

TITLE 1000BASE-T 100m SFP Copper	DOC No. : 20260805100-001	
	REVISION : 01	AUTHORIZED BY : Eric Chen
	DATE : 2026,08,05	CLASSIFICATION : Optical Transceivers

1. Features

- 1.25 Gigabit Ethernet over Cat 5 cable
- Electrical interface specifications per SFF-8431
- Management interface specifications per SFF-8432 and SFF-8472
- Up to 100m over Cat 5 cable
- Single +3.3V power supply
- Class 1 laser safety certified
- 1.2W maximum power consumption with established link
- Operating temperature Options:0~70°C
- RoHS Compliant

2. Applications

- High speed storage area networks
- Switched Backplane Applications
- Switch to Switch Interface

3. Description

The 1000BASE-T 100m SFP Copper is full-duplex throughput of 10/100/1000Mbps by transporting data over shielded and unshielded twisted pair category 5 cable with 5-level PAM (Pulse Amplitude Modulation) signals. The module takes signals from both the twisted pair category 5 cable and the SGMII or Serdes interface. Pin count overhead between the MAC and the PHY is minimized, and Gigabit Ethernet operation is achieved with maximum space savings.

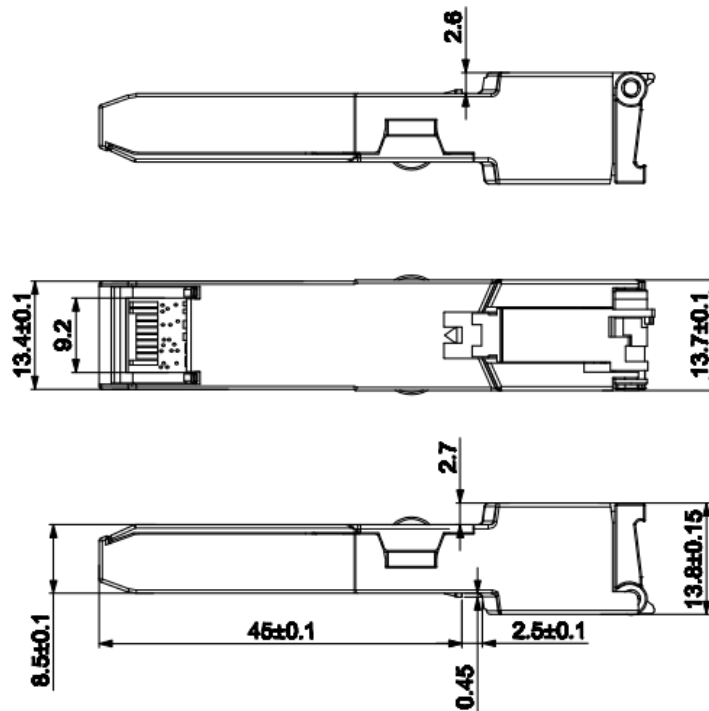
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3.1 Product Name And Series Number(s)

JPC PN	Media	Distance	Mode	Connector	Tem.
P60**MABC001-1	Cat 5 cable	100 m	SERDES	RJ45	C
P60**FABC001-1	Cat 5 cable	100m	SGMII	RJ45	C

Note-1 : ** Indicates the customer code.

3.2 Dimensions, Materials, Platings And Marking



4. Specification

Parameter	Symbol	Min	Typ	Max	Units	Conditions / Notes
Operating Temperature	T _{OP}	0	-	70	°C	Case temperature
Storage Temperature	T _{STO}	-40	-	85	°C	Ambient temperature
Operating Relative Humidity	RH	5	-	95	%	
Serial Bus Timing Requirements						
I ² C Clock Rate		0	100	400	kHz	

4.1 +3.3V Electrical Power Interface

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Parameter	Symbol	Min	Typ	Max	Units	Notes
Supply Current	I_S	-	320	400	mA	
Input Voltage	V_{CC}	3.13	3.3	3.47	V	
Maximum Voltage	V_{MAX}	-	-	3.8	V	

