1.25Gbps Copper SFP Transceiver
BN-J8177C

Product Features

- Up to 1.25Gbps bi-directional data links *1
- RJ45 Max100m
- Fully metallic enclosure for low EMI
- Compact RJ-45 Connector assembly
- Hot-pluggable SFP footprint
- Low power dissipation
- Case temperature: 0^0C to 75^0C
- RoHS compliant and Lead Free
- Access to physical layer IC via 2-wire serial bus over Cat 5 cable

Applications

√ 1.25 Gigabit Ethernet

Part Number	Data Rate
BN-J8177C	1000M

1.Product Description

The BN-J8177C is Copper Small Form pluggable (SFP) transceiver,which are based on SFP multi-sourcing agreement (MSA). They are compatible with the Gigabit Ethernet and 1000BASE-T standards as specified in IEEE Std 802.3.The 1000BASE-T physical layer IC(PHY) can be accessed via I2C,allowing access to all PHY settings and features.

2. +3.3V Volt Electrical Power Interface

The BN-J8177C has an input voltage range of 3.3V +/-5%,The 4 V maximun voltage is not allowed for continuous operation.

Parameter	Symbol	Min.	Typ	Max	Unit s	Notes/Conditions
Supply-Current	Is	300	325	345	mA	1.2W max power over full range of voltage and temperature.see caution note below
Power Supply Voltage	Vcc	3.13	3.3	3.47	v	Referebced to GND
Maximum Voltage	Vmax				v	
Surge Current	Isurge			345	mA	Hot plug above steady state current,See caution note be-low

Caution:Power consumption and surge current are higher than the specified values in the SFP MSA

Table 1.+3.3 Volt electrical power interface

3.Low-Speed Signals

Parameter	Sym-bol	Min.	Max	Units	Notes/Conditions
SFP Out-put LOW	VOL	0	0.5	V	4.7k to 10k pull-up to host Vcc,mea-sured at host side of connector
SFP Out-put 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 con-nector
SFP Input LOW	VIL	0	0.8	V	4.7k to 10k pull-up to Vcc,measured at SFP side of connector
SFP Input HIGH	VIH	2	Vcc+0.3	V	4.7k to 10k pull-up to Vcc,measured at SFP side of connector

Table 2. Low-speed signals,electronic characteristics

4-High-Speed Electrical Interface

ALL high-speed signals are AC-coupled internally (1)High-speed Electrical Interface Transmission Line-SFP

Parameter	Symbol	Min.	Typ	Max	Units	Notes/Conditions
Line Frequency	ls	10	125	1000	MHZ	5-level encoding,per IEEE 802.3
Tx Output Impedance	Zout,TX		100		Ohm	Differential,for all frequencies between 1MHz and 125MHz
Rx Input Impedance	Zin,RX		100		Ohm	Differential,for all frequencies between 1MHz and 125MHz

Table 3. High-speed electrical interface,transmission line-SFP

(2)High-speed Electrical Interface,Host-SFP

Parameter	Symbol	Min.	Typ	Max	Units	Notes/Conditions
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

Table 4. High-speed electrical interface,host-SFP

5-General Specifications

Parameter	Symbol	Min.	Typ	Max	Units	Notes/Conditions
Data Rate	BR	10		1000	Mb/sec	IEEE 802.3 compatible.See Notes 2 through 4 below
Tx Out-put Impedance	L			100	M	Category 5 UTP.BER<10^{-12}

Note: Table 5. General specifications

Clock tolerance is +/- 50 ppm

By default,the BN-J8177C is a full duplex device in preferred master mode 3.Automatic crossover detection is enabled.External crossover calble is not required 4.10/100/1000 BASE-T operation requires the host system to have an SGMII interface with no clocks,and the module PHY to be configured per Applications Note AN-2036.With a SERDES that does not support SGMII,the module will operate at 1000BASE-T only.

6.Environmental Specifications

The BN-J8177C has an Industy range from -40^{0}C to +85^{0}C case temperature as specified in Table.

Parameter	Symbol	Min.	Typ	Max	Units	Notes/Conditions
Operating Temperature	Top	-40		85		Case temperature
Storage Temperature	Tsto	-40		85		Ambient temperature

