

Feature:

1. Supports 9.95Gb/s to 10.3Gb/s Bit Rates
2. SFP+ package with LC connector
3. **DFB** Transmitter by 1310nm
4. Distance up to 40km (include 10,20,40km)
5. Power Dissipation < 1.5W
6. LVPECL compatible data input/output interface
7. Dispersion tolerance 800ps/nm (If >20km)
8. Low EMI and excellent ESD protection
9. laser safety standard IEC-60825 compliant
10. Compatible with RoHS
11. Compliant with MSA SFP+ Specification SFF-8431
12. Compatible with SFF8472



Application

- 10GBASE-LR at 10.31Gbps
- 10GBASE-LW at 9.95Gbps
- Other Optical Link

Absolute Maximum Ratings

Parameter	Symbol		Min	Max	Unit
Storage Temperature	TS		-40	+85	°C
Operating Temperature	TOP	Commercial level	-5	+70	°C
Supply Voltage	VCC		-0.5	+3.6	V
Voltage on Any Pin	VIN		0	VCC	V
Soldering Temperature ,Time	-			260°C, 10 S	°C,S

Operation Environment

Parameter	Symbol		Min.	Typ	Max.	Unit
Ambient Temperature	TAMB	Commercial level	0	-	70	°C
Power Supply Voltage	V _{CC-V_{EE}}		3.15	3.3	3.45	V
Power Dissipation					1	W
Data Rate	10GBASE-LR/ER/ZR			10.3125		Gbps

Optical Characteristics

(Ambient Operating Temperature 0°C to +70°C, V_{cc} = 3.3 V)

Parameter		Symbol	Min.	Typ.	Max.	Units
Transmitter Section						
Center Wavelength		λ_o	1300	1310	1320	nm
RMS Spectral Width		$\Delta\lambda$	-	-	1	nm
Side Mode Suppression Ratio		SMSR	30			dB
Average Output Power	10km	P _o	-6	-	-0	dBm
	20km		-2		+3	
	40km		1		+4	
Extinction Ratio		Er	3.5	-	-	dB
Dispersion Penalty					3.2	dB
Input Differential Impedance		Z _{in}	90	100	110	Ω
Relative Intensity Noise		RIN _{12OMA}			-128	dB/Hz
Total jitter		T _j			0.28	UI(p-p)
Receiver Section						
Center Wavelength		λ_o	1100		1610	nm
Receiver Sensitivity	10km	PIN	R _{sen}		-14	dBm
	20km				-14.4	
	40km				-17	
Receiver Overload		PIN	R _{ov}	0.5		dBm
Return Loss				12		dB
LOS Assert		PIN	LOS _A	-25		dBm
LOS Dessert		PIN	LOS _D		-17	dBm
LOS Hysteresis				0.5	4	dB

LOS	High		2.0		VCC+0.3	V
	Low		0		0.8	

Electrical Characteristics

(Ambient Operating Temperature 0°C to +70°C, Vcc = 3.3 V)

Parameter	Symbol	Min.	Typ.	Max.	unit
Transmitter Section					
Input Differential Impedence	Zin	90	100	110	Ohm
Data Input Swing Differential	Vin	180		1200	mV
TX Disable	Disable	2.0		Vcc	V
	Enable	0		0.8	V
TX Fault	Assert	2.0		Vcc	V
	Deassert	0		0.8	V
Transmit Disable Assert Time				10	uS
Receiver Section					
Output differential impedance	Zout		100		Ohm
Data output Swing Differential	Vout	300		850	mV
Data output rise time(20~80%)	tr	30			ps
Data output fall time (20~80%)	tf	30			
Rx_LOS	Assert	2.0		Vcc	V
	Deassert	0		0.8	V

Diagnostics

Parameter	Range	Accuracy	Unit	Calibration
Temperature	-5 ~ 75	±3	°C	Internal
Voltage	0 ~ VCC	0.1	V	Internal
Bias Current	0 ~ 12	0.3	mA	Internal
Tx Power	-8 ~ +5	±1	dBm	Internal
Rx Power	-26 ~ 0	±1	dBm	Internal

