



TOPSTAR TECHNOLOGY INDUSTRIAL CO., LIMITED

产品规格书

Product Specification Sheet

TOP-BIDI-2.5G-20A/B

RoHS Compliant 2.5G 1310/1550nm(1550/1310nm) 20KM Transceiver



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PRODUCT FEATURES

- Up to 2.5Gb/s data links
- DFB laser transmitter
- PIN photo-detector
- Up to 20km on 9/125 μ m 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+3.3Vpowersupply
- 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

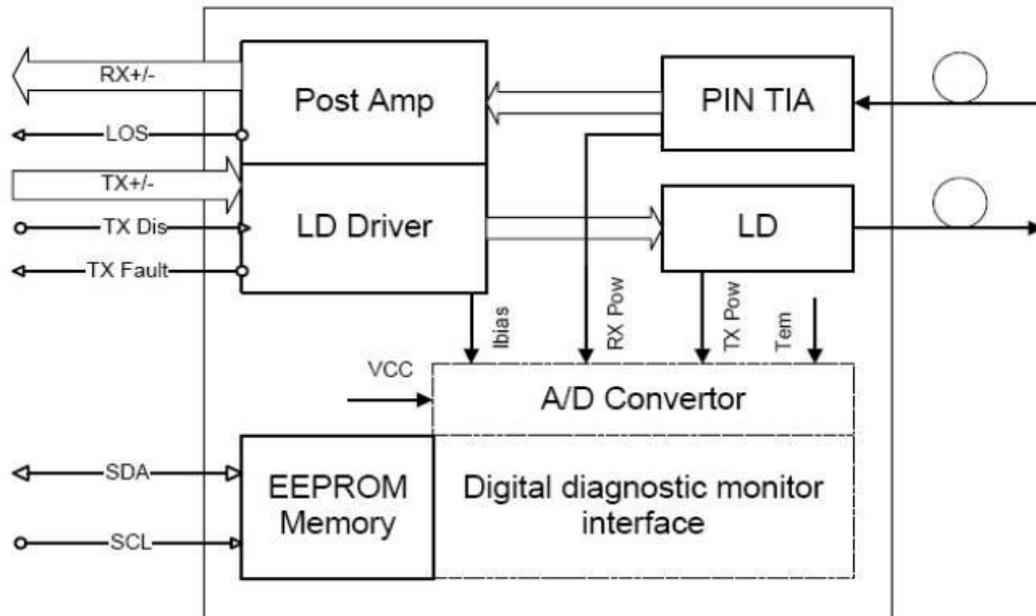
- SFP+MSA Compliant
- SFF-8472reversion 9.5 compliant
- IEEE802.3-2005 compliant
- Telcordia GR-468-COREcompliant
- FCC47CFRPart15,Class B compliant
- FDA21CFR1040.10and1040.11,class1compliant
- RoHS compliant



PRODUCTION DESCRIPTION

TOP-BIDI-2.5G-20AD/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

Product part Number	Data Rate (Gbps)	Media	Wavelength(n m)	Transmission Distance(k m)	TemperatureRange (Tcase) (°C)	
TOP-BIDI-2.5G-20AD/BD-c	2.5	Singlemode fiber	1310/1550(1550/1310)	20	0~70	commercial
TOP-BIDI-2.5G-20AD/BD-e	2.5	Singlemode fiber	1310/1550(1550/1310)	20	-10~80	extended
TOP-BIDI-2.5G-20AD/BD-i	2.5	Singlemode fiber	1310/1550(1550/1310)	20	-45~85	industrial



ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Min	Max	Unit	Note
Supply Voltage	Vc	-0.5	4.0	V	
Storage Temperature		-40	85	°C	
Relative Humidity		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
Data Rate			2.5		Gb/s	
Supply Voltage	Vcc	3.13	3.3	3.47	V	
Supply Current	Icc _s			280	mA	
Operating Case Temp.	Tc	0		70	°C	TOP-BIDI-2.5G-20AD/BD-c
		-10		80	°C	TOP-BIDI-2.5G-20AD/BD-e
		-40		85	°C	TOP-BIDI-2.5G-20AD/BD-i

ELECTRICAL INPUT/OUTPUT CHARACTERISTICS

Transmitter

Paramete	Symbol	Min.	Typ	Max.	Unit	Note
Diff. input voltage swing		120		820	mVpp	1
Tx Disable input	H	VIH	2.0	Vcc+0.3	V	
	L	VIL	0	0.8		
Tx Fault output	H	VOH	2.0	Vcc+0.3	V	2
	L	VOL	0	0.8		
Input Diff. Impedance	Zin		100		Ω	

Receiver

Paramete	Symbol	Min.	Typ	Max.	Unit	Note
Diff. output voltage swing		340	650	800	mVpp	3
RxLOS Output	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 between 2.0VandVcc+0.3V.
Note3)RD+/- outputs are internally AC coupled, and should be terminated with100Ω(differential)at the user SERDES.

