产 品 规 格 书

Product Specification Sheet

TOP-BIDI-155M-80AD/BD

RoHS Compliant 155M 1490/1550nm(1550/1490nm) 80KM Transceiver

E-mali : csale@topsfp.com

PRODUCT FEATURES

- Up to 155Mb/s data links
- DFB laser transmitter
- PIN photo-detector
- Up to 80KM on 9/125µm SMF
- Hot-pluggable SFP footprint
- BIDILC/UPC type pluggable optical interface
- Low power dissipation
- Metal enclosure, for lower EMI
- RoHS compliant and lead-free
- Single+3.3V power supply
- Support Digital Diagnostic Monitoring interface
- Compliant with SFF-8472
- Case operating temperature Commercial:0°Cto +70°C Extended:-10°Cto +80°C Industrial:-40°Cto+85°C

APPLICATIONS

- Switch to Switch Interface
- Fast Ethernet
- Switched Backplane Applications
- Router/Server Interface
- Other Optical Links

STANDARD

- SFP+MSA Compliant
- SFF-8472reversion9.5compliant
- IEEE802.3-2005compliant
- Telcordia GR-468-COREcompliant
- FCC47CFRPart15,ClassBcompliant
- FDA21CFR1040.10and1040.11,class1compliant
- RoHS compliant

PRODUCT DESCRIPTIONS

TOP-BIDI-155M-80AD/BD optical transceivers are designed for optical interfaces for data communications with

single mode fiber(SMF). The transceiver designs are optimized for high performance and cost effective to supply customers the best solutions for telecom applications.

FUNCTIONAL DIAGRAM
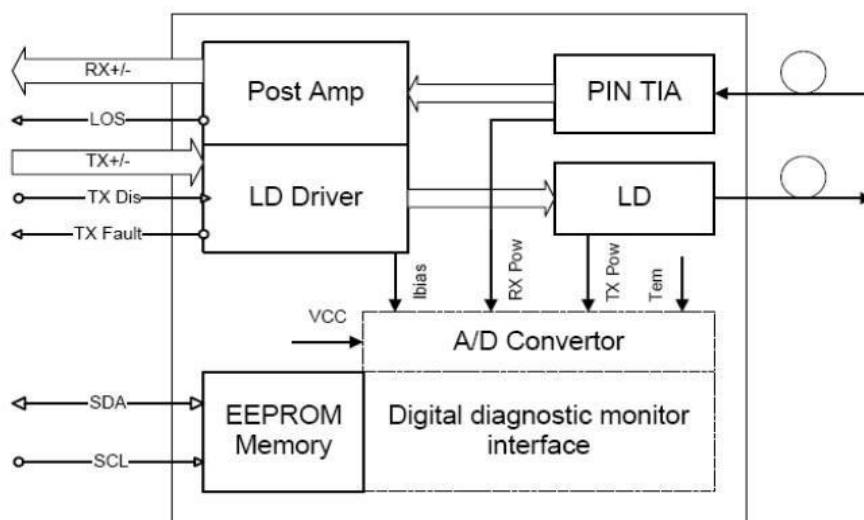
Ordering information

ProductpartNumber	Data Rate (Mbps)	Media	Wavelength(nm)	Transmission Distance(km)	TemperatureRange（Tcase）（℃）	
TOP-BIDI-155M-80AD/BD-c	155	Singlemode fiber	1490/1550(1550/1490)	80	0~70	commercial
TOP-BIDI-155M-80AD/BD-e	155	Singlemode fiber	1490/1550(1550/1490)	80	-10~80	extended
TOP-BIDI-155M-80AD/BD-i	155	Singlemode fiber	1490/1550(1550/1490)	80	-45~85	industrial

ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Min.	Max.	Unit	Note
SupplyVoltage	Vcc	-0.5	4.0	V	
StorageTemperature		-40	85	°C	
RelativeHumidity		5	95	%	

Note:Stress in excess of the maximum absolute ratings can cause permanent damage to the module

