

ABFP64-10-SXXXXXX

10Gb/s Bi-Directional XFP Transceiver, 10km
1270/1330nm TX / 1330/1270 nm RX

Features:

- Supports 9.95Gb/s to 11.1Gb/s bit rates
Hot-pluggable XFP footprint
- Maximum link length of 10km with SMF
1270/1330nm DFB laser Transmitter and
1330/1270nm Receiver
- XFP MSA package with LC connector
- No reference clock required
- +3.3V, +1.8V power supply
- Power dissipation <2W
- Compatible with RoHS
- Built-in digital diagnostic functions
- Operating case temperature: 0~+70°C



Applications:

- 10G Base-LR/LW, SDH/SONET STM64/OC192
- 10GE Storage, 8G Fiber Channel
- Other optical links

Description:

ABFP64-10-SXXXXXX is compliant with the IEEE803.3ae 10Gbase-Bx. and transmission distance up to 10km on SMF.

The transceiver module comprises a transmitter with a 1270/1330nm DFB laser transmitter, an integrated 1330/1270nm detector preamplifier(IDP) mounted in an optical header and a limiting post-amplifier IC. Transmitter and receiver are separate within a wide temperature range of 0 to +70 and offers optimum heat dissipation and excellent electromagnetic shielding thus enabling high port densities for 10 GbE systems.

● **Absolute Maximum Ratings**

Parameter	Symbol	Min	Max	Unit
Storage Temperature	T _{ST}	-40	+85	°C
Operating Temperature	T _{OP}	0	+70	°C
Supply Voltage for 3.3V	V _{CC3}	-0.5	+3.6	V
Supply Voltage for 1.8V	V _{CC3}	-0.5	+1.98	V
Relative Humidity			85	%

● **Recommend Operation Environment:**

Parameter	Symbol	Min	Typ	Max	Unit
Date Rate		9.95		11.1	Gb/s
Supply Voltage for 3.3V	V _{CC}	+3.14	3.3	+3.47	V
Supply Voltage for 1.8V		+1.62	1.8	+1.98	V
Power Dissipation	PD			2.0	W
Operating Temperature	T _{OP}	0	-	+70	°C

● **Optical Characteristics (Condition: T_a=T_{OP})**

Parameter	Symbol	Min	Typ	Max	Unit	Ref.
Transmitter						
Date Rate		9.95	10.312 5	11.1	Gb/s	
Optical Wavelength	λ	1260	1270	1280	nm	
		1320	1330	1340	nm	
Average output power	P _o	-5		0	dBm	1
Optical Extinction Ratio	ER	3.5			dB	1
Side Mode Suppression Ratio	SMSR	30			dB	
Average launch power of Tx OFF	P _{ave_off}			-30	dBm	
Receiver						
Date Rate		9.95	10.312 5	11.1	Gb/s	
Optical Wavelength	λ	1260	1270	1280	nm	
		1320	1330	1340	nm	
Receiver Sensitivity	R			-14.0	dBm	2
Maximum Input Power	P _{MAX}	0.5			dBm	
LOS De-Assert	LOSD			-18	dBm	

LOS Assert	LOSA	-30			dBm	
LOS Hysteresis		1		5	dB	
Receiver Reflectance				-14	dB	

Notes:

Note 1) Measured at 10.3125b/s with PRBS $2^{31} - 1$ NRZ test pattern.

Note 2) Under the ER worst case, measured at 10.3125 Gb/s with PRBS $2^{31} - 1$ NRZ test pattern for BER < 1×10^{-12}

● Electrical Characteristics (Condition: $T_a = T_{OP}$)

Parameter		Symbol	Min	Typ	Max	Unit	Note
Transmitter:							
Differential input voltage swing			150		1600	mVpp	1
Transmit Disable Input	H	V_{IH}	2.0		$V_{CC}+0.3$	V	
	L	V_{IL}	0		0.8	V	
Transmit Enable Output	H	V_{OH}	2.4		$V_{CC}+0.3$	V	
	L	V_{OL}	0		0.4	V	2
Data Dependent Input Jitter		DDJ			0.1	UI	
Data Input Total Jitter		TJ			0.28	UI	
Input Differential Impedance		Z_{in}	80	100	120	Ω	
Receiver							
Differential output voltage swing			500		700	mVpp	3
LOS Output	H	V_{OH}	2.4		$V_{CC}+0.3$	V	2
	L	V_{OL}	0		0.4	V	
Rx Output Rise and Fall Time		T_r/T_f	30			ps	20% to 80%
Onput Differential Impedance		Z_{on}	80	100	120	Ω	

