

1000BASE-T Copper SFP Transceiver MXP-24RJ(S)



Features:

- Compatible with IEEE 802.3:2000
- Up to 1.25Gb/s bi-directional data links
- Industry Standard Small Form Pluggable (SFP) Package
- Single + 3.3V Power Supply, Low Power dissipation
- 10/100/1000 BASE-T operation in host systems with SGMII interface
- Intelligent Auto-Negotiation support for automatic duplex, speed, and flow control resolution
- Link lengths at 1.25 Gbd: up to 100 meter per IEEE802.3

Application:

- LAN 1000Base-T
- Switch to Switch Interface
- Router/Server interface

Description:

HG Genuine 1000BASE-T copper SFP transceivers MXP-24RJ(S) are based on the SFP Multi-Source Agreement (MSA). They are compatible with the Gigabit Ethernet and 1000BASE-T standards as specified in IEEE Std 802.3:2000 and IEEE802.3ab.

The MXP-24RJ(S) supports 1000Mbps full duplex data-links with 5-level Pulse Amplitude Modulation (PAM) signals. All four pairs in the cable are used with symbol rate at 250Mbps on each pair.

The 1000BASE-T physical layer IC (PHY) can be accessed via I²C, address: 0XACH, allowing access to all PHY settings and features. Also, the Serial ID can be accessed via I²C, address: 0XA0h. The hot pluggable feature allows changing to and from another SFP compatible module without having to remove system power.

Specification:

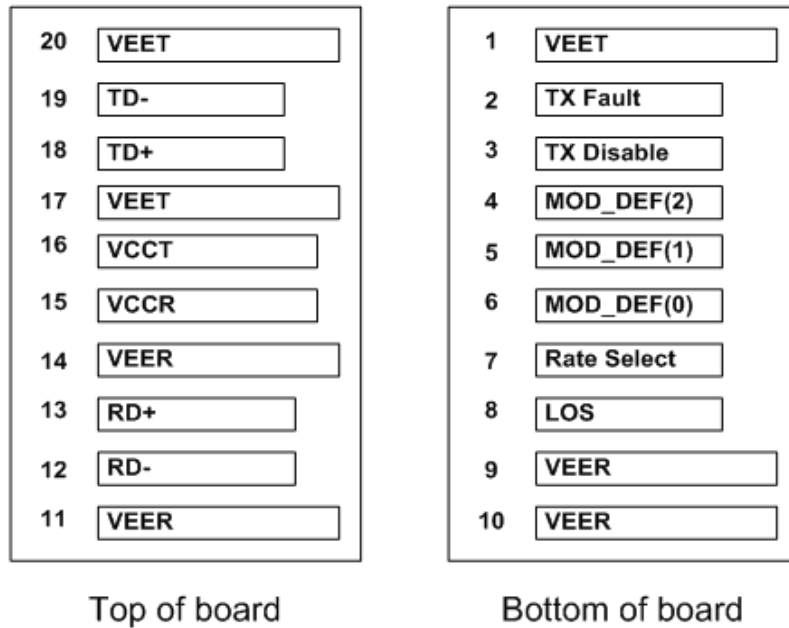
Absolute Maximum Ratings						
Parameter	Symbol	Min.	Max.	Unit	Note	
Storage Temperature	T _S	-40	+85	°C		
Power Supply Voltage	V _{CC}	-0.5	5.0	V		

Recommended Operating Conditions						
Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Ambient Operating Temperature	T _A	0		+70	°C	
Power Supply Voltage	V _{CC}	3.13	3.3	3.47	V	
Power Supply Current	I _{CC}			385	mA	

Transceiver Electrical and Timing Characteristics						
Parameter	Symbol	Min.	Typ.	Max.	Unit	Note
Data Input Swing Differential	V _{in} P-P	500		2400	mV	1
Data Output Swing Differential	V _{out} P-P	350	1200	1400	mV	2
Module Reset Assert Time				10	µs	3
Data Rate		10		1000	Mbps	4
Bit Error Rate	BER			10 ⁻¹⁰		5
Output Data Rise/Fall Time			180		psec	6
Serial ID Clock Rate				100	KHz	

Notes:

- Internally ac coupled and terminated (100 Ohm differential).
- Internally ac coupled with an external 100 ohm differential load termination.
- Time from rising edge of Tx Disable until link comes down.
- 10/100/1000 BASE-T operation requires the host system to have an SGMII interface with no clocks, and the module will operate as 1000BASE-T only when the host system use SERDES interface.
- Measured over 100m Cat-5 UTP cable.
- 20%-80% rise and fall times measured from the module's internally generated Gigabit Ethernet idle pattern at 1.25 Gbps.