GERERAL OPERATING CHARACTERISTICS

Parameter	Symbol	Min.	Typ	Max.	Unit	Note
DataRate			155		Mb/s	
SupplyVoltage	Vcc	3.13	3.3	3.47	V	
SupplyCurrent	Icc$_5$			280	mA	
OperatingCaseTemp.	Tc	0		70	°C	TOP-BIDI-155M-80AD/BD-c
		-10		80	°C	TOP-BIDI-155M-80AD/BD-e
		-40		85	°C	TOP-BIDI-155M-80AD/BD-i

ELECTRICAL INPUT/OUTPUT CHARACTERISTICS

Transmitter

Parameter		Symbol	Min.	Typ	Max.	Unit	Note
Diff.inputvoltageswing			120		820	mVpp	1
TxDisableinput	H	VIH	2.0		Vcc+0.3	V	
	L	VIL	0		0.8		
TxFaultoutput	H	VOH	2.0		Vcc+0.3	V	2
	L	VOL	0		0.8		
InputDiff.Impedance		Zin		100		Ω	

Receiver

Parameter		Symbol	Min.	Typ	Max.	Unit	Note
Diff.outputvoltageswing			340	650	800	mVpp	3
RxLOSOutput	H	VOH	2.0		Vcc+0.3	V	2
	L	VOL	0		0.8		

Note1)TD+/- are internally AC coupled with100Ω differential termination inside the module.
Note2)Tx Fault and RxLOS are open collector outputs, which should be pulled up with 4.7k to10kΩ
resistors on the host board. Pull up voltage between2.0VandVcc+0.3V.
Note3)RD+/- outputs are internally AC coupled, and should be terminated with100Ω(differential)at the user
SERDES.

OPTICAL CHARACTERISTICS

Transmitter

arameter	Symbol	Min.	Typ	Max.	Unit	Note
OperatingWavelength	λC	1470	1490	1510	nm	
		1530	1550	1570		
Ave.outputpower(Enabled)	Po	-5		0	dBm	1
ExtinctionRatio	ER	8.2			dB	1
RMS spectralwidth	Δλ			4	nm	
Rise/Falltime(20%~80%)	Tr/Tf			0.26	ps	2
OutputEyeMask	TelcordiaGR-253-COREandITU-TG.957compatible					

Note (1):Measureat2^23-1 NRZPRBS pattern
Note (2): Transmitter eye mask definition

Receiver

Parameter	Symbol	Min.	Typ	Max.	Unit	Note
OperatingWavelength		1530	1550	1570	nm	
		1470	1490	1510		
Sensitivity	Psen			-32	dBm	3
Min.overload	Pimax	-8			dBm	
LOSAssert	Pa	-45			dBm	
LOSDe-assert	Pd			-33	dBm	
LOSHysteresis	Pd-Pa	0.5		6	dB	

Note1)Measured at10.3125b/swithPRBS231–1NRZtest pattern. Note2) 20%~80%
Note3) Under the ER worst case, measured at10.3125Gb/swithPRBS231- 1NRZtest
pattern for BER<1x10-12

Digital Diagnostic Functions

TOP-BIDI-155M-80AD/BD transceivers support the 2-wire serial communication protocol as defined in the SFPMSA. It is very closely relatedtotheE2PROMdefined in the GBIC standard ,with the same electrical specifications.

The standard SFP serial ID provides access to identification information that describes the transceiver's capabilities, standard interfaces, manufacturer, and other information.

Additionally, TOP-BIDI-155M-80AD/BD transceivers provide a unique enhanced digital diagnostic monitoring interface, which allows real-time access to device

operating parameters such as transceiver temperature, laser bias current, transmitted optical power, received optical power and transceiver supply voltage. It also defines a sophisticated system of alarm and warning flags, which alerts end-users when particular operating parameters are outside of a factory set normal range.