Table 6. Environmental specifications

7-Pin Descriptions

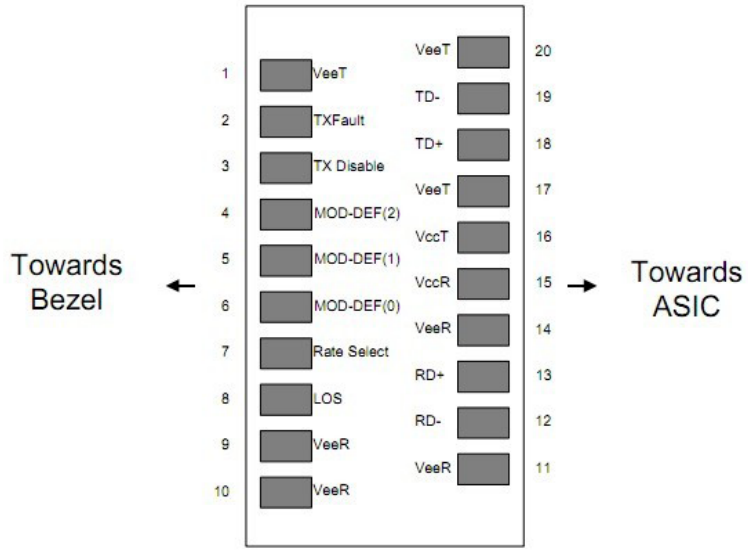


Diagram of Host Board Connector Block Pin Numbers and Names

Pin	Symbol	Description	Ref.
1	VEET	Transmitter Ground (Common with Receiver Ground)	8.1
2	TFAULT	Transmitter Fault. Not supported.	
3	TDIS	Transmitter Disable. Laser output disabled on high or open.	8.2
4	MOD_DEF(2)	Module Definition 2. Data line for Serial ID.	8.3
5	MOD_DEF(1)	Module Definition 1. Clock line for Serial ID.	8.3
6	MOD_DEF(0)	Module Definition 0. Grounded within the module.	8.3
7	Rate Select	No connection required	
8	LOS	Grounded	8.4
9	VEER	Receiver Ground (Common with Transmitter Ground)	8.1
10	VEER	Receiver Ground (Common with Transmitter Ground)	8.1
11	VEER	Receiver Ground (Common with Transmitter Ground)	8.1
12	RD-	Receiver Inverted DATA out. AC Coupled.	
13	RD+	Receiver Non-inverted DATA out. AC Coupled.	
14	VEER	Receiver Ground (Common with Transmitter Ground)	8.1
15	VCCR	Receiver Power Supply	
16	VCCT	Transmitter Power Supply	
17	VEET	Transmitter Ground (Common with Receiver Ground)	8.1
18	TD+	Transmitter Non-Inverted DATA in. AC Coupled.	
19	TD-	Transmitter Inverted DATA in. AC Coupled.	
20	VEET	Transmitter Ground (Common with Receiver Ground)	8.1

Table 7. SFP to host connector pin assignments and descriptions

Notes:

1.1 Circuit ground is connected to chassis ground.

1.2 PHY disabled on TDIS>2.0V or open,enabled on TDIS<0.8V.

1.3 Should be pulled up with 4.7k - 10k Ohms on host board to a voltage between 2.0V and 3.6V. MOD_DEF(0) pulls line low to indicate module is plugged in.

1- Serial Communication Protocol

All SFPS support the 2-wire serial communication protocol outlined in the SFP MSA.These SFPS use an Atmel AT24C01A 128 byte EEPROM with an address of A0h.For details on interfacing with the

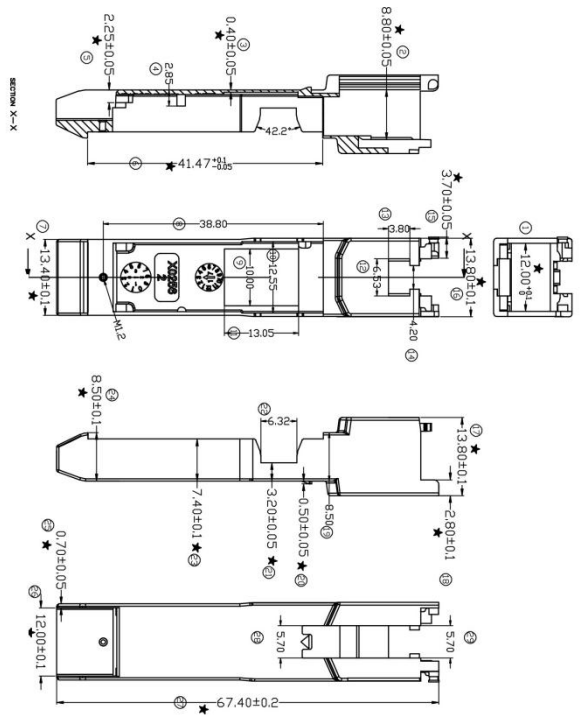
EEPROM,see the Atmel data sheet titled "AT24C01A/02/04/08/16 2-Wire Serial CMOS EEPROM."

The 1000BASE-T physical layer IC can also be accessed via the 2-wire serial bus at address Ach.For details interfacing with the PHY IC,see Marvell data sheet titled "Alaska Ultra 88E1111 Integrated Gigabit Ethernet Transceiver"(Marvell document number MV-S100649-00).

Serial Bus Timing Requirements

Parameter	Symbol	Min.	Typ	Max	Units	Notes/Conditions
IC Clock Rate		0		100000	Hz	

9. Mechanical Specifications



Ordering Information

Part No.	Data Rate	Laser	Fiber Type	Distance	Optical Interface
BN-J8177C	1000M			100m	RJ45

Custom requirement

EEPROM
2 wire address 1010000X (A0h)

0~95 Serial ID Defined by SFP MSA (96 bytes)
96~127 Vendor Speific (32 bytes)
128~255 Reserved (128 bytes)