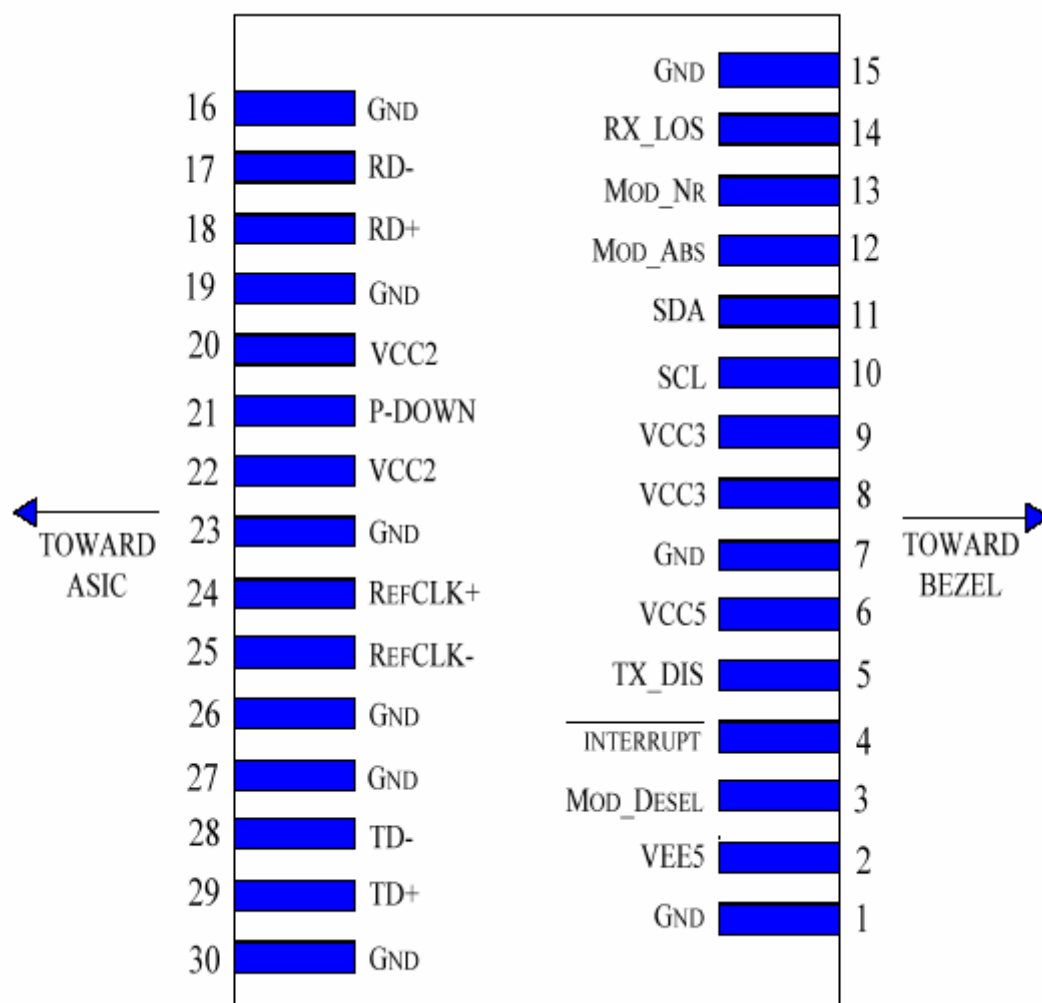
Note 1) TD+/- are internally AC coupled with 100 Ω differential termination inside the module.

Note 2) Tx Fault and Rx LOS are open collector outputs, which should be pulled up with 4.7k to 10k Ω resistors on the host board. Pull up voltage between 2.0V and $V_{CC}+0.3V$.

Note 3) RD+/- outputs are internally AC coupled, and should be terminated with 100 Ω (differential) at the user SERDES.

Pin Assignment:

Diagram of Host Board Connector Block Pin Numbers and Name



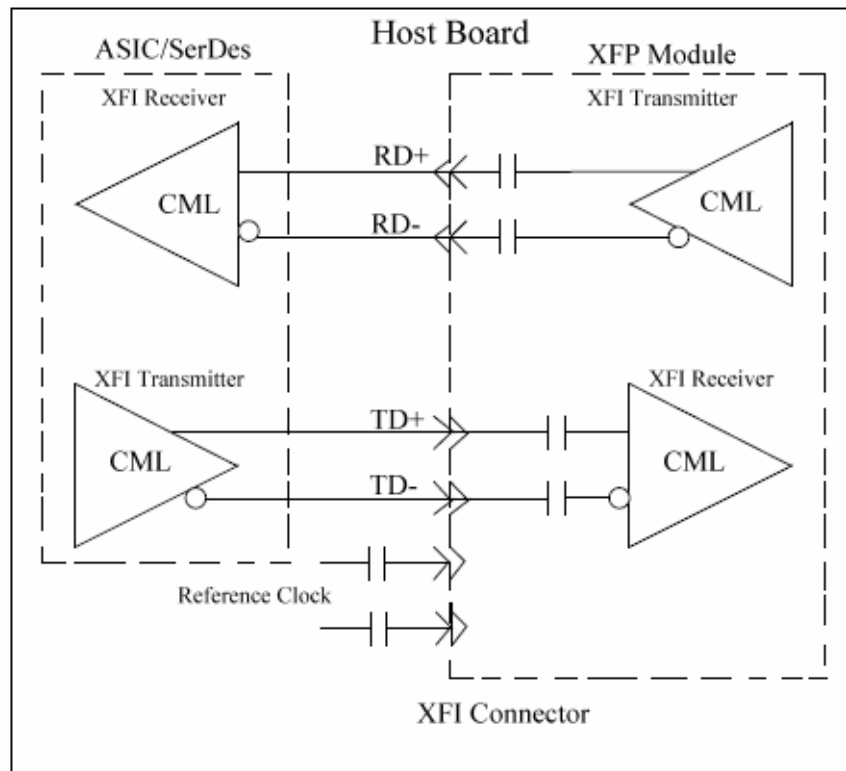
Pin Function Definitions

Pin	Logic	Symbol	Name/Description	Ref
1		GND	Module Ground	1
2		VEE5	Optional -5.2 Power Supply – Not required	
3	LVTTL-I	Mod-Desel	Module De-select; When held low allows the module to , respond to 2-wire serial interface commands	
4	LVTTL-O	Interrupt	Interrupt (bar); Indicates presence of an important condition which can be read over the serial 2-wire interface	2
5	LVTTL-I	TX_DIS	Transmitter Disable; Transmitter laser source turned off	
6		VCC5	+5 Power Supply– Not required	
7		GND	Module Ground	1
8		VCC3	+3.3V Power Supply	
9		VCC3	+3.3V Power Supply	
10	LVTTL-I	SCL	Serial 2-wire interface clock	2
11	LVTTL-I/O	SDA	Serial 2-wire interface data line	2
12	LVTTL-O	Mod_Abs	Module Absent; Indicates module is not present. Grounded in the module.	2
13	LVTTL-O	Mod_NR	Module Not Ready;	2
14	LVTTL-O	RX_LOS	Receiver Loss of Signal indicator	2
15		GND	Module Ground	1
16		GND	Module Ground	1
17	CML-O	RD-	Receiver inverted data output	
18	CML-O	RD+	Receiver non-inverted data output	
19		GND	Module Ground	1
20		VCC2	+1.8V Power Supply	
21	LVTTL-I	P_Down/RST	Power Down; When high, places the module in the low power stand-by mode and on the falling edge of P_Down initiates a module reset	
			Reset; The falling edge initiates a complete reset of the module including the 2-wire serial interface, equivalent to a power cycle.	
22		VCC2	+1.8V Power Supply	
23		GND	Module Ground	1
24	PECL-I	RefCLK+	Reference Clock non-inverted input, AC coupled on the host board – Not required	3
25	PECL-I	RefCLK-	Reference Clock inverted input, AC coupled on the host board – Not required	3
26		GND	Module Ground	1
27		GND	Module Ground	1
28	CML-I	TD-	Transmitter inverted data input	
29	CML-I	TD+	Transmitter non-inverted data input	
30		GND	Module Ground	1

Notes:

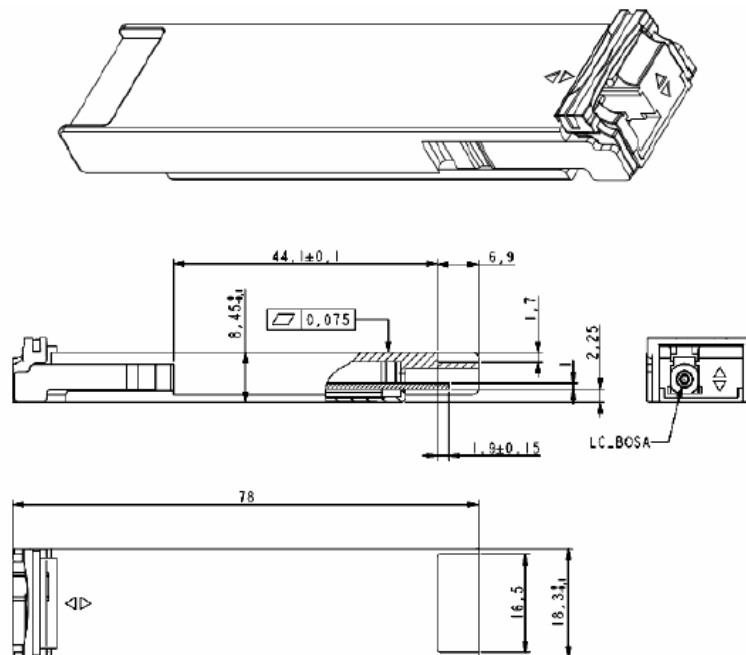
1. Module circuit ground is isolated from module chassis ground within the module.
2. Open collector; should be pulled up with 4.7k – 10k ohms on host board to a voltage between 3.15V and 3.6V.
3. A Reference Clock input is not required.

