

1.25Gb/s SFP 1550nm 160km Industrial Type

PRODUCT FEATURES

- Transceiver unit with independent
- FP laser transmitter and PIN photo-detector
- Dual Data-rate of 1.25Gbps/1.0625Gbps Operation
- Up to 160KM transmission distance on 9/125 μ m SMF
- Standard serial ID information compliant with SFP MSA
- SFP MSA package with duplex LC connector
- Digital Diagnostic Monitor Interface
- Very low EMI and excellent ESD protection
- +3.3V single power supply
- Wide operating temperature range
- RoHS compliant
- Case operating temperature
 - Commercial: 0°C to +70°C
 - Extended: -10°C to +80°C
 - Industrial: -40°C to +85°C

APPLICATIONS

- Gigabit Ethernet
- Fiber Channel
- Switch to Switch interface
- Switched backplane applications
- Router/Server interface
- Other optical transmission systems

STANDARD

- SFP MSA (Version Sept.14 2000) compliant
- SFF-8472 (Rev 9.3, Aug. 2002) Digital Diagnostic Monitoring Interface for Optical Transceivers compliant
- IEEE 802.3z compliant
- ANSI specifications for Fiber Channel compliant
- Telcordia GR-468-CORE compliant

ORDERING INFORMATION

Product Part Number	Data Rate	Media	Wavelength	Transmission Distance	Temperature Range (Tcase)
ZSFP5512-LDH5	1.25	SMF	1550	160Km	0~70°C
ZSFP5512-iLDH5	1.25	SMF	1550	160Km	-40~+85°C

ABSOLUTE MAXIMUM RATINGS

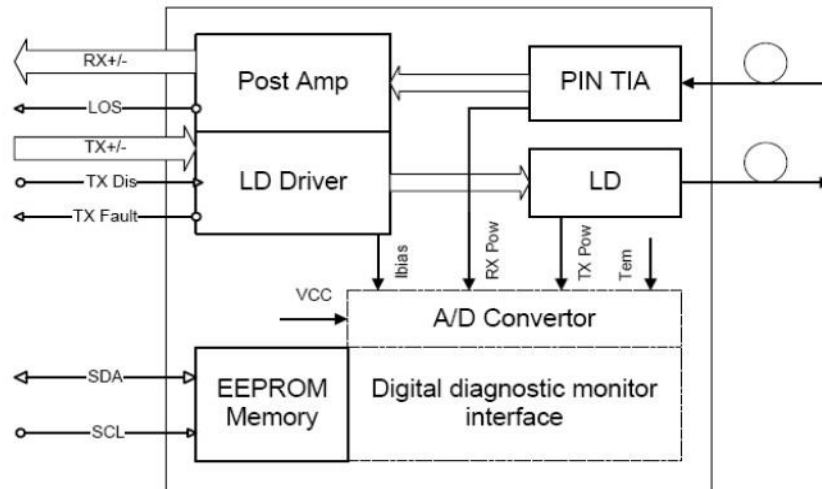
Parameter	Symbol	Min.	Max	Unit	Notes
Supply Voltage	Vcc	-0.5	4.0	V	
Storage Temperature		-40	85	°C	
Relative Humidity			85	%	

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

GENERAL OPERATING CHARACTERISTICS

Parameter	Symbol	Min.	Typ	Max.	Unit	Note
Data Rate	Ethernet		1.25		Gb/s	
	Fiber Channel					
Supply Voltage	Vcc	3.13	3.3	3.47	V	
	Vcc				V	
Supply Current	Icc ₅				mA	
	Icc ₃			450	mA	
Operating Case Temp.	Tc	0		70	°C	

