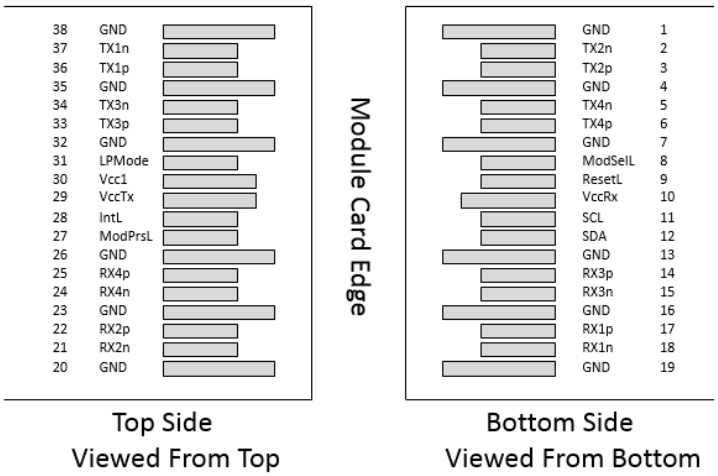
Detailed technical specification

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

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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	Interrupt	-
29	VccTx	3.3V power supply transmitter	-
30	Vcc1	3.3V power supply	-
31	LPMode	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	Notes
Transmitter Differential Input Voltage	+/-TX_DAT			900	mV p-p	
Receiver Differential Output Voltage	+/-RX_DAT	100		400	mV p-p	1
		300		600		
		400		800		
		600		1200		
Power dissipation	B			6.5	W	
Supply Current	Icc			1.8716	A	Steady state

Notes:

1. Output voltage is settable in 4 discrete ranges via I2C. Default range is 400-800mV.

Transmitter parameters

Parameter	Unit	min	type	max	Note
Signaling speed per line	Gbps	25,78125+/-100ppm			
Transmit wavelenghts	nm	1294,53		1296,59	
		1299,02		1301,09	
		1303,54		1305,63	
		1308,09		1310,19	
SMSR	dB	30			
Total Average Launch Power	dBm	8		12,5	
Avarage Launch Power, each line	dBm	2		6,5	
Difference in launch power between any two lines	dBm			3	
Average launch power of OFF transmitter, each line(max)	dBm			-30	
Extinction Ratio(ER)	dB	6			

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RIN OMA	dB/Hz			-130	
Optical return loss tolerance (max)	dB			20	
Transmitter Reflectance	dB			-12	
Eye mask definition (X1, X2, X3, Y1, Y2, Y3)		(0.25, 0.4, 0.45, 0.25, 0.28, 0.4)			
Mask margin	%	5			
Eye diagram	Compliant with IEEE802.3ba 100GBase-ZR4				

Receiver parameters

Parameter	Unit	min	type	max	Note
Signaling speed per line	Gbps	25,78125+/-100ppm			
Transmit wavelenghts	nm	1294,53		1296,59	
		1299,02		1301,09	
		1303,54		1305,63	
		1308,09		1310,19	
Avarage Receiver Power, each line	dBm	-28		-7	
Receiver power, each lane (OMA)	dBm			-7	
Receiver reflectance	dB			-26	
Receiver sensitivity Average, each line	dBm			-28	1
Receiver 3dB electrical upper cutoff frequency, each line	GHz			31	
Damage treshhold , each line	dBm	6,5			
LOS Assert	dBm	-40			
LOS Deassert	dBm			-29	
LOS Hysteresis	dB	0,5			

Notes:

1. Measured with PRBS 2^{31}-1 at test pattern @25.78125Gbps

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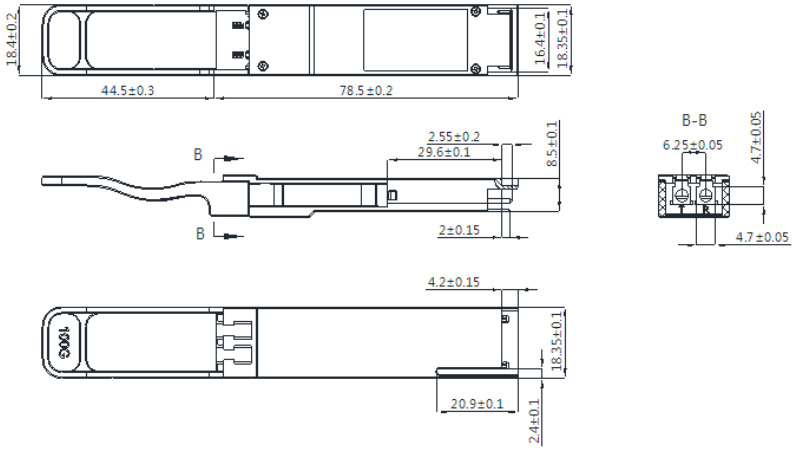
Mechanical specification



Picture 3 Mechanical Dimensions

Recommended environment conditions

Parameter	Symbol	Min	Typ	Max	Unit
Operating Temperature Range	T	0		70	^{0}C
Supply Voltage	V_{CC}	3.135	3.3	3.465	V
Relative Humidity	RH	15	-	85	%
Link Distance with				80	km

Ordering information

FTH-S01T-SWDL-080**D**– 4xLAN WDM, 80km, single-mode, LC Duplex, **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

Pictures used for reference only, actual product look may differ. For most actual information please contact technical support via aktywa@fibrain.pl

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