

● Features :

- GiSObit Ethernet
- GiSObit Fiber Channel
- SFP MSA package with Simplex LC connector
- Compliant with IEEE 802.3ah,
- Digital diagnostic monitor interface compatible with SFF-8472
- transmission with 9/125 μm SMF
- Single 3.3V Power Supply and LVTTTL Logic
- Very low EMI and excellent ESD protection
- Operating Case Temperature: 0°C ~+70°C
- RoHS compliant
- Class 1 laser safety certified

● Absolute Maximum Ratings

Table 1- Absolute Maximum Ratings

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Supply Voltage	V _{CC}	-0.5	-	+3.6	V	
Storage Temperature	T _S	-40	-	85	°C	
Operating Relative Humidity	RH	+5	-	+95	%	

Recommended Operating Conditions

Table 2- Recommended operating Conditions

Parameter	Symbol	Min.	Typ.	Max.	Units	Notes
Operating Case Temperature	T _C	0	-	70	°C	
Power Supply Voltage	V _{CC}	3.14	3.3	3.46	V	
Power Supply Current	I _{CC}	-	-	300	mA	
Power Dissipation	P _D	-	-	1	W	
Data Rate		-	1250	-	Mbps	

● Electrical Characteristics

Table 3- Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Units	Notes	
Differential Data Input Swing	V _{in p-p}	200	-	2400	mV	1	
Input Differential Impedance	R _{IN}	80	100	120	Ω		
Tx_Disable	Laser Disable	V _{OH}	2.0	-	V _{CC} +0.5	V	
	Normal Operation	V _{OL}	GND	-	GND+0.8	V	
TX_Fault	Transmitter Fault	V _{OH}	2.0	-	V _{CC} +0.5	V	

	Normal Operation	V_{OL}	GND	-	GND+0.8	V	
Differential Date Output Swing		$V_{out\ p-p}$	750	900	1050	mV	2
Rx_LOS	Los Signal	V_{OH}	2.0	-	$V_{CC}+0.5$	V	
	Normal Operation	V_{OL}	GND	-	GND+0.8	V	

Note:

1. Internally AC coupled, input termination may be required for CML or LVPECL applications.
2. Internally AC coupled, CML differential output stage.

● Optical Characteristics

Table 4-Optical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit		Notes
Transmitter							
Average Output Power	P_{OUT}	-9		-3	dBm	5km/20km	1
		-5		0		40km	
		0		5		80km	
Mean Wavelength	λ	1290	1310	1330	nm	SOBS-3512-xxxL	
		1480	1490	1500		SOBS-4512-xxxL	
		1540	1550	1560		SOBS-5312-xxxL SOBS-5412-xxxL	
Extinction Ratio	ER	9	-	-	dB		
Spectral Width(RMS)	$\Delta\lambda$	-	-	1	nm		
P_{out} @TX Disable Asserted	P_{OUT}	-	-	-45	dB		
Rise/Fall Time (20%~80%)	T_r/T_f			260	ps		
Optical Eye Mask	IEEE 802.3ah Compliant						
Receiver							
Receiver Power	P_{in}			-18	dBm	5km	2
			-	-23		20km/40km/80km	
Centre Wavelength	λ_c	1290	1310	1330	nm	SOBS-5312-xxxL	
		1480	1490	1500		SOBS-5412-xxxL	
		1530	1550	1570		SOBS-3512-xxxL SOBS-4512-xxxL	
Receiver Overload	$R_{sens,high}$	-3	-	-	dBm		
Damage Threshold For	$P_{in, damage}$	0					

Receive							
Receiver Reflectance	RX_r	-	-	-12	dB		
LOS De-Assert	LOS _D			-	dB	20km/40km/80km	
		-	-	-25			
LOS Assert	LOS _A	-35	-	-	dB	20km/40km/80km	
LOS Hysteresis		0.5		-			

Note:

1. Coupled into 9/125 SMF.
2. Measured with PRBS 2⁷-1 test pattern @1.25Gbps.BER=10E-12

● Recommended Interface Circuit

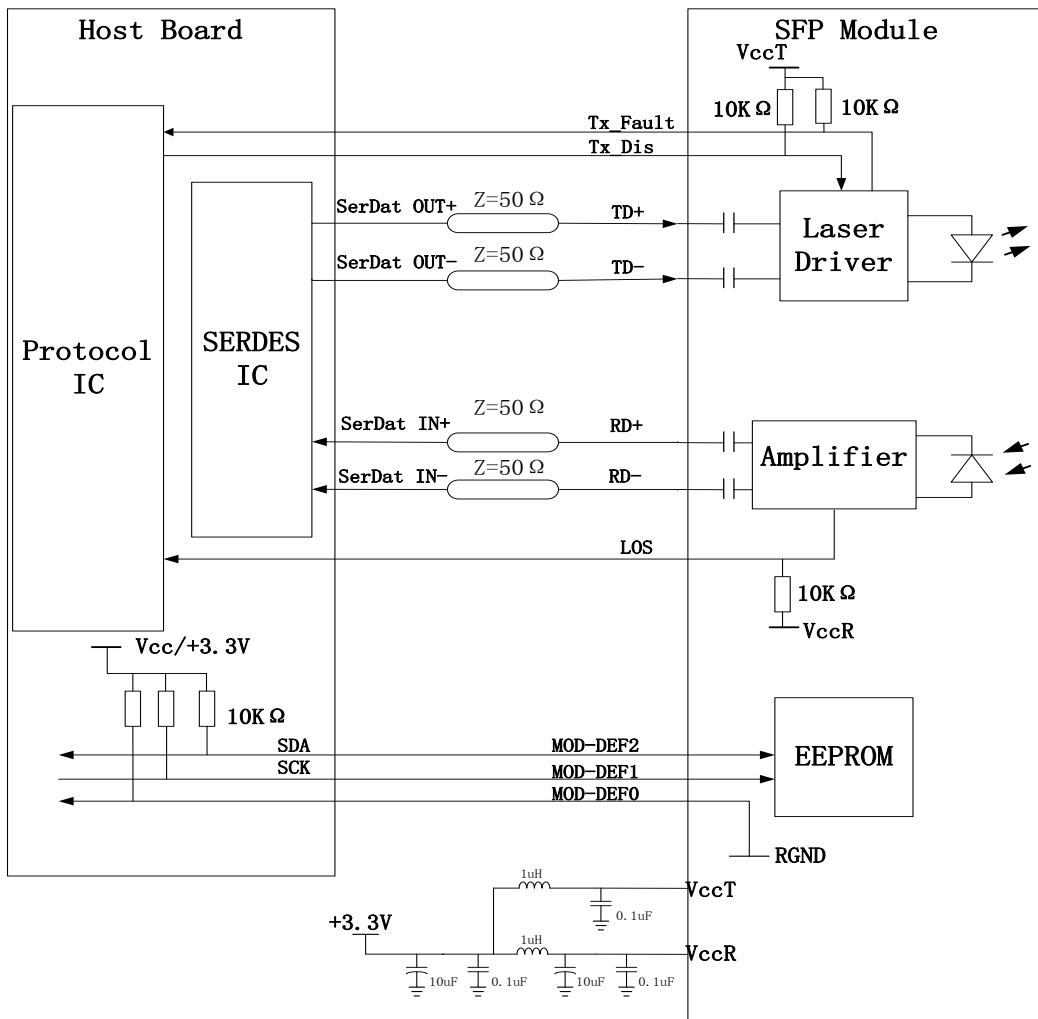


Figure 1, Recommended Interface Circuit

● Pin arrangement

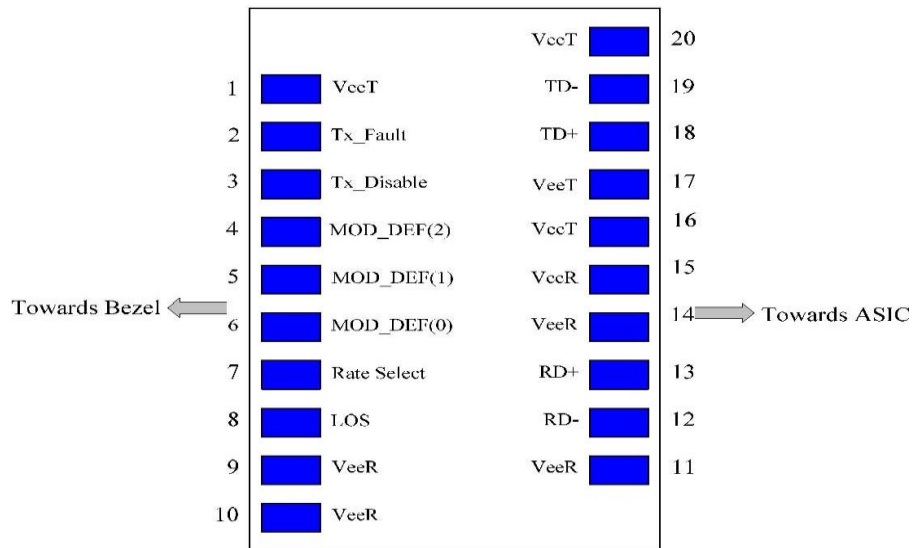


Figure 2, Pin View

Table 5-Pin Function Definitions

Pin	Name	FUNCTION	Plug Seq.	Notes
1	VeeT	Transmitter Ground	1	
2	TX Fault	Transmitter Fault Indication	3	1
3	TX Disable	Transmitter Disable	3	2,
4	MOD-DEF 2	Module Definition 2	3	3
5	MOD-DEF 1	Module Definition 1	3	3
6	MOD-DEF 0	Module Definition 0	3	3
7	Rate Select	Not Connect	3	
8	LOS	Loss of Signal	3	4
9	VeeR	Receiver Ground	1	
10	VeeR	Receiver Ground	1	
11	VeeR	Receiver Ground	1	
12	RD-	Inv. Received Data Out	3	
13	RD+	Received Data Out	3	
14	VeeR	Receiver Ground	1	
15	VccR	Receiver Power	2	3.3V ± 5%
16	VccT	Transmitter Power	2	3.3V ± 5%
17	VeeT	Transmitter Ground	1	
18	TD+	Transmit Data In	3	

19	TD-	Inv. Transmit Data In	3	
20	VeeT	Transmitter Ground	1	

Note:

- TX Fault is open collector output which should be pulled up externally with a 4.7K ~10KΩ resistor on the host board to voltage between 2.0V and $V_{CC}+0.3V$. Logic 0 indicates normal operation; logic 1 indicates a laser fault of some kind. In the low state, the output will be pulled to less than 0.8V.
- TX Disable input is used to shut down the laser output per the state table below. It is pulled up within the module with a 4.7~10K resistor.

Low (0- 0.8V):	Transmitter on
Between (0.8V and 2V):	Undefined
High (2.0 – $V_{CC}T$):	Transmitter Disabled
Open:	Transmitter Disabled
- MOD-DEF 0, 1, 2. These are the module definition pins. They should be pulled up with a 4.7~10K resistor on the host board to supply less than $V_{CC}T+0.3V$ or $V_{CC}R+0.3V$.
 - MOD-DEF 0 is grounded by the module to indicate that the module is present.
 - MOD-DEF 1 is clock line of two wire serial interface for optional serial ID.
 - MOD-DEF 2 is data line of two wire serial interface for optional serial ID.
- LOS (Loss of signal) is an open collector output, which should be pulled up with a 4.7k~10kΩ resistor on the host board to a voltage between 2.0V and $V_{CC}+0.3V$. Logic 0 indicates normal operation; logic 1 indicates loss of signal. In the low state, the output will be pulled to less than 0.8V.