FUNCTIONAL DIAGRAM



ELECTRICAL INPUT/OUTPUT CHARACTERISTICS

Parameter	Symbol	Min.	Typ	Max.	Unit	Note
Transmitter						
Diff. input voltage swing		120		820	mVpp	1
Tx Disable input	H	V _{IH}	2.0	V _{cc} +0.3	V	
	L	V _{IL}	0	0.8		
Tx Fault output	H	V _{OH}	2.0	V _{cc} +0.3	V	2
	L	V _{OL}	0	0.8		
Input Diff. Impedance	Z _{in}		100		Ω	
Receiver						
Parameter	Symbol	Min.	Typ	Max.	Unit	Note
Diff. output voltage swing		340	650	800	mVpp	3
Rx LOS Output	H	V _{OH}	2.0	V _{cc} +0.3	V	2
	L	V _{OL}	0	0.8		

Note 1) TD+/- are internally AC coupled with 100Ω 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 10kΩ 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 100Ω (differential) at the user SERDES.

OPTICAL CHARACTERISTICS

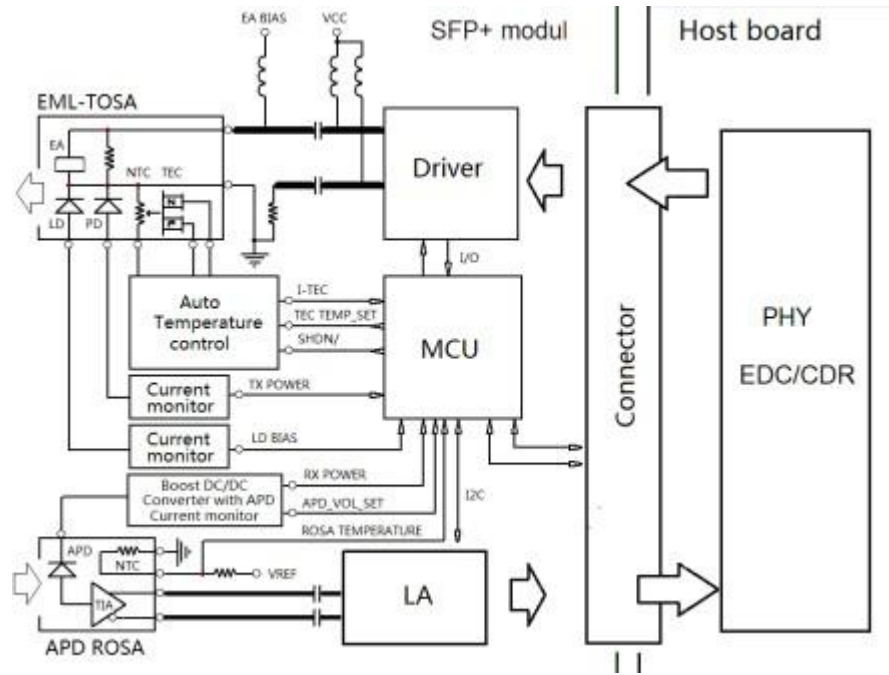
Parameter	Symbol	Min.	Typ	Max.	Unit	Note
Transmitter						
Operating Wavelength		1530		1565	nm	
Ave. output power (Enabled)	P _o	3		7	dBm	1
Extinction Ratio	ER	9			dB	1
RMS spectral width	Δλ			1	nm	
Rise/Fall time (20%~80%)	T _r /T _f			260	ps	2
Dispersion penalty				1	dB	
Output Optical Eye	Compliant with IEEE 0802.3ae					
Receiver						
Parameter	Symbol	Min.	Typ	Max.	Unit	Note
Operating Wavelength		1260		1600	nm	
Sensitivity	P _{sen}			-32	dBm	3
Min. overload	P _{imax}	-7			dBm	
LOS Assert	P _a	-45			dBm	
LOS De-assert	P _d			-34	dBm	
LOS Hysteresis	P _d -P _a	0.5		4	dB	

Note 1) Measured at 1250 Mb/s with PRBS 2²³ - 1 NRZ test pattern.

