

10Gb/S SFP+ BIDI Transceiver

P/N: TBSFPP-AF1I23(32)A



Product Features

- Compliant with SFP+ MSA with LC connector
- Up to 11.1Gbps Data Links
- Up to 40km distance
- Power dissipation<1.5 W
- 1270nm DFB laser and PIN receiver for TBSFPP-AF1I23A
- 1330nm DFB laser and PIN receiver for TBSFPP-AF1I32A
- Case operating temperature range: 0°C to +70°C
- Digital Diagnostic Monitor Interface
- RoHS-6 Compliant

Application

- 10G Base-BX

Absolute Maximum Rating

Parameter	Min	Max	Unit	Note
Storage Temperature	-40	85	°C	
3.3V Power Supply Voltage	-0.3	4	V	
Relative Humidity	5	95	%	

Recommended Operating Conditions

Parameter	Min	Typical	Max	Unit	Note
Case Operating Temperature	-5		70	°C	
Power Supply Voltage	3.135	3.3	3.465	V	
Data Rate		10.3125		Gbps	
Supply Current			450	mA	
Link Distance			40	km	

Optical Characteristics

Parameter	Symbol	Min	Typical	Max	Unit	Note
Transmitter						
Center Wavelength	λ	1260	1270	1280	nm	TBSFPP-AF1I23A
		1320	1330	1340		TBSFPP-AF1I32A
Spectral Width – RMS	$\Delta\lambda$			1	nm	
Average Launch Optical Power	LOP	-1		+4	dBm	
Average Launched Power (Laser off)	Poff			-40	dBm	1
Extinction Ratio	ER	3.5			dB	2
Output Optical Eye		Compliant IEEE 802.3				2

Receiver						
Center Wavelength	λ	1320	1330	1340	nm	TBSFPP-AF1I23A
		1260	1270	1280		TBSFPP-AF1I32A
Sensitivity	Psen			-15	dBm	3
Input Saturation Power (Overload)		-6			dBm	3
LOS Assert	LOSA	-35			dBm	
LOS De-assert	LOSD			-17	dBm	
LOS Hysteresis	LOSH	0.5		5	dB	

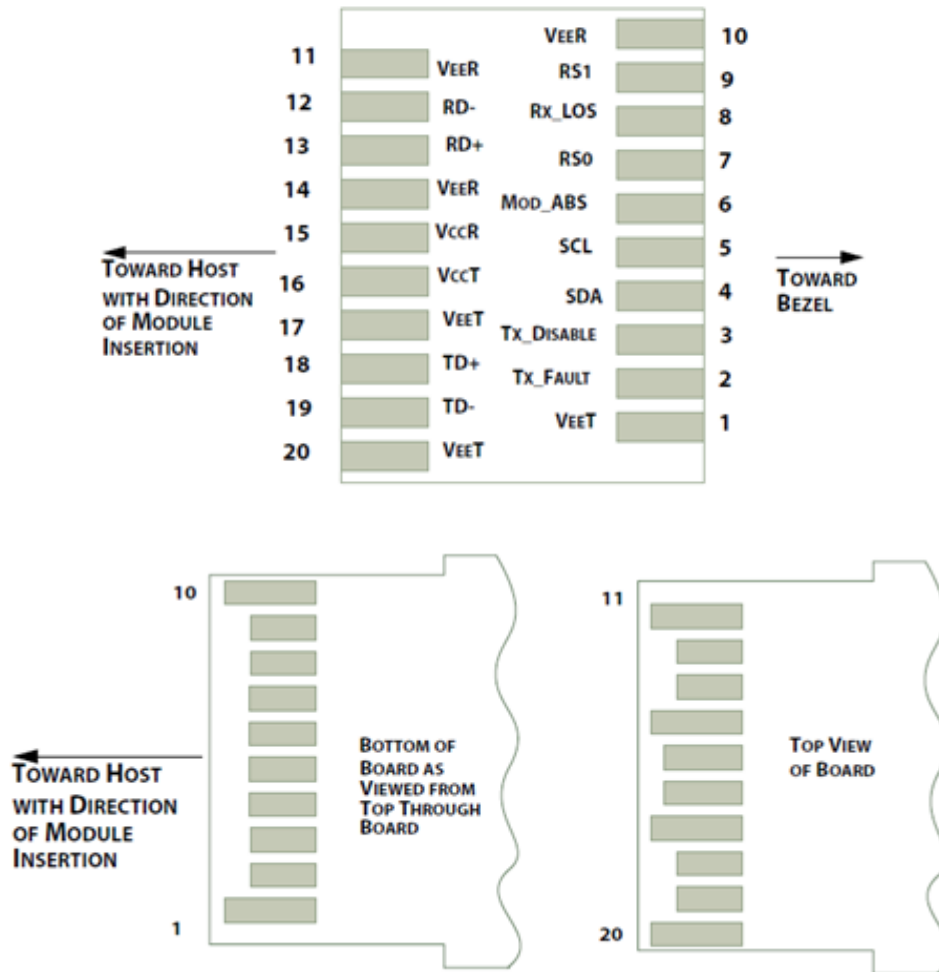
Notes

1. The optical power is launched into SMF
2. Measured with RPBS 2³¹-1 test pattern @10.3125Gbs
3. Measured with RPBS 2³¹-1 test pattern @10.3125Gbs BER=<10⁻¹²