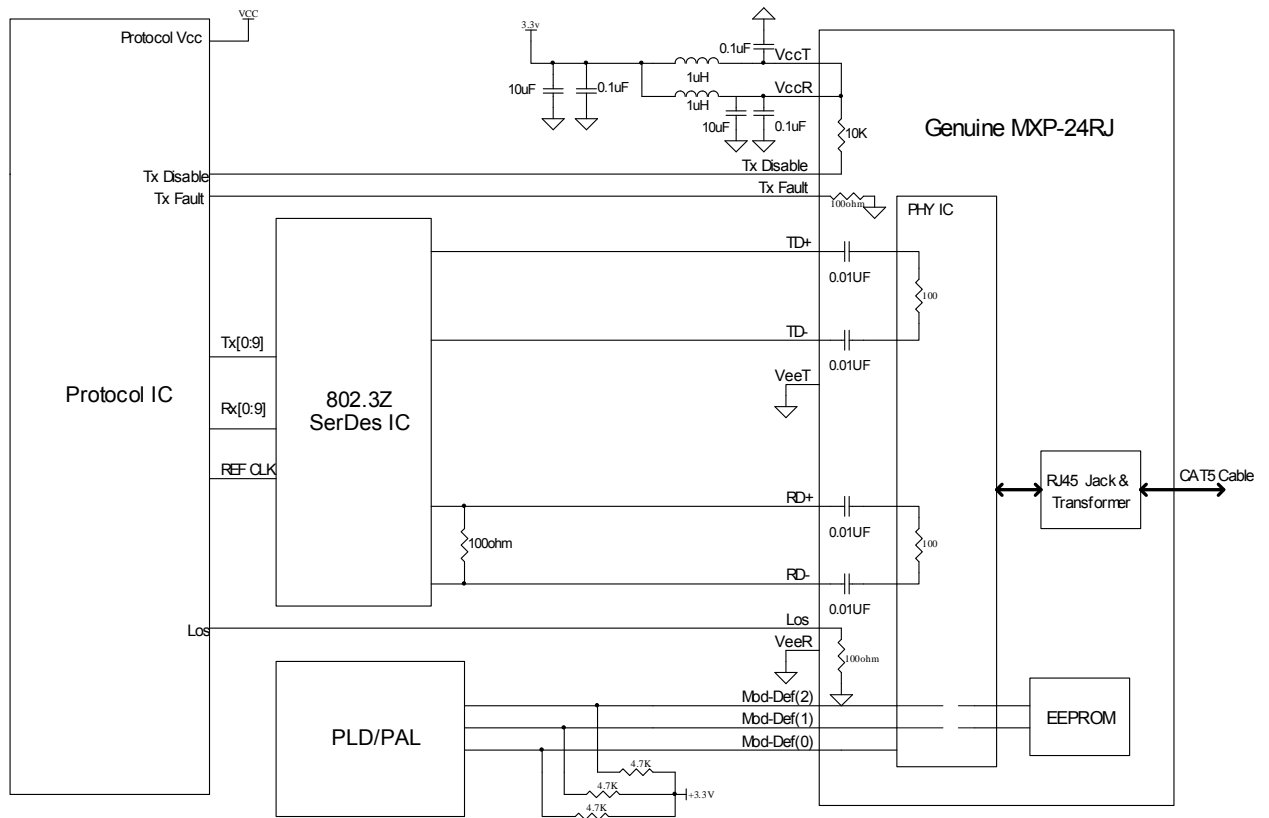
Pin Definition:

Figure1

Pin	Name	Description	Notes
1	VEET	Transmitter Ground	
2	TXFAULT	Transmitter Fault.	1
3	TXDIS	Transmitter Disable.	2
4	MOD_DEF(2)	SDA Serial Data Signal	3
5	MOD_DEF(1)	SCL Serial Clock Signal	3
6	MOD_DEF(0)	Grounded within the module.	3
7	Rate Select	No connection required	
8	LOS	Loss of Signal indication. Logic 0 indicates normal operation.	4
9	VEER	Receiver Ground	
10	VEER	Receiver Ground	
11	VEER	Receiver Ground	
12	RD-	Receiver Inverted DATA out.	5
13	RD+	Receiver Non-inverted DATA out.	5
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.	6
19	TD-	Transmitter Inverted DATA in.	6
20	VEET	Transmitter Ground	

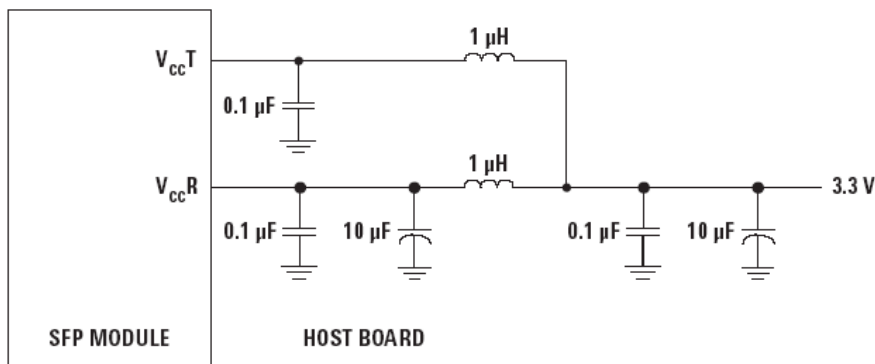
Notes:

1. TX Fault is not used and tied to ground via a 100ohm resistor.
2. TX Disable as described in the MSA is not applicable to the 1000BASE-T module, but is used for convenience as an input to reset the internal PHY
Low (0 – 0.4V): Transceiver on
Between (0.4V and 2.0 V): Undefined
High (2.0 – 3.465 V): Transceiver in reset state
Open: Transceiver in reset state
3. MOD-DEF 0,1,2 are the module definition pins. They should be pulled up with a 4.7k~10kohm resistor on the host board. The pull-up voltage shall be VccT or VccR.
MOD-DEF 0 is tied to ground within the module.
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 not used and is always tied to ground via a 100ohm resistor
5. These are the differential receiver output. They are internally AC-coupled 100Ω differential lines which should be terminated with 100Ω (differential) at the user side.
6. These are the differential transmitter inputs. They are AC-coupled, differential lines with 100Ω differential termination inside the module.