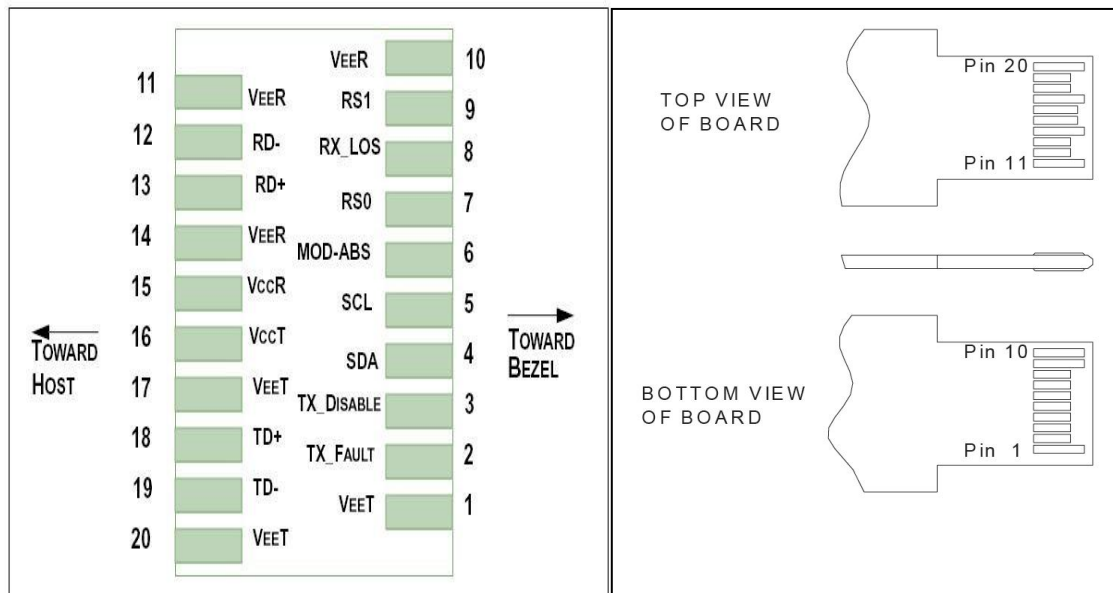
Note 2) Unfiltered, measured with a PRBS 2²³-1 test pattern @1.25Gbps

Note 3) Measured at 1250 Mb/s with PRBS 2²³ - 1 NRZ test pattern for BER < 1x10⁻¹²

FUNCTIONAL DIAGRAM



PIN DEFINITIONS AND FUNCTIONS



Pin	Symbol	Name/Description
1	VEET [1]	Transmitter Ground
2	Tx_FAULT [2]	Transmitter Fault
3	Tx_DIS [3]	Transmitter Disable. Laser output disabled on high or open
4	SDA [2]	2-wire Serial Interface Data Line
5	SCL [2]	2-wire Serial Interface Clock Line
6	MOD_ABS [4]	Module Absent. Grounded within the module
7	RS0 [5]	Rate Select 0
8	RX_LOS [2]	Loss of Signal indication. Logic 0 indicates normal operation
9	RS1 [5]	Rate Select 1
10	VEER [1]	Receiver Ground
11	VEER [1]	Receiver Ground
12	RD-	Receiver Inverted DATA out. AC Coupled
13	RD+	Receiver DATA out. AC Coupled
14	VEER [1]	Receiver Ground
15	VCCR	Receiver Power Supply
16	VCCT	Transmitter Power Supply
17	VEET [1]	Transmitter Ground
18	TD+	Transmitter DATA in. AC Coupled
19	TD-	Transmitter Inverted DATA in. AC Coupled
20	VEET [1]	Transmitter Ground

Notes:

