FTQ-M01T-S85M-10MD

QSFP28 100GBase-SR4, multi-mode, 100m

Description

FTQ-M01T-S85M-10MD series QSFP28 transceiver can be used to setup a reliable, high speed (up to 100Gbps) serial data link over OM4 multi-mode ribbon cable. This transceivers offers four independent transmit and receive channels, each capable of 25Gb/s operation for aggregate data rate of 100Gb/s on 100m. Thanks to module's compact size high port density of host device can be archived easily. Casing made fully from metal alloys ensures very good EMI immunity. MPO connector has built-in two metal pins to ensure proper alignment of fibers. Module is fully compliant with QSFP28 MSA and 100GBASE-SR specification and it is available in two hardware versions:

Model	Operating case temperature
FTQ-M01T-S85M-10MD	0~70°C
FTQ-M01T-S85M-10MDI	-40~85°C

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, HP, Juniper, Extreme Networks, Alcatel-Lucent.

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Optical networking solutions

QSFP28 Transceivers

Applications

- 100G Ethernet
- Infiniband QDR, DDR and SDR
- Rack to rack connections

Key features

- MPO/MTP optical connector
- Transmission distance up to 100m
- VCSEL laser array, PIN receiver array
- Throughput up to 100Gb/s
- Fully compliant with QSFP28 MSA
- Hot-Pluggable
- RoHS-6 compliant
- Low power dissipation (maximum 3.5W)
- Metal case for low EMI
- Operating case temperature: 0~70°C

Specification

Supported transmission technology
100G Ethernet, Fiber Channel over Ethernet

Speed supported for Ethernet technology
100Gbps

Speed supported for Fibre Channel technology
-

Transmission medium
Multi-mode fiber 50/125μm

Transmission distance*
100m

Receptacle type
MPO/MTP

Wavelength
850nm

Output power
-9.1~+2.4dBm (for each channel)

Receiver sensitivity
-9.9dBm

Power supply voltage
3.3V

Total power consumption
3.5W

Operating environment – temperature
0~70°C / -40~85°C

Operating environment - humidity
5~95% 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

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 output	-
4	GND	Transmitter Ground (Common with Receiver Ground)	1
5	Tx4-	Transmitter Inverted Data Input	-
6	Tx4+	Transmitter Non-Inverted Data output	-
7	GND	Transmitter Ground (Common with Receiver Ground)	1
8	ModSelL	Module Select	2
9	ResetL	Module Reset	2
10	VccRx	3.3V Power Supply Receiver	-
11	SCL	2-Wire serial Interface Clock	2
12	SDA	2-Wire serial Interface Data	2
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	1
25	Rx4+	Receiver Non-Inverted Data Output	-
26	GND	Transmitter Ground (Common with Receiver Ground)	1
27	ModPrsl	Module Present	-
28	IntL	Interrupt	2
29	VccTx	3.3V power supply transmitter	-
30	Vcc1	3.3V power supply	-
31	LPMode	Low Power Mode	2
32	GND	Transmitter Ground (Common with Receiver Ground)	1
33	Tx3+	Transmitter Non-Inverted Data Input	-
34	Tx3-	Transmitter Inverted Data Output	-
35	GND	Transmitter Ground (Common with Receiver Ground)	1
36	Tx1+	Transmitter Non-Inverted Data Input	-
37	Tx1-	Transmitter Inverted Data Output	-
38	GND	Transmitter Ground (Common with Receiver Ground)	1

Notes:

1. The module signal grounds are isolated from the module case.
2. This is an open collector/drain output that on the host board requires a 4.7KΩ to 10KΩ pull-up resistor to VccHost.