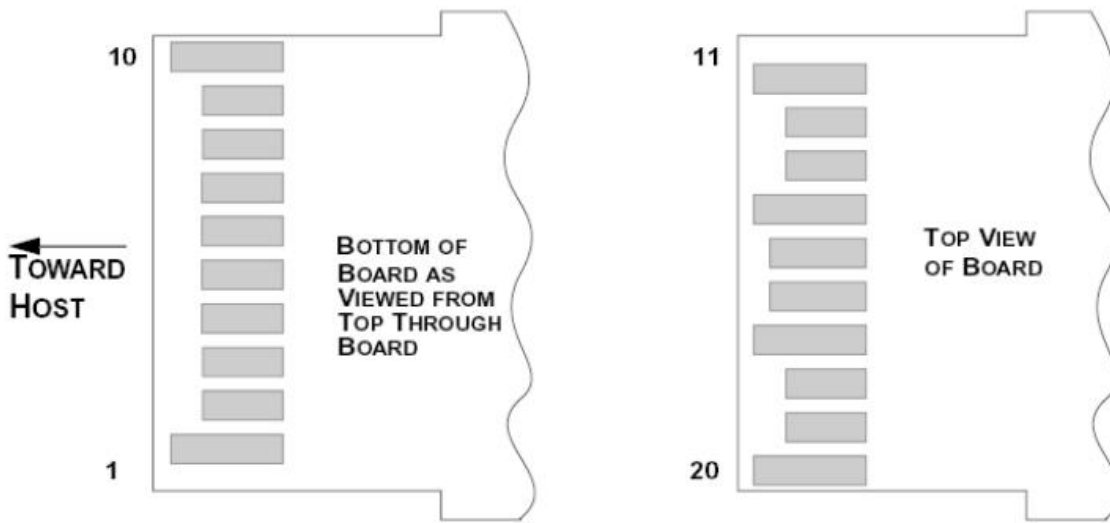


EEPROM INFORMATION (A0) :

Addr	Field Size (Bytes)	Name of Field	HEX	Description
0	1	Identifier	03	SFP
1	1	Ext. Identifier	04	MOD4
2	1	Connector	07	LC
3-10	8	Transceiver	10 00 00 00 00 00 00 00	Transmitter Code
11	1	Encoding	06	64B66B
12	1	BR, nominal	67	10000M bps
13	1	Reserved	00	
14	1	Length (9um)-km	00	
15	1	Length (9um)	00	
16	1	Length (50um)	08	
17	1	Length (62.5um)	02	
18	1	Length (copper)	00	
19	1	Reserved	00	
20-35	16	Vendor name	48 44 56 20 20 20 20 20 20 20 20 20 20 20 20 20	HDV
36	1	Reserved	00	
37-39	3	Vendor OUI	00 00 00	
40-55	16	Vendor PN	xx xx xx xx xx xx xx xx xx xx xx xx xx xx xx xx	ASC II
56-59	4	Vendor rev	31 2E 30 20	V1.0
60-61	2	Wavelength	05 1E	1310nm
62	1	Reserved	00	
63	1	CC BASE	XX	Check sum of byte 0~62
64-65	2	Options	00 1A	LOS, TX_DISABLE, TX_FAULT
66	1	BR, max	00	
67	1	BR, min	00	
68-83	16	Vendor SN	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00	Unspecified
84-91	8	Vendor date code	XX XX XX 20	Year, Month, Day
92-94	3	Reserved	00	
95	1	CC_EXT	XX	Check sum of byte 64~94
96-255	160	Vendor specific		