4.2 Low-Speed Signals ,Electronic Characteristics

Parameter	Symbol	Min	Max	Units	Notes
SFP Output LOW	V_{OL}	0	0.5	V	
SFP Output HIGH	V_{OH}	Host_ V_{CC} -0.5	Host_ V_{CC} +0.3	V	4.7k to 10k pull-up to host_ V_{CC} ,
SFP Input LOW	V_{IL}	0	0.8	V	measured at host side of connector
SFP Input HIGH	V_{IH}	2	V_{CC} +0.3	V	

4.3 High-Speed Electrical Interface, Transmission Line-SFP

Parameter	Symbol	Min	Typ	Max	Units	Conditions / Notes
Line Frequency	f_L	-	125	-	MHz	5-level encoding, per IEEE802.3
Tx Output Impedance	$Z_{OUT,TX}$	-	100	-	Ohm	Differential, for all
Rx Input Impedance	$Z_{IN,RX}$	-	100	-	Ohm	frequencies between 1MHz and 125MHz

4.4 High-Speed Electrical Interface, Host-SFP

Parameter	Symb	Min	Typ	Max	Units	Conditions / Notes
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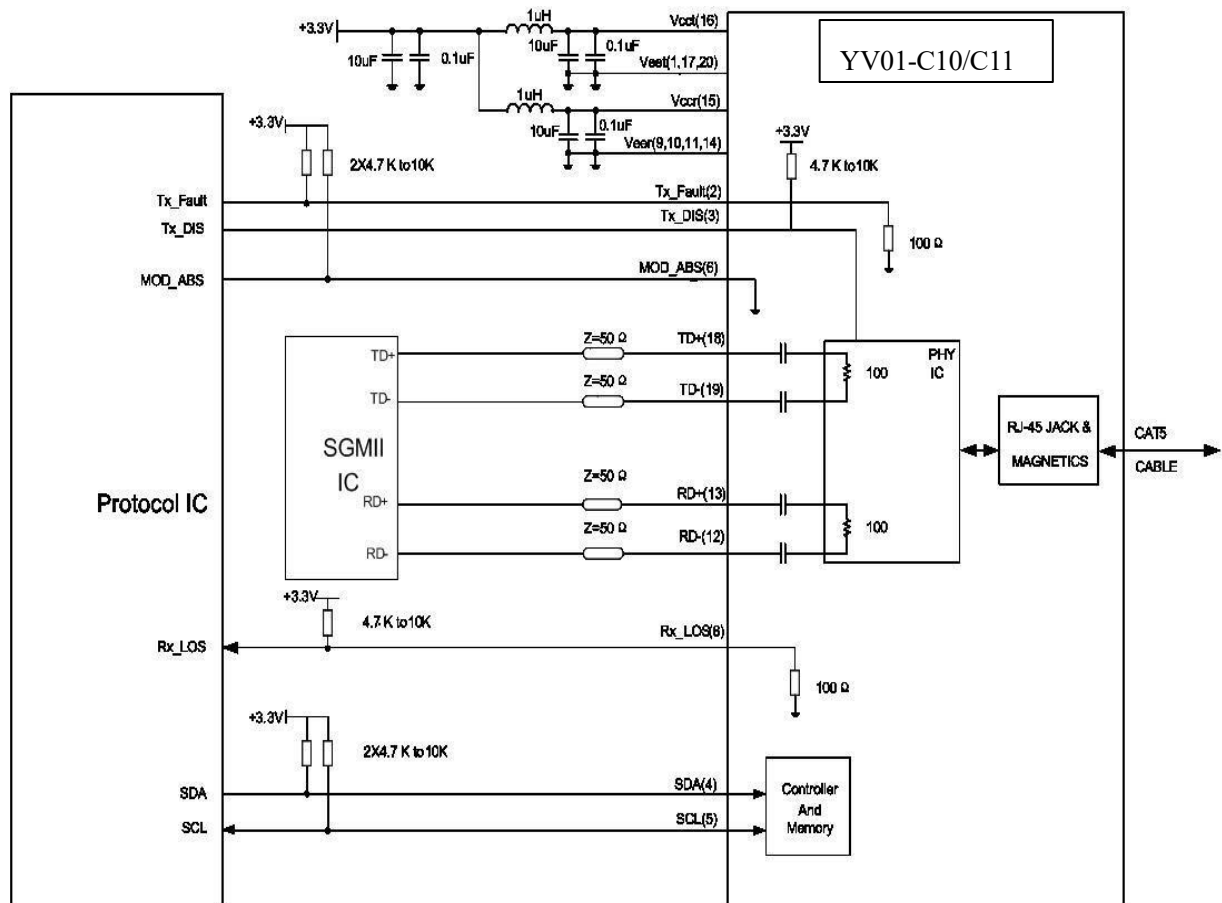
	ol					
Transmitter Differential Input Voltage	V_{IN}	500	-	2400	mV	Differential voltage swings
Receiver Differential Output Voltage	V_{OUT}	500	-	1600	mV	Differential voltage swings
Rise and Fall Time	t_r / t_f	-	175	-	ps	20% - 80%
Tx Input Impedance	Z_{IN}	-	50	-	Ohm	Single ended
Rx Output Impedance	Z_{OUT}	-	50	-	Ohm	Single ended