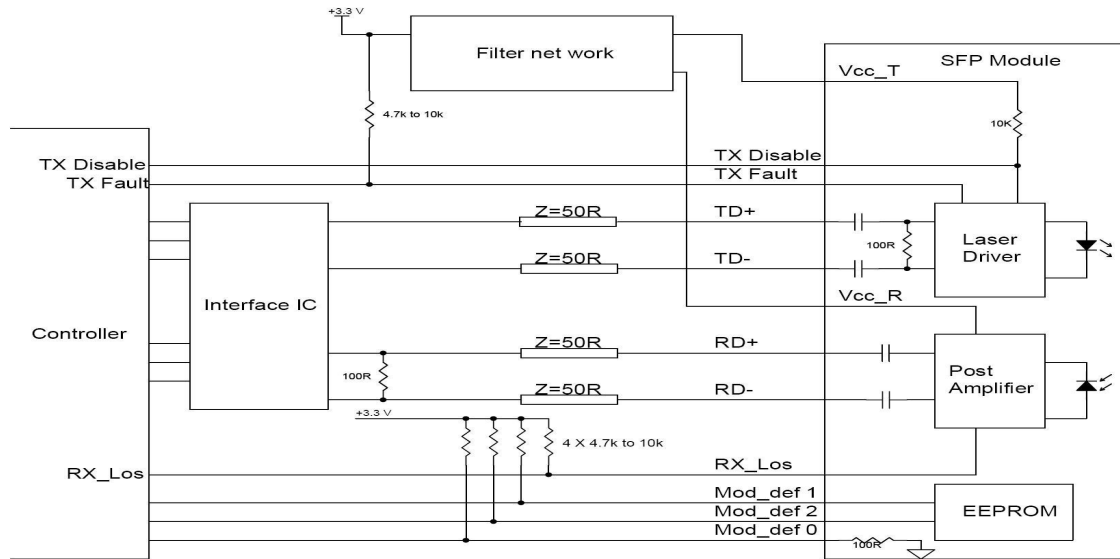
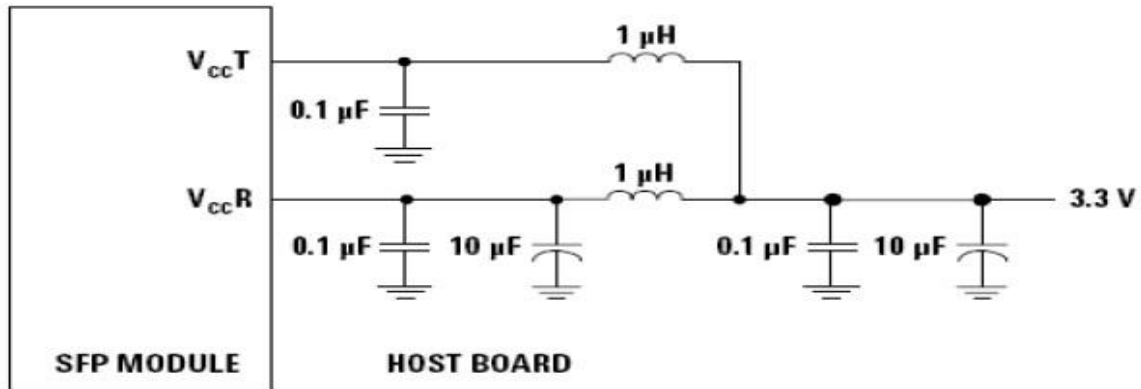
[1] Module circuit ground is isolated from module chassis ground within the module.

[2].should be pulled up with 4.7k – 10k ohms on host board to a voltage between 3.15V and 3.6V.