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Electrical parameters

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Transmitter Differential Input Volt	+/-TX_DAT	180		1000	mV p-p	1
Receiver Differential Output Volt	+/-RX_DAT	300		1000	mV p-p	2
Tx_Disable Input Voltage – Low	V_{IL}	0		0.8	V	
Tx_Disable Input Voltage – High	V_{IH}	2.0		Vcc	V	
Tx_Fault Output Voltage – Low	V_{OL}	0		0.8	V	3
Tx_Fault Output Voltage – High	V_{OH}	2.0		Vcc	V	3
Rx_LOS Output Voltage- Low	V_{OL}	0		0.8	V	3
Rx_LOS Output Voltage- High	V_{OH}	2.0		Vcc	V	3
Throughput	B			100	Gb/s	
Total current requirement				1,06	A	

Transmitter parameters

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Central wavelength	λ	840	850	860	nm	
Spectral width	Δλ			0.6	nm	
Launch optical power	P_o	-9.1		+2.4	dBm	4
Extinction ratio	EX	3.0			dB	
Dispersion penalty		-8			dB	
Eye diagram	Compliant with requirements					

Receiver parameters

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Sensitivity	P_{min}			-9.9	dBm	5
Central wavelength	λc	1260		1340	nm	
Receiver reflectance	R_R			-12	dBm	5
RX_LOS Asserted	S_A	-30			dBm	
RX_LOS De-Asserted	S_D			-12	dBm	
RX_LOS Hysteresis	-	0.5			dB	
Optical return loss	ORL	12			dB	

Notes:

1. Internally AC coupled and terminated to 100Ω differential load.
2. Internally AC coupled, but requires a 100Ω differential termination or internal to Serializer/Deserializer.
3. It is open collector/drain output which should be pulled up externally to Vcc with a 4.7KΩ-10KΩ resistor on the host board. LOS: logic 0 indicates normal operation; logic 1 indicates no signal detected.
4. Optical power is launched into SMF
5. Per channel.

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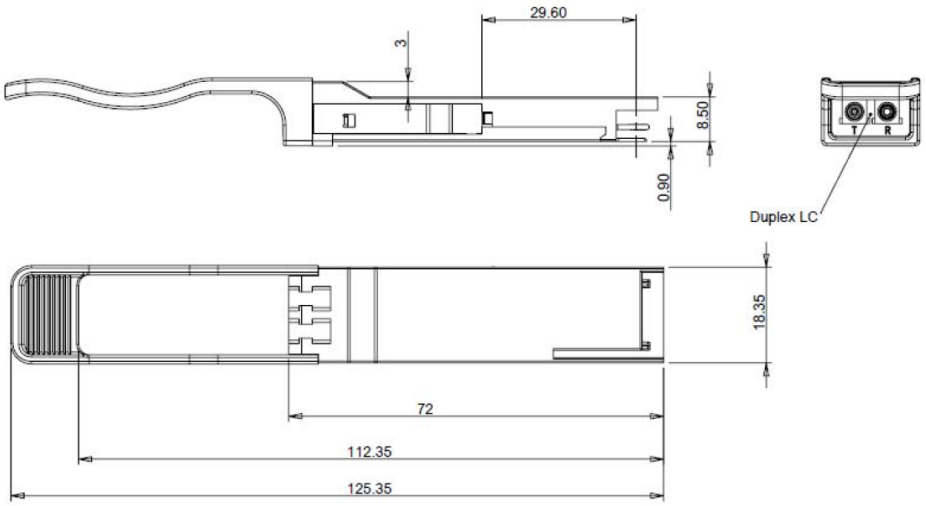
Mechanical specification



Recommended environment conditions

Parameter	Symbol	Min	Typ	Max	Unit
Operating Temperature Range (standard)	T	0	25	70	^{0}C
Operating Temperature Range (industrial)	T	-40		+85	^{0}C
Supply Voltage	V_{CC}	3.135	3.3	3.465	V
Relative Humidity	RH	5	-	95	%

Ordering information

FTQ-M01T-S85M-10M**D**– 850nm, 100m multi-mode, **DDMI**, commercial temperature (0~70°C)
FTQ-M01T-S85M-10M**DI**– 850nm, 100m, multi-mode, **DDMI**, **extended temperature** (-40~85°C)

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

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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