1.25Gb/S SFP BIDI 3km Transceiver

P/N: TBSFP-1FxE35(53)A

Product Features

- Compliant with SFP MSA and SFF-8472 with LC receptacle
- Up to 3km on 9/125um SMF
- 1310nm FP laser and PIN receiver for TBSFP-1FxE35A
- 1550nm FP laser and PIN receiver for TBSFP-1FxE53A
- Typical data rate 1.25Gbps
- Low power dissipation <800mW
- Case operating temperature range: 0°C to +70°C or -40 to 85°C
- RoHS-6 Compliant
- Part number
  (1:0°C to 70°C, 5:-40°C to 85°C)
  - TBSFP-1F1(5)E35A , TX1310/RX1550
  - TBSFP-1F1(5)E53A , TX1550/RX1310

Application

- Gigabit Ethernet
- 1x Fiber Channel

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Absolute Maximum Rating

Parameter	Min	Max	Unit	Note
Storage Temperature	-40	85	℃	
3.3V Power Supply Voltage	-0.5	+4.0	V	
Relative Humidity		95	%	

Recommended Operating Conditions

Parameter	Min	Typical	Max	Unit	Note
Case Operating Temperature	0		70	℃	
	-40		85	℃	
Power Supply Voltage	3.135	3.3	3.465	V	
Date Rate		1.25		Gbps	
Supply Current			250	mA	
Link Distance			3	km	

Optical Characteristics (Tx:1310nm/Rx:1550nm)

Parameter	Symbol	Min	Typical	Max	Unit	Note
Transmitter						
Center Wavelength	λ	1275	1310	1350	nm	
Spectral width				3	nm	
Average Launch Optical Power	LOP	-14		-3	dBm	1
Extinction Ratio	ER	9			dB	
Rise/Fall time				260	ps	2
Total Jitter				200	ps	
Receiver						
Center Wavelength	λ	1530	1550	1570	nm	
Sensitivity	Psen			-23	dBm	
Saturation		-3			dBm	3.4
LOS Assert	LOSA	-40			dBm	
LOS De-assert	LOSD			-23	dBm	
LOS Hysteresis	LOSH	0.5		5	dB	

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Optical Characteristics (Tx:1550nm/Rx:1310nm)

Parameter	Symbol	Min	Typical	Max	Unit	Note
Transmitter						
Center Wavelength	λ	1530	1550	1570	nm	
Spectral Width				3	nm	
Average Launch Optical Power	LOP	-14		-3	dBm	1
Extinction Ratio	ER	9			dB	
Rise/Fall time				260	ps	2
Total Jitter				200	ps	
Receiver						
Center Wavelength	λ	1275	1310	1350	nm	
Sensitivity	Psen			-23	dBm	3.4
Saturation		-3			dBm	
LOS Assert	LOSA	-40			dBm	
LOS De-assert	LOSD			-23	dBm	
LOS Hysteresis	LOSH	0.5		5	dB	

Notes

1. Class 1 Laser Safety
2. Unfiltered, 20-80%. Complies with OC-24 eye masks when filtered
3. Measured with conformance signals defined in FC-PI-2 Rev. 10.0 specifications.
4. Measured with PRBS 2^7-1 at 10^{-10} BER

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Electrical Characteristics

Parameter		Symbol	Min	Typical	Max	Unit	Note
Transmitter							
Single ended data input swing		Vin, pp	250		1200	mV	
Tx Disable	High		Vcc-1.3		Vcc	V	
	Low		Vee		Vee+0.8		
Tx Fault	High		Vcc-0.5		Vcc		
	Low		Vee		Vee+0.5		
Input Diff. Impedance		Zin		100		Ω	AC coupled
Receiver							
Single ended data output swing		Vout, pp	300	400	800	mV	1
Data output rise time		Tr			175	ps	20-80%
Data output fall time		tf			175	ps	20-80%
Rx LOS		High	Vcc-0.5		Vcc	V	
		Low	Vee		Vee+0.5		