Recommended Interface Circuit



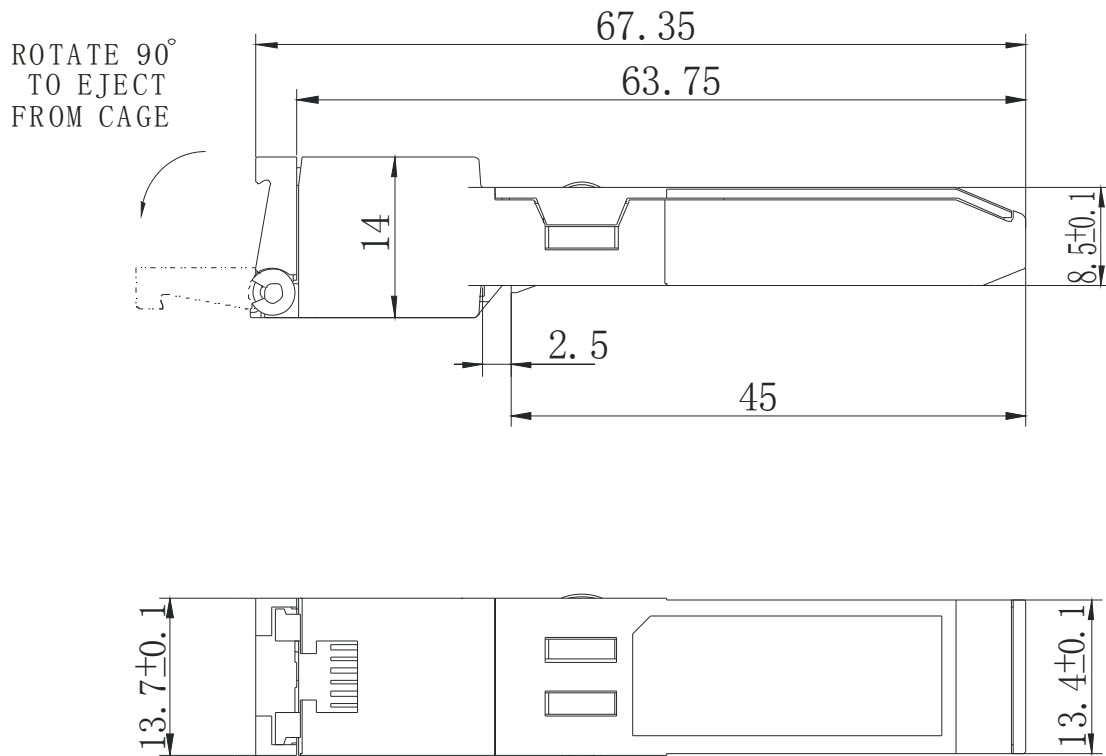
Recommended Power Supply Filter



Note: Inductors must have less than 1 ohm series resistance per MSA.

Mechanical Dimensions

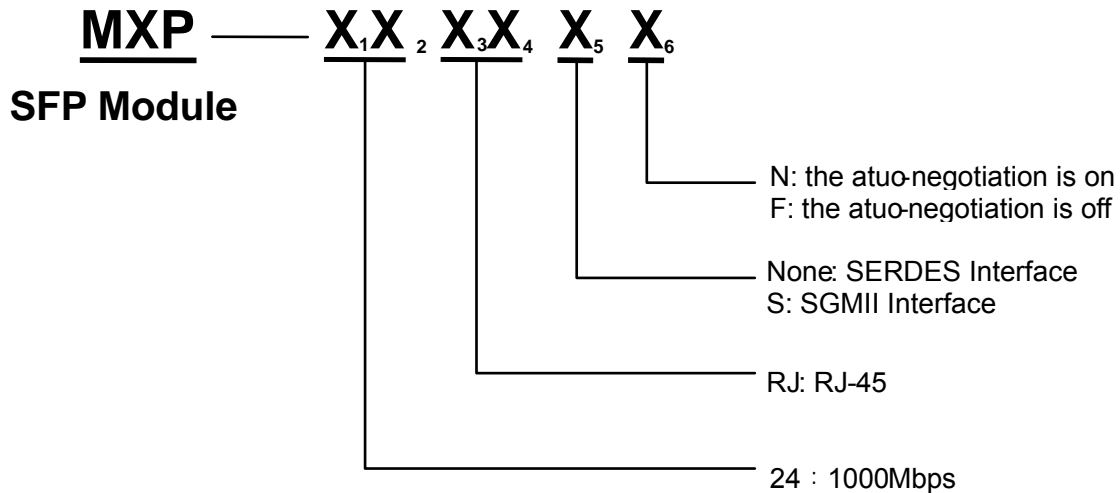
Unit is millimeter. All dimensions are $\pm 0.1\text{mm}$ unless otherwise specified.


Caution

All adjustments have been done at the factory before the shipment of the devices. No maintenance and user serviceable part is required. Tampering with and modifying the performance of the device will result in voided product warranty.

Ordering Information:

Digital Transceiver Module Denominate Rule



Part No.	Product information
MXP-24RJN	1000Mbps, SERDES interface, auto-negotiation is on, Copper SFP with Bail latch, 0°C~+70°C
MXP-24RJF	1000Mbps, SERDES interface, auto-negotiation is off, Copper SFP with Bail latch, 0°C~+70°C, support RX_LOS as link indication function
MXP-24RJS	10/100/1000Mbps, SGMII interface, Copper SFP with Bail latch, 0°C~+70°C

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