Electrical Characteristics

Parameter	Min	Typical	Max	Unit	Note
Transmitter					
Differential Input Voltage	180		700	mVp-p	
Differential line input Impedance	85	100	115	Ohm	
Transmitter Fault Output-High	2.4		Vcc	V	
Transmitter Fault Output-Low	-0.3		0.8	V	
Transmitter Disable Voltage- High	2		Vcc+0.3	V	
Receiver					
Differential Data Output Voltage	300		850	mVp-p	
Differential line Output Impedance	80	100	120	Ohm	
Receiver LOS Pull up Resistor	4.7		10	KOhm	
Data Output Rise/Fall time			38	ps	
LOS Output Voltage-High	2		Vcc	V	
LOS Output Voltage-Low	-0.3		0.4	V	

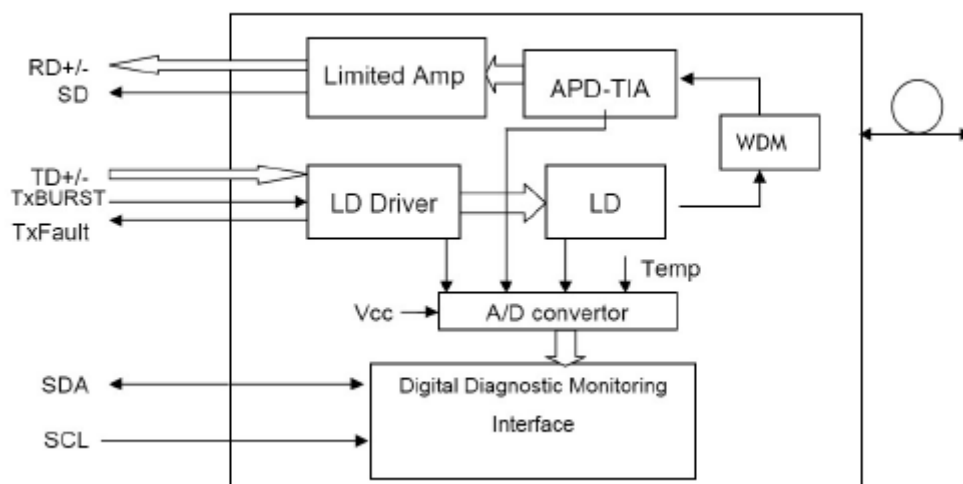
SFP+ Module Pad Assignments and Descriptions



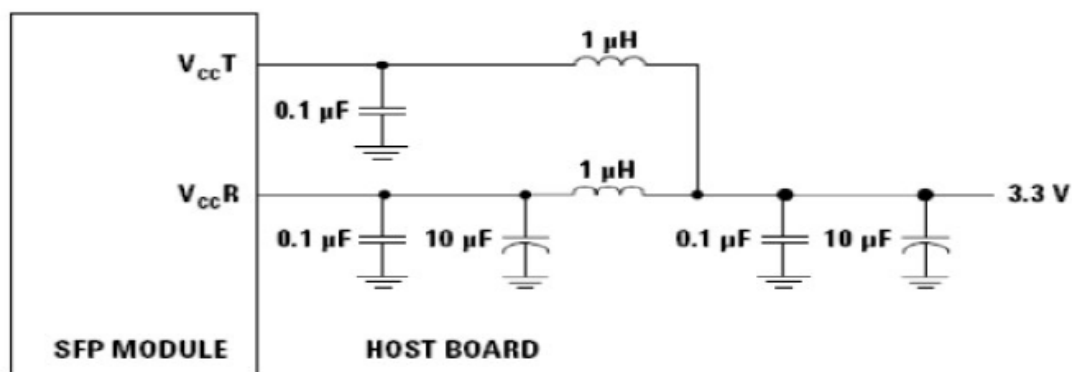
PIN	Logic	Symbol	Name / Description	Note
1		VeeT	Module Transmitter Ground	
2	LVTTL-O	TX_Fault	Module Transmitter Fault	
3	LVTTL-I	TX_Dis	Transmitter Disable; Turns off transmitter laser output	
4	LVTTL-I/O	SDA	2-Wire Serial Interface Data Line	
5	LVTTL-I	SCL	2-Wire Serial Interface Clock	
6		MOD_DEF0	Module Definition, Grounded in the module	
7	LVTTL-I	RS0	Receiver Rate Select, default is high for 8G/10G application, when set to low by system, transceiver will set the bandwidth to under 4.25G to improve the sensitivity at low data rate	

8	LVTTL-O	RX_LOS	Receiver Loss of Signal Indication Active LOW	
9	LVTTL-I	RS1	Transmitter Rate Select, default input is high for 8G/10G application, when set to low by system, transceiver will set the TX optical output to be compliant with low data rate fiber channel specifications	
10		VeeR	Module Receiver Ground	
11		VeeR	Module Receiver Ground	
12	CML-O	RD-	Receiver Inverted Data Output	
13	CML-O	RD+	Receiver Data Output	
14		VeeR	Module Receiver Ground	
15		VccR	Module Receiver 3.3 V Supply	
16		VccT	Module Transmitter 3.3 V Supply	
17		VeeT	Module Transmitter Ground	
18	CML-I	TD+	Transmitter Non-Inverted Data Input	
19	CML-I	TD-	Transmitter Inverted Data Input	
20		VeeT	Module Transmitter Ground	

Transceiver Block Diagram



Recommended Host Board Power Supply Circuit



Mechanical Design Diagram

Unit: mm

