

100BASE-T Copper SFP Transceiver

Features

- Up to 100Mbps data links
- SFP form with compact RJ-45 connector
- Single +3.3V power supply
- 100 BASE-T operation in host systems with SERDES interface

(MXP-24RJSX,MXP-24RJSDX)

- Fully metallic enclosure for low EMI
- It supports RX_LOS(Loss of Signal) function
- Physical layer IC can be accessed via 2-wire serial bus
- For 100m reach over cat 5 UTP cable
- Low power consumption
- Operating case temperature: 0 ~ +70°C
- Compatible with IEEE802.3u

Applications

SFP based switch100Base-FX ports

Compliance

- Compatible with SFP MSA
- Compatible with IEEE Std 802.3
- ROHS



Description

SFP-FE-T 100BASE-T Copper Small Form Pluggable (SFP) transceiver module is specifically designed for converting 100Base-FX NRZI port interface to 10/100Base-TX interface with RJ45 connector. The transceiver module is compliant with the SFP MultiSource Agreement (MSA) and IEEE802.3u. With the hot pluggability, the module offers a flexible and easy way to be installed into SFP MSA compliant ports at any time without the interruption of the host equipments operating online. The Copper SFP transceivers use an integrated RJ-45 connector with transformer and PHY IC.

Absolute Maximum Ratings

Table1-Absolute Maximum Ratings								
Parameter	Symbol	Min.	Typical	Max.	Unit	Notes		
Storage Temperature	Ts	-40		+85	°C			
Supply Current	ls		320	375	mA	 1.2W max power over full range of voltage and temperature. See caution note below 		
Input Voltage	Vcc	3.13	3.3	+3.47	V	Referenced to GND		
Maximum Voltage	Vmax			4	V			

Recommended Operating Conditions

Table2-Recommended Operating Conditions							
Parameter	Symbol	Min.	Typical	Max.	Unit	Notes	
Operating Case Temperature	TC	0	25	70	°C		
Data Rate	BR	10		100	Mb/sec	IEEE802.3u	
Cable Length	L			100	m	Category 5 UTP. BER $<\!10^{-12}$	

Electrical Characteristic

Table3-Electrical Characteristic							
Parameter	Symbol	Min.	Typical	Max.	Unit	Note	
Low-Speed Signals, Electronic Characteristics							
SFP Output LOW	VOL	0		0.5	V	4.7k to 10k pull-up to host_Vcc, measured at host side of connector	
SFP Output HIGH	VOH	host_Vcc - 0.5		host_Vcc + 0.3	V	4.7k to 10k pull-up to host_Vcc, measured at host side of connector	
SFP Input LOW	VIL	0		0.8	V	4.7k to 10k pull-up to Vcc,	



						measured at SFP side of
						connector
						4.7k to 10k pull-up to Vcc,
SFP Input HIGH	VIH	2		Vcc + 0.3	V	measured at SFP side of
						connector
	High-Speed	d Electrical Int	terface Trans	mission Line	e-SFP	
	fl		125		MНz	5-level encoding, per IEEE
Line rrequency	IL		120		IVITZ	802.3u
						Differential, for all
Tx Output Impedance	Zout,TX		100		Ohm	Frequencies between 1MHz
						and 125MHz
						Differential, for all
Rx Input Impedance	Zin,RX		100		Ohm	Frequencies between 1MHz
						and 125MHz
	High	n-Speed Elect	rical Interfac	e, Host-SFP		
Single ended data input swing	Vinsing	250		1200	mV	Single ended
Single ended data output swing	Voutsing	350		800	mV	Single ended
Rise/Fall Time	Tr,Tf		175		psec	20%-80%
Tx Input Impedance	Zin		50		Ohm	Single ended
Rx Output Impedance	Zout		50		Ohm	Single ended

Notes:

[1] Clock tolerance is +/- 50 ppm

[2] By default, the SFP-FB-GE-T is a full duplex device in preferred master mode

[3] Automatic crossover detection is enabled. External crossover cable is not required





Pin Description

Figure1 Module Interface to Host



SFP Module PIN Definition

Table4-	Table4-SFP Module PIN Definition					
	Symbol	Name / Description	Power Sequence Order	Note		
1	VeeT	Module Transmitter Ground	1st			
2	TX_Fault	Transmitter Fault Indication	3rd	1		
3	TX_Dis	Transmitter Disable; Turns off transmitter laser output	3rd	2		
4	MOD-DEF2	SDA Serial Data Signal	3rd	3		
5	MOD-DEF1	SCL Serial Clock Signal	3rd	3		
6	MOD-DEF0	TTL Low	3rd	3		
7	Rate Select	Not used	3rd			
8	RX_LOS	Loss of Signal	3rd			
9	VeeR	Receiver Ground	3rd			
10	VeeR	Module Receiver Ground	1st			
11	VeeR	Module Receiver Ground	1st			
12	RD-	Receiver Inverted Data Output	3rd	5		
13	RD+	Receiver Data Output	3rd	5		
14	VeeR	Module Receiver Ground	1st			
15	VccR	Module Receiver 3.3 V Supply	2nd			
16	Vcc⊤	Module Transmitter 3.3 V Supply	2nd			
17	VeeT	Module Transmitter Ground	1st			
18	TD+	Transmitter Non-Inverted Data Input	3rd	6		
19	TD-	Transmitter Inverted Data Input	3rd	6		
20	VeeT	Module Transmitter Ground	1st			

Notes:

Plug Seq.: Pin engagement sequence during hot plugging.

[1] TX Fault is not supported and is always connected to ground.

[2] TX Disable is an input that is used to shut down the transmitter optical output. It is pulled up within the module with a 4.7 °C 10 K

resistor. Its states are:

Low (0 to 0.8V):	Transmitter on
(>0.8, <2.0V):	Undefined
High (2.0 to 3.465V):	Transmitter Disabled
Open:	Transmitter Disabled

[3] Mod-Def 0,1,2. These are the module definition pins. They should be pulled up with a 4.7K to 10K resistor on the host board. The pull-up voltage shall be VccT or VccR

Mod-Def 0 is grounded by the module to indicate that the module is present

Mod-Def 1 is the clock line of two wire serial interface for serial ID

Mod-Def 2 is the data line of two wire serial interface for serial ID

[4] LOS is an open collector output, which should be pulled up with a 4.7k~10kΩ resistor. Pull up voltage between 2.0V and Vcc+0.3V.



Logic 1 indicates loss of signal; Logic 0 indicates normal operation. In the low state, the output will be pulled to less than 0.8V.

[5] RD-/+: These are the differential receiver outputs. They are AC-coupled, differential lines with 100 differential termination inside the module.

[6] TD-/+: These are the differential transmitter inputs. They are AC-coupled, differential lines with 100 differential termination inside the module.



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