The SFPMSA defines a 256-byte memory map in E2PROM that is accessible over a 2-wire serial interface at the 8 bit address1010000X(A0h).The digital diagnostic monitoring interface makes use of the 8 bit address 1010001X(A2h),so the originally defined serial ID memory map remains unchanged. The interface is identical to, and is thus fully backward compatible with both the GBIC Specification and the SFP Multi Source Agreement.

The operating and diagnostics information is monitored and reported by a Digital Diagnostics Transceiver Controller(DDTC)inside the transceiver, which is accessed through a 2-wire serial interface. When the serial protocol is activated, the serial clock signal (SCL,ModDef1)is generated by the host. The positive edge clocks data into the SFP transceiver into those segments of the E2PROM that are not write-protected. The negative edge clocks data from the SFP transceiver. The serial data signal(SDA,ModDef2)is bi-directional for serial data transfer. The host uses SDA in conjunction with SCL to mark the start and end of serial protocol activation. The memories are organized as a series of 8-bit data words that can be addressed individually or sequentially.

Digital diagnostics for the TOP-BIDI-155M-80AD/BD are Internally calibrated bydefault.

Pin Definitions and Functions
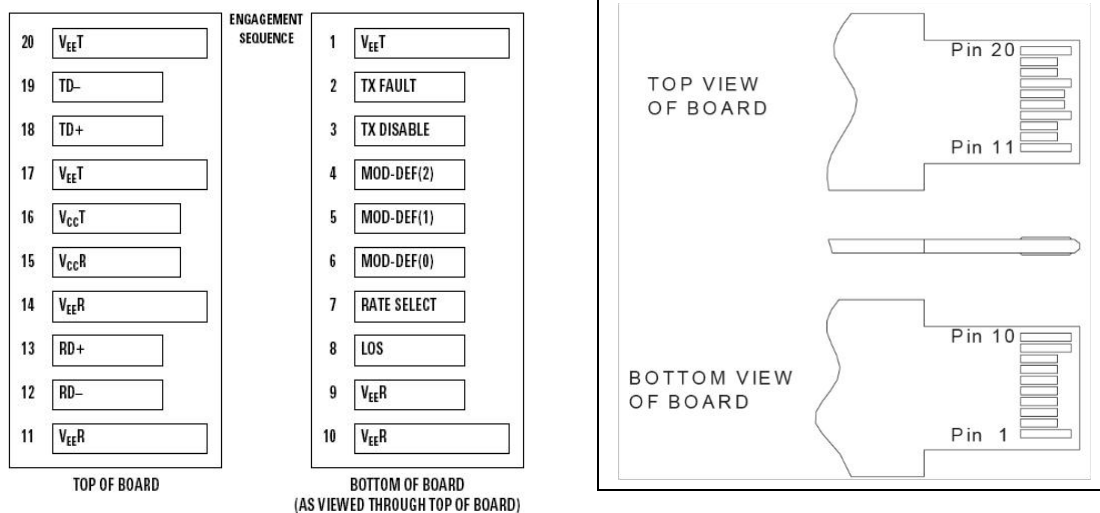
| PIN #	Name	Function	Notes
1	VeeT	Module transmitter ground	Note1
2	Tx Fault	Module transmitter fault	Note 2
3	Tx Disable	Transmitter Disable; Turns off transmitter laser output	Note 3
4	SDL	2 wire serial interface data input/output (SDA)	
5	SCL	2 wire serial interface clock input (SCL)	
6	MOD-ABS	Module Absent, connect to VeeR or VeeT in the module	Note 2
7	RS0	Rate select0,optionally control SFP+ receiver. When high, input data rate >4.5Gb/s;when low, input data rate <=4.5Gb/s	
8	LOS	Receiver Loss of Signal Indication	Note4
9	RS1	Rate select0,optionally control SFP+ transmitter. When high, input data rate >4.5Gb/s;when low, input data rate <=4.5Gb/s	
10	VeeR	Module receiver ground	Note 1
11	VeeR	Module receiver ground	Note 1
12	RD-	Receiver inverted data out put	
13	RD+	Receiver non-inverted data out put	
14	VeeR	Module receiver ground	Note 1
15	VccR	Module receiver 3.3V supply	
16	VccT	Module transmitter 3.3V supply	
17	VeeT	Module transmitter ground	Note 1
18	TD+	Transmitter inverted data out put	
19	TD-	Transmitter non-inverted data out put	
20	VeeT	Module transmitter ground	Note1