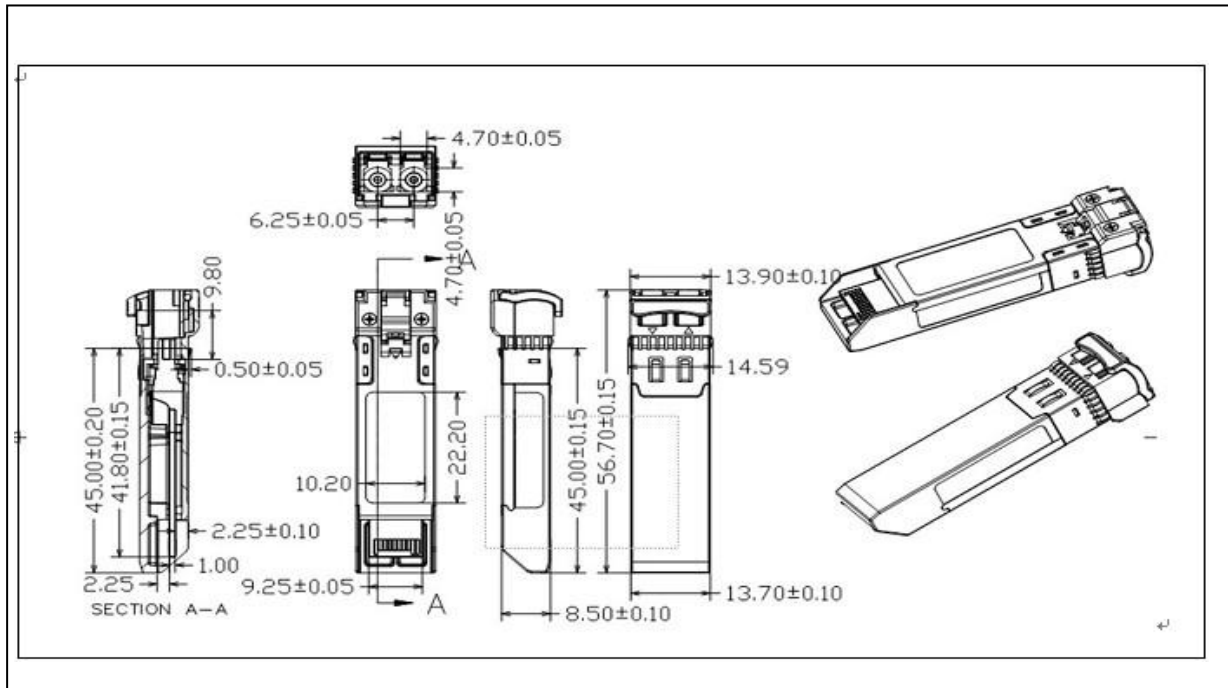
[3]Tx_Disable is an input contact with a 4.7 kΩ to 10 kΩ pullup to VccT inside the module.

[4]Mod_ABS is connected to VeeT or VeeR in the SFP+ module. The host may pull this contact up to Vcc_Host with a resistor in the range 4.7 kΩ to 10 kΩ. Mod_ABS is asserted “High” when the SFP+ module is physically absent from a host slot.

[5] RS0 and RS1 are module inputs and are pulled low to VeeT with > 30 kΩ resistors in the module.

TYPICAL INTERFACE CIRCUIT

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 the recommended supply filtering network is used, hot plugging of the SFP transceiver module will result in an inrush current of no more than 30 mA greater than the steady state value.

PACKAGE DIMENSIONS

REGULATORY COMPLIANCE

Feature	Reference	Performance
Electrostatic discharge (ESD)	IEC/EN 61000-4-2	Compatible with standards
Electromagnetic Interference (EMI)	FCC Part 15 Class B EN 55022 Class B (CISPR 22A)	Compatible with standards
Laser Eye Safety	FDA 21CFR 1040.10, 1040.11 IEC/EN 60825-1, 2	Class 1 laser product
Component Recognition	IEC/EN 60950, UL	Compatible with standards
ROHS	2002/95/EC	Compatible with standards
EMC	EN61000-3	Compatible with standards

FOR MORE INFORMATION

Company: Shenzhen ZiLinkOpto Co., Ltd
Add: 5 Floor, Tianhui Building, Donghuan 1st Road, Longhua District, Shenzhen China
Tel: 86-755-21004789
Email: sales@zilinkopto.com
Website: www.zilinkopto.com