OPTICAL CHARACTERISTICS

Table with 7 columns: Parameter, Symbol, Min., Typ, Max., Unit, Note. Rows include Transmitter parameters like Operating Wavelength, Ave. output, Extinction Ratio, RMS spectralwidth, Rise/Falltime, and Output Eye Mask.

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

Table with 7 columns: Parameter, Symbol, Min., Typ, Max., Unit, Note. Rows include Receiver parameters like Operating Wavelength, Sensitivi, Min. overload, LOS Assert, LOS De-assert, and LOS Hysteresis.

Note1)Measured at 10.3125b/swithPRBS231-1NRZ test pattern.
Note2) 20%~80%
Note3) Under the ER worst case, measured at10.3125Gb/s with PRBS231- 1NRZtest pattern for BER<1x10-12

Digital Diagnostic Functions

TOP-BIDI-2.5G-20AD/BD transceivers support the 2-wire serial communication protocol as defined in the SFPMSA. It is very closely related to the E2PROM defined 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.



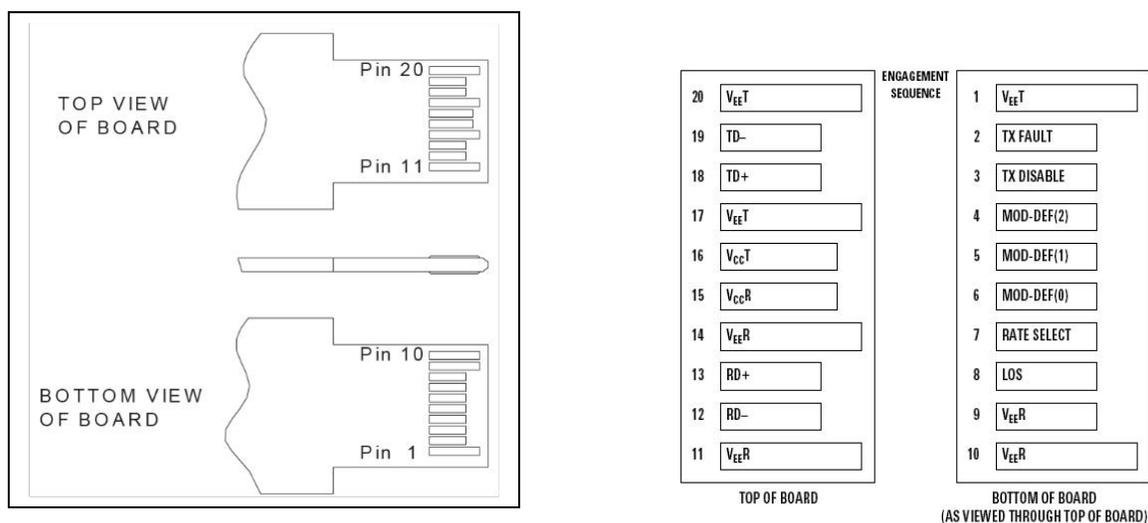
Additionally, TOP-BIDI-2.5G-20AD/BD transceivers provide a unique enhanced digital diagnostic monitoring interface, which allows real-time access to device operating parameters such as transceiver temperature, laser bias current, transmitted optical power, received optical power and transceiver supply voltage. It also defines a sophisticated system of alarm and warning flags, which alert send-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 address 1010000X(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.