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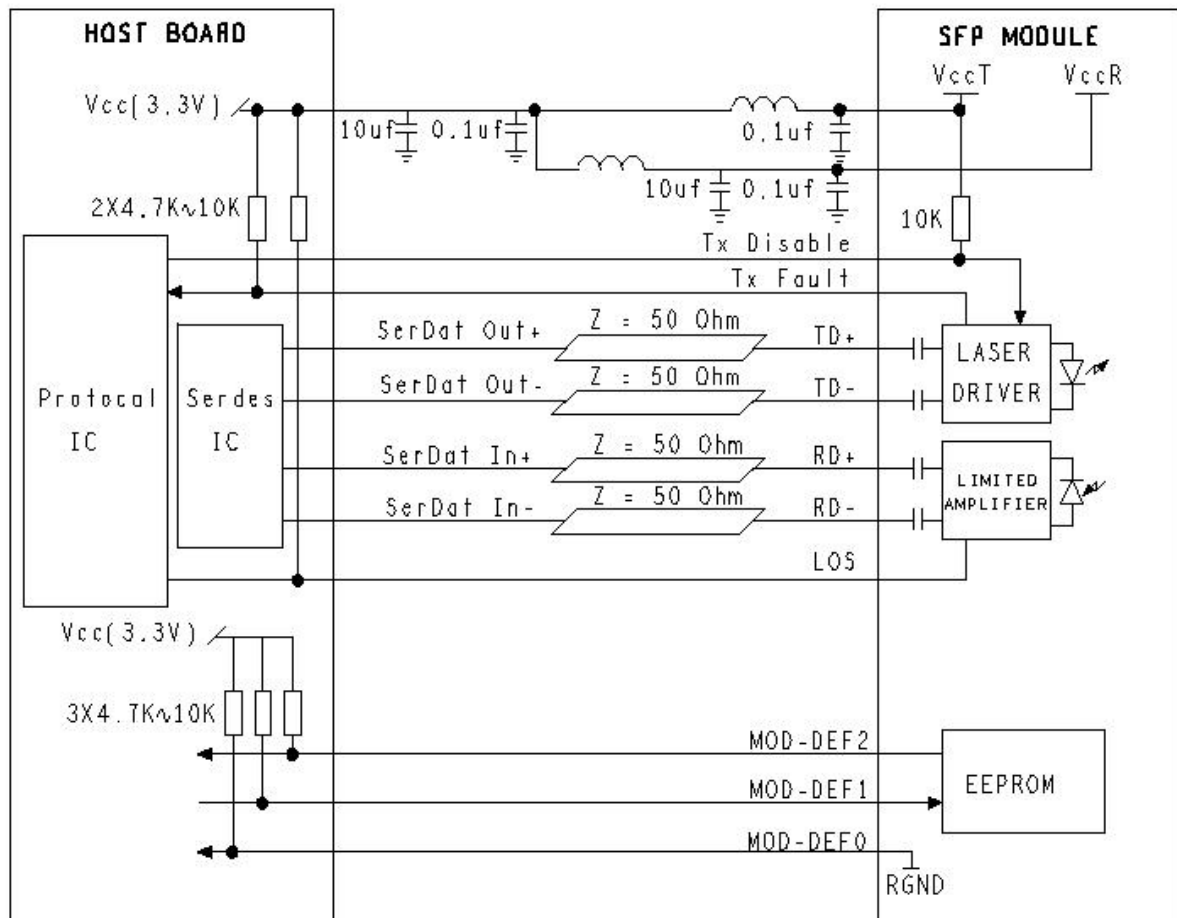
Pins	Name	Discription	NOTE
1	VeeT	Transmitter Ground	
2	Tx Fault	Transmitter Fault Indication	1
3	Tx Disable	Transmitter Disable	2
4	MOD DEF2	Module Definition 2	3
5	MOD DEF1	Module Definition 1	3
6	MOD DEF0	Module Definition 0	3
7	RS0	Not Connected	
8	LOS	Loss of Signal	4
9	RS1	Not Connected	
10	VeeR	Receiver Ground	
11	VeeR	Receiver Ground	
12	RD-	Inv. Received Data Output	5
13	RD+	IReceived Data Output	5
14	VeeR	Receiver Ground	
15	VccR	Receiver Power	
16	VccT	Transmitter Power	
17	VeeT	Transmitter Ground	
18	TD+	Transmit Data Input	6
19	TD-	Inv. Transmit Data Input	6
20	VeeT	Transmitter Ground	