4.5 General

Parameter	Symbol	Min	Typ	Max	Units	Conditions / Notes
Data Rate	BR	10		1000	Mb/sec	IEEE802.3 compatible.
Cable Length	L	-	-	100	m	Category 5 UTP. BER <10 ⁻¹²

5. Electrical Interface

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Serial Communication Protocol

EEPROM Serial ID Memory Contents at address A0

All SFP support the 2-wire serial communication protocol outlined in the SFP MSA. These SFP use an 128 byte EEPROM with an address of A0h.

6. Internal ASIC Registers

The 1000BASE-T physical layer IC can also be accessed via the 2-wire serial bus at address ACh.

7. Pin Description

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Pin	Symbol	Name/Description	Note
1	V _{EET}	Transmitter ground (common with receiver ground)	1
2	T _{FAULT}	Transmitter Fault. Not supported	
3	T _{DIS}	Transmitter Disable. PHY disabled on high or open	2
4	MOD_DEF(2)	Module Definition 2. Data line for serial ID	3
5	MOD_DEF(1)	Module Definition 1. Clock line for serial ID	3
6	MOD_DEF(0)	Module Definition 0. Grounded within the module	3
7	Rate Select	No connection required	
8	LOS	Loss of Signal indication.	4
9	V _{EER}	Receiver ground (common with transmitter ground)	1
10	V _{EER}	Receiver ground (common with transmitter ground)	1
11	V _{EER}	Receiver ground (common with transmitter ground)	1
12	RD-	Receiver Inverted DATA out. AC coupled	
13	RD+	Receiver Non-inverted DATA out. AC coupled	
14	V _{EER}	Receiver ground (common with transmitter ground)	1
15	V _{CCR}	Receiver power supply	
16	V _{CCT}	Transmitter power supply	
17	V _{EET}	Transmitter ground (common with receiver ground)	1
18	TD+	Transmitter Non-Inverted DATA in. AC coupled	
19	TD-	Transmitter Inverted DATA in. AC coupled	
20	V _{EET}	Transmitter ground (common with receiver ground)	1

Notes:

1. Circuit ground is isolated from chassis ground
2. PHY disabled on Tx_DIS > 2.0V or open, enabled on Tx_DIS < 0.8V
3. Should be pulled up with 4.7k – 10k Ohms on host board to a voltage between 2.0 V and 3.6 V.
MOD_DEF(0) pulls line low to indicate module is plugged in.
4. No function.

8. Modification History

Rev.	Comments	Date	Originator	Approval
01	Preliminary Draft	2026.08.05	Eric Chen	Mike Sun