Notes

1.Into 100 ohm differential termination

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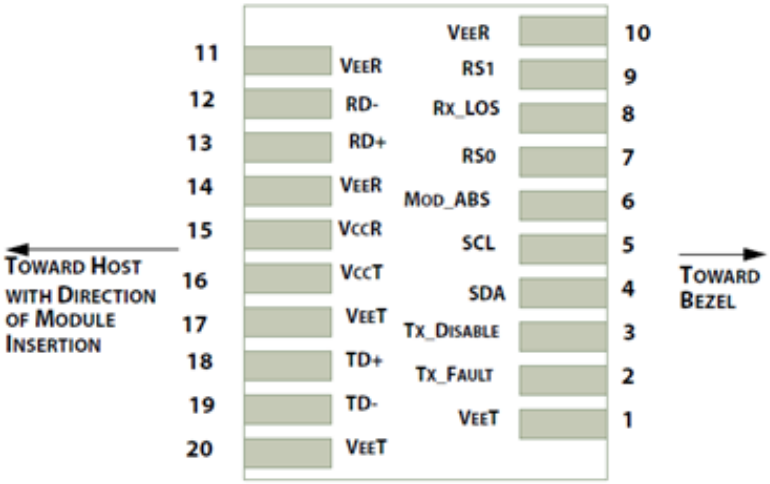
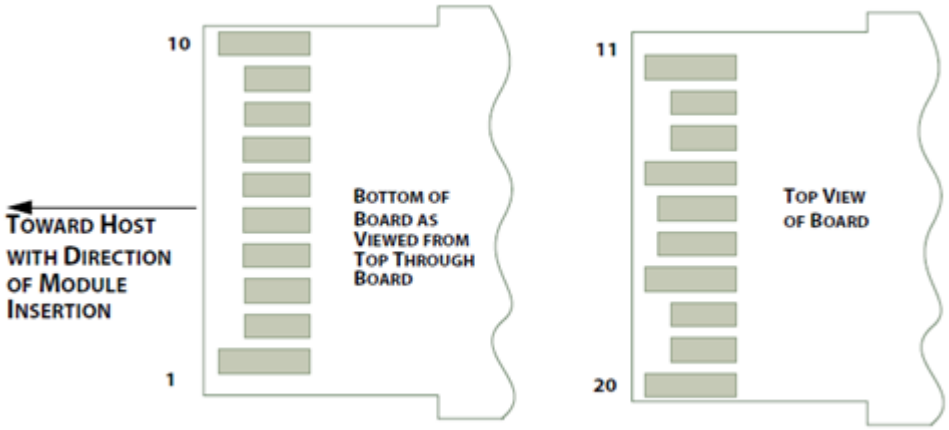
SFP Module Pad Assignments and Descriptions





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	

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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	

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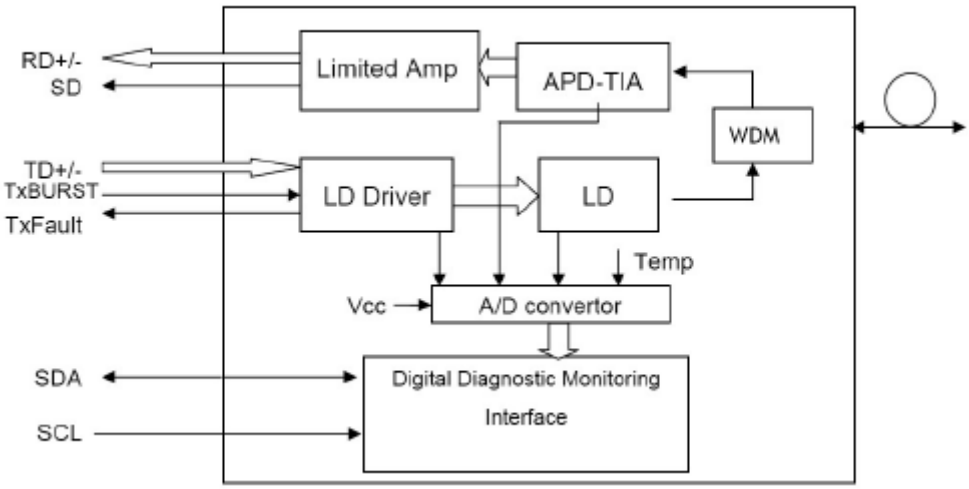
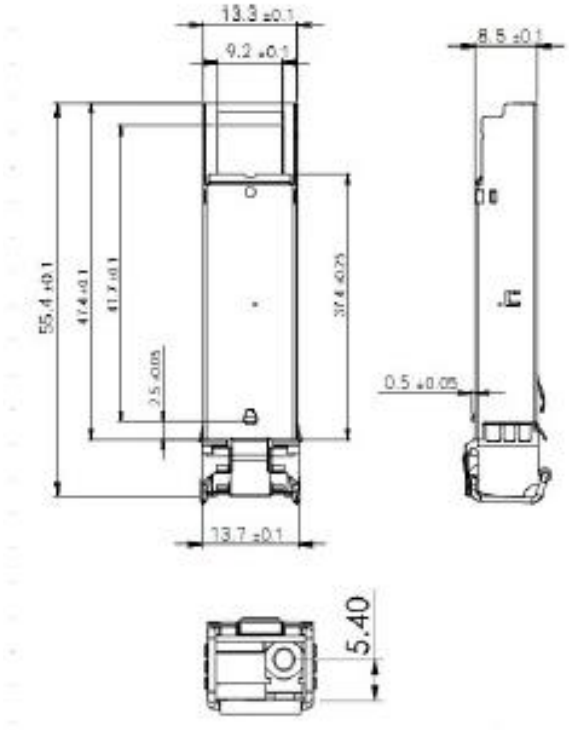
Transceiver Block Diagram



Mechanical Design Diagram

Unit: mm



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