Notes:

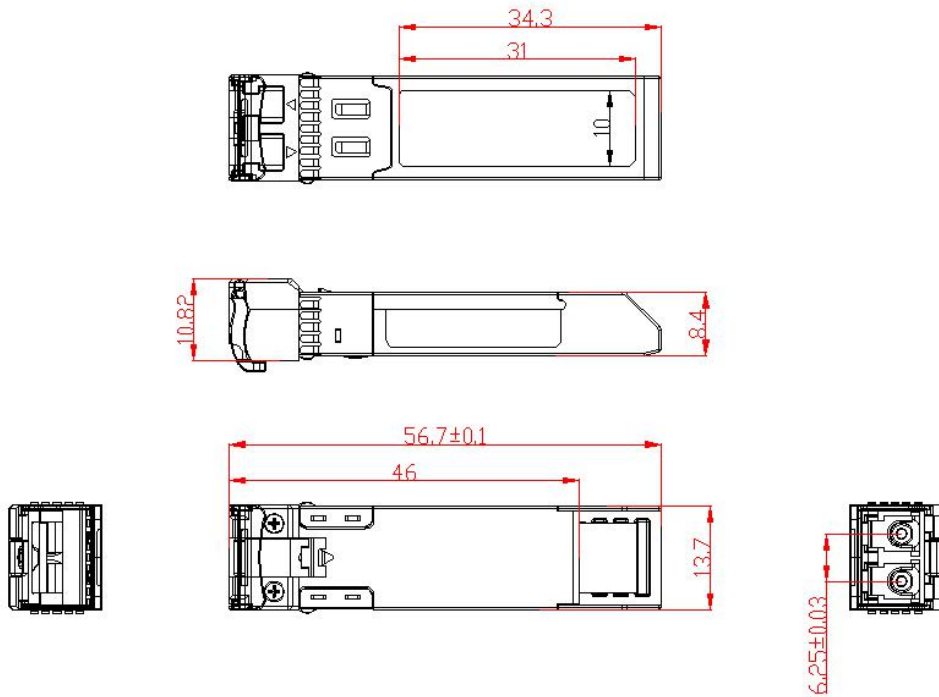
1. TX Fault is an open collector output, which should be pulled up with a 4.7k~10kΩ resistor on the host board to a voltage between 2.0V and Vcc+0.3V. Logic 0 indicates normal operation; logic 1 indicates a laser fault of some kind. In the low state, the output will be pulled to less than 0.8V.

2. TX Disable is an input that is used to shut down the transmitter optical output. It is pulled up within the module with a 4.7k~10kΩ resistor. Its states are:
 Low (0~0.8V): Transmitter on
 (>0.8V, <2.0V): Undefined
 High (2.0~3.465V): Transmitter Disabled
 Open: Transmitter Disabled
3. MOD-DEF 0,1,2 are the module definition pins. They should be pulled up with a 4.7k~10kΩ resistor on the host board. The pull-up voltage shall be VccT or VccR.
 MOD-DEF 0 is grounded by the module to indicate that the module is present
 MOD-DEF 1 is the clock line of two wire serial interface for serial ID
 MOD-DEF 2 is the data line of two wire serial interface for serial ID
4. LOS 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 Vcc+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.
5. These are the differential receiver output. They are internally AC-coupled 100Ω differential lines which should be terminated with 100Ω (differential) at the user SERDES.
6. These are the differential transmitter inputs. They are AC-coupled, differential lines with 100Ω differential termination inside the module.

Recommended Application Circuit



Outline drawing (mm):



Ordering information :

Part No.	Wavelength	Connector	Temp.	TX Power (dBm)	RX Sens (Max.) (dBm)	Distance
SFP+-10G-L10	1310nm	LC	0~70°C	-6 to 0	-14	10km
SFP+-10G-L20	1310nm	LC	0~70°C	-1 to +3	-14.4	20km
SFP+-10G-L40	1310nm	LC	0~70°C	1 to +4	-17	40km

Contact :

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