Note1)The module ground pins shall be isolated from the module case.
Note2)This pin is an open collector/drain output pin and shall be pulled up with
4.7K-10Kohmsto Host_Vcc on the host board.
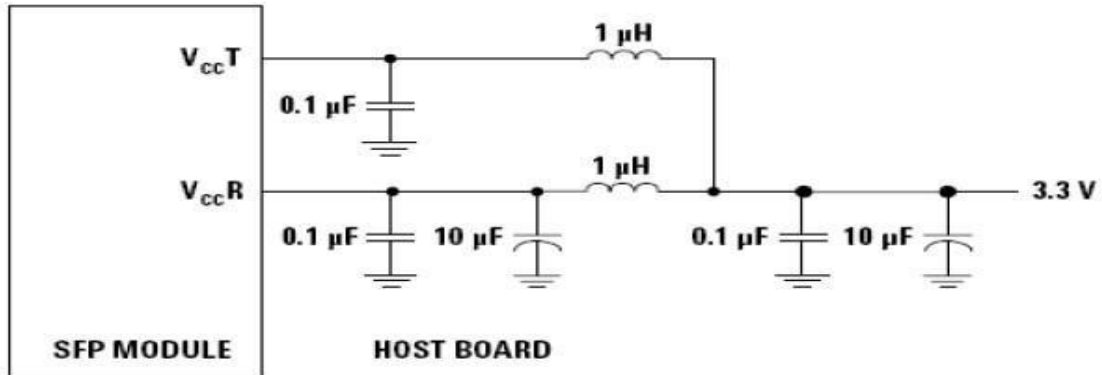Note3)This pin shall be pulled up with 4.7K-10Kohmsto VccT in the module.
Note4)This pin is an open collector/drain output pin and shall be pulled up with
4.7K-10KohmstoHost_Vcc on the host board. In FC designated as RX_LOS,in SONET
designated as LOS, and in Ethernet designated at Signal Detect.

TYPICAL INTERFACE CIRCUIT
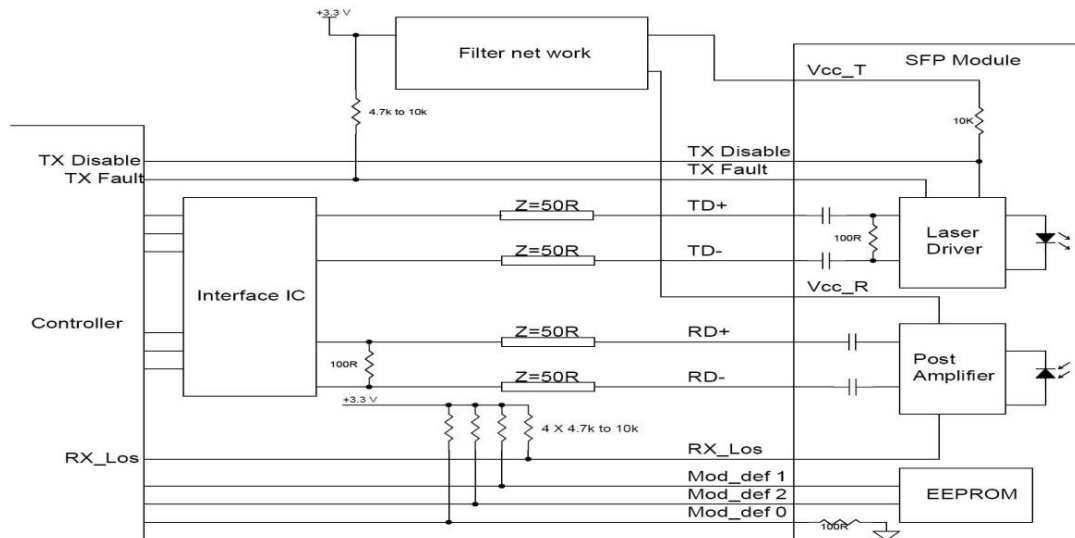
Recommended power supply filter