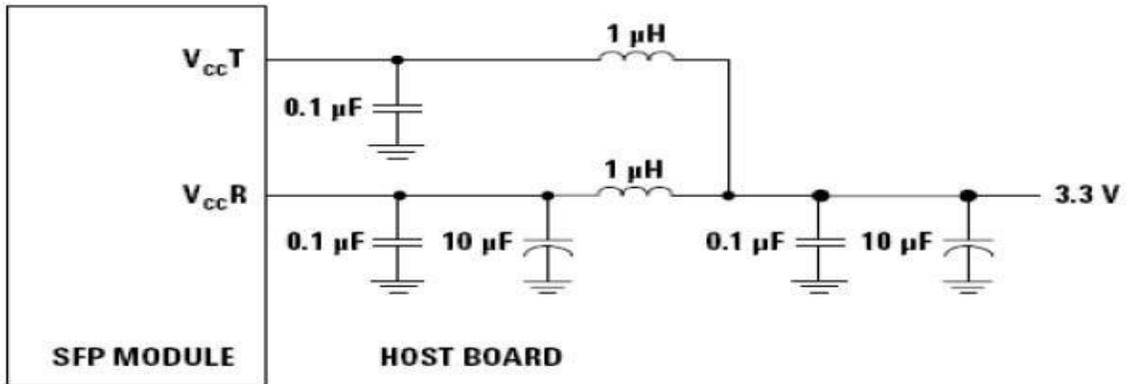
Digital diagnostics for the TOP-BIDI-2.5G-20AD/BD are Internally calibrated by default.

Pin Definitions and Functions



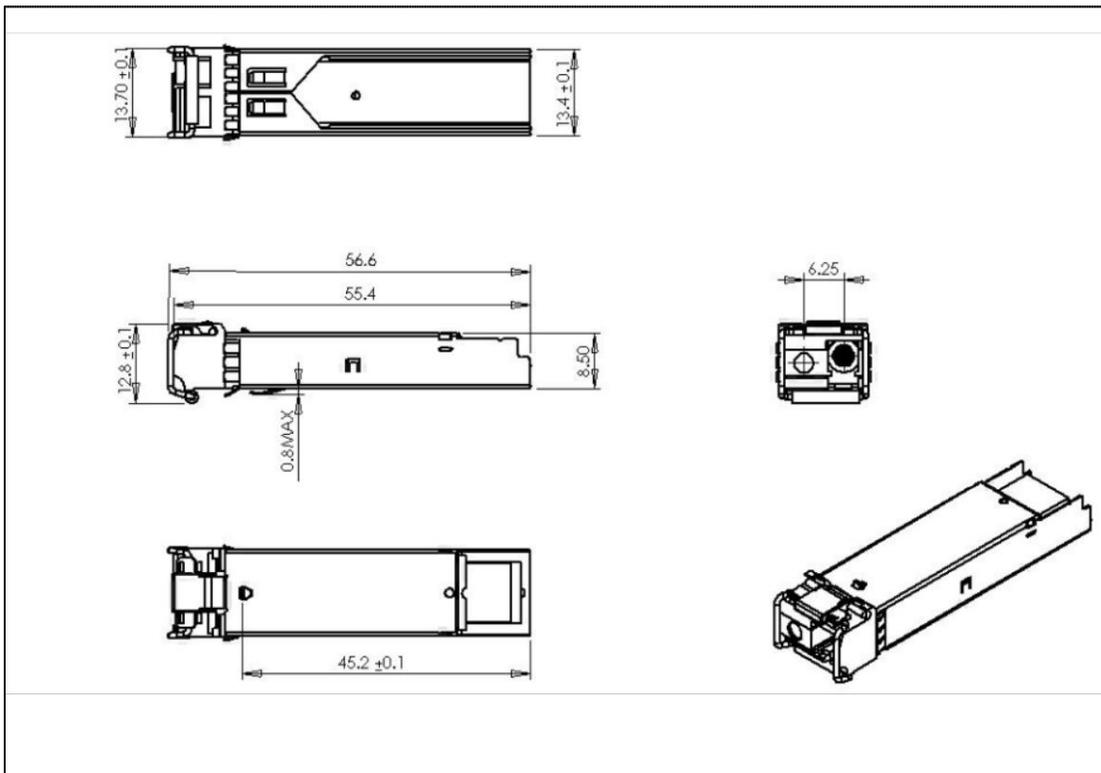


Recommended power supply filter



Note: Inductors with DC resistance of less than 1Ω should be used in order to maintain the required voltage at the SFP input pin with 3.3V supply voltage. When this recommended supply filtering network is used, hot plugging of the SFP transceiver module will result in an inrush current of no more than 30mA greater than the steady state value.

PACKAGE DIMENSIONS





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