Recommended Circuit:



Recommended High Speed Interface Circuit

Mechanical Dimensions:

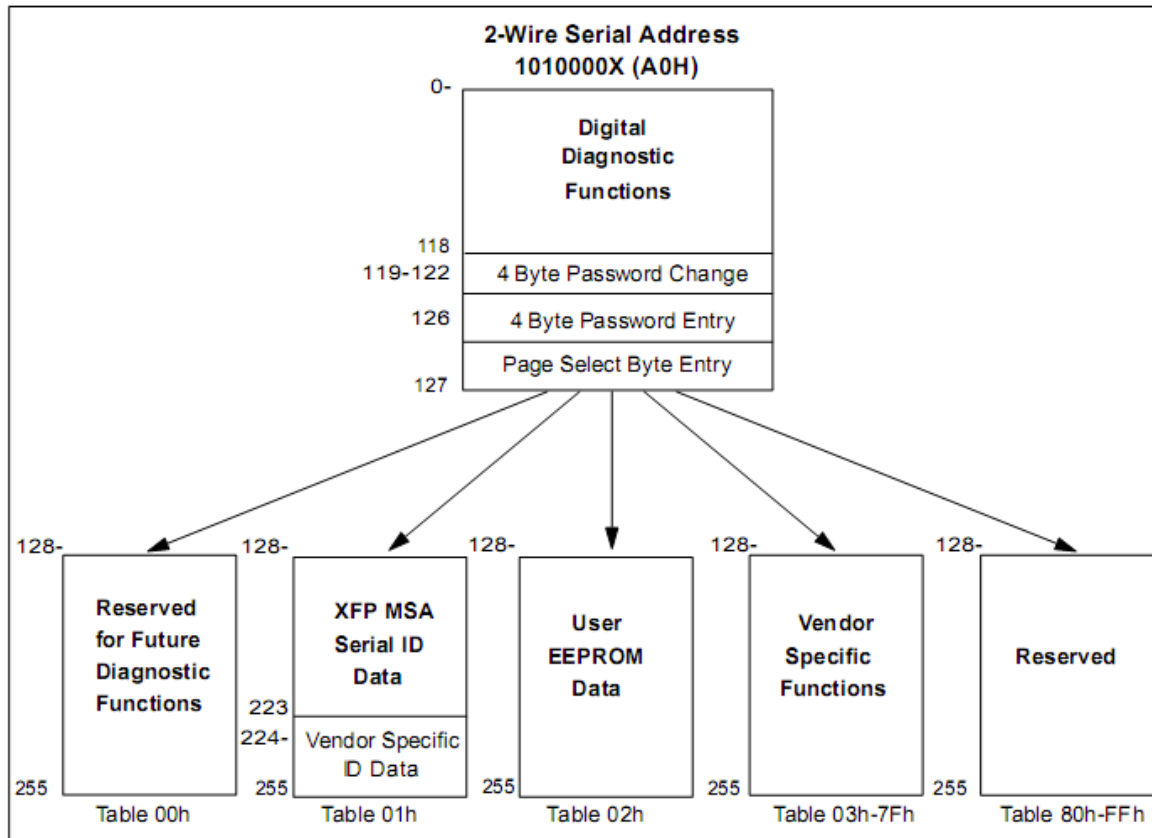


Management Interface

The transceivers provide serial ID memory contents and diagnostic information about the present operating conditions by the 2-wire serial interface (SCL, SDA).

The Module provides diagnostic information about the present operating conditions. The transceiver generates this diagnostic data by digitization of internal analog signals. Alarm/warning threshold data is written during device manufacture. Received power monitoring, transmitted power monitoring, bias current monitoring, supply voltage monitoring and temperature monitoring all are implemented.

The digital diagnostic memory map specific data field defines as following.



Part Number Definition and Ordering Information:

Company	A
Package	BFP: BIDI XFP
Data Rate	64: 9.958G~11.1G
Distance	xx: xx kilometer
Fiber Mode	S: Single Mode
Wavelength	3155: 1310/1550nm
Temperature	C: 0 – 70℃ I: -45~+85℃
DDM	D: with DDM Blank: without DDM

Notice:

Atech reserves the right to make changes to or discontinue any optical link product or service identified in this publication, without notice, in order to improve design and/or performance. Applications that are described herein for any of the optical link products are for illustrative purposes only. Atech makes no representation or warranty that such applications will be suitable for the specified use without further testing or modification.