Note: Inductors with DC resistance of less than1Ωshould be used in order to maintain the required voltage at the SFP input pin with3.3Vsupply voltage. When the recommended supply filtering network is used, hot plugging of the SFP transceiver module will result in an in rush current of no more than 30m A greater than the steady state value

PACKAGE DIMENSIONS
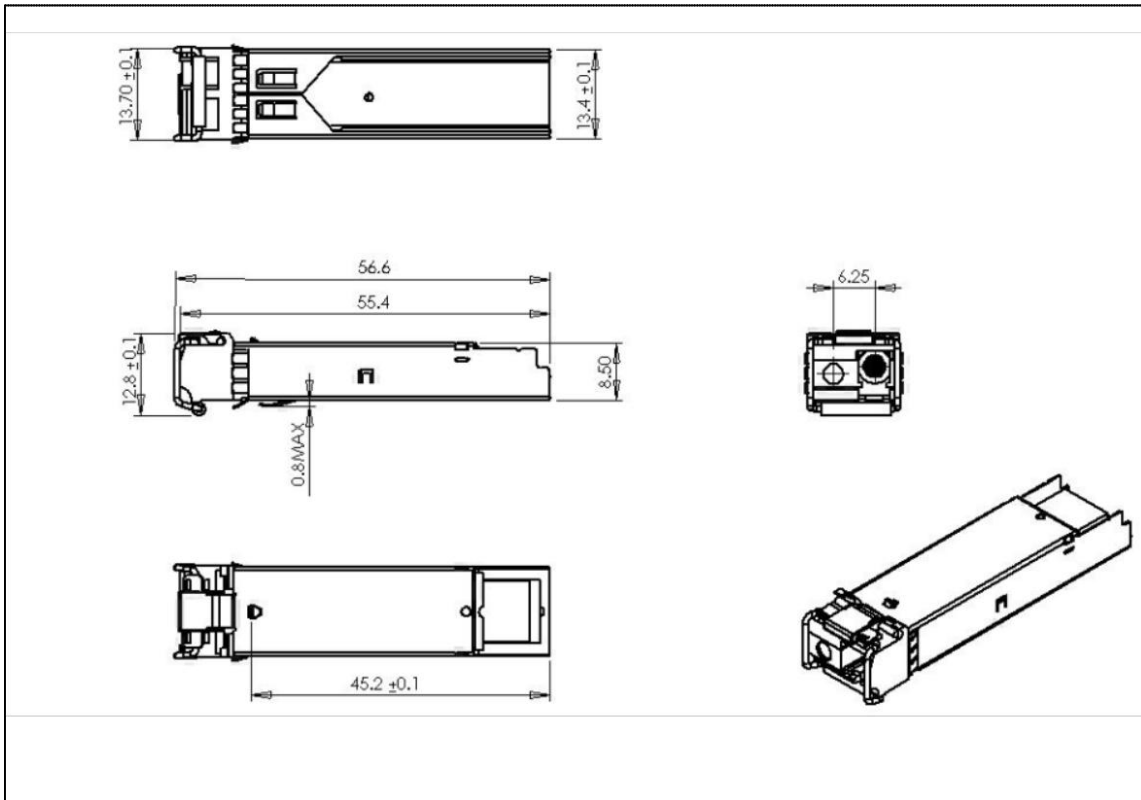
Topstar Technology Industrial Co., Ltd

Add: F5, Rongcheng Building, 28 Yayuan Road Wuhe Community, BanTian Street, Shenzhen, China

Tel: +86 755 8255 2969 Email:lisa@topsfp.com

Skype: lisalin6565   Whatsapp: +86 13798265065

Wechat: 251081707

Facebook and Linked in: Topstar Technology Industrial Co., Ltd