● Digital Diagnostic Memory Map

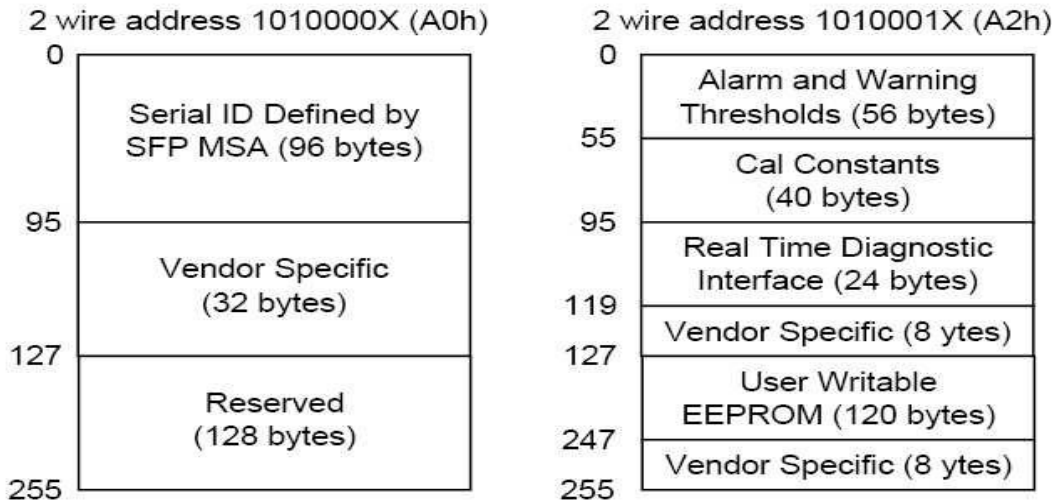


Figure 3, memory map

● Mechanical Diagram

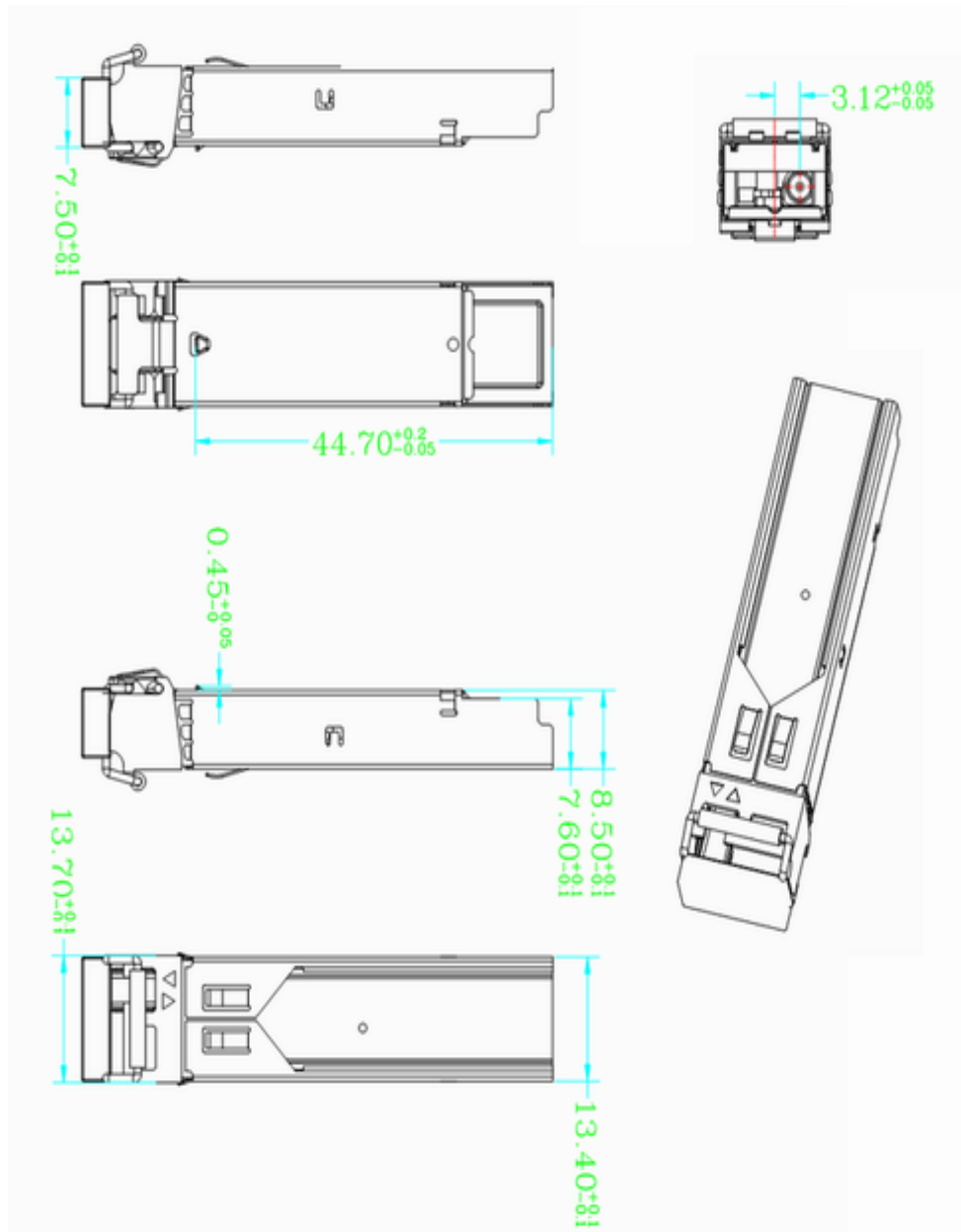


Figure 4, mechanical diagram

● Ordering Information

Table 6-ordering information

Part No.	DDM	Tx Wavelength	Rx Wavelength	Fiber Type	Optical Interface	Distance
SOSPb-3512-05D	YES	1310nm	1550nm	SMF	SC	5km
SOSPb-3512-05	NO					
SOSPb-5312-05D	YES	1550nm	1310nm	SMF	SC	5km
SOSPb-5312-05	NO					

SOSPB-3512-20D	YES	1310nm	1550nm	SMF	SC	20km
SOSPB-3512-20	NO					
SOSPB-5312-20D	YES	1550nm	1310nm	SMF	SC	20km
SOSPB-5312-20	NO					
SOSPB-3512-40D	YES	1310nm	1550nm	SMF	SC	40km
SOSPB-3512-40	NO					
SOSPB-5312-40D	YES	1550nm	1310nm	SMF	SC	40km
SOSPB-5312-40	NO					
SOSPB-4512-80D	YES	1490nm	1550nm	SMF	SC	80km
SOSPB-4512-80	NO					
SOSPB-5412-80D	YES	1550nm	1490nm	SMF	SC	80km
SOSPB-5412-80	NO					

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SFP Bi-Di 1.25Gbps Transceiver

SOSPB-3512-20D

SOSPB-5312-20D

SOSPB-3512-40D

SOSPB-5312-40D

SOSPB-4512-80D

SOSPB-5412-80D