Product Specification Sheet

OLSP5512L-CDH3

RoHS Compliant 1.25Gbps 1550nm SFP Optical Transceiver, 120km Reach

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Product Features

- ●1550nm DFB laser and APD photodetector for 120km transmission
- ● Dual Data-rate of 1.25Gbps/1.0625Gbps Operation
- ●Compliant with SFP MSA and SFF-8472 with duplex LC receptacle
- ● Digital Diagnostic Monitor Interface
- ● Very low EMI and excellent ESD protection
- ● +3.3V single power supply
- ● RoHS compliant
- ● Case operating temperature
  Commercial: 0°C to +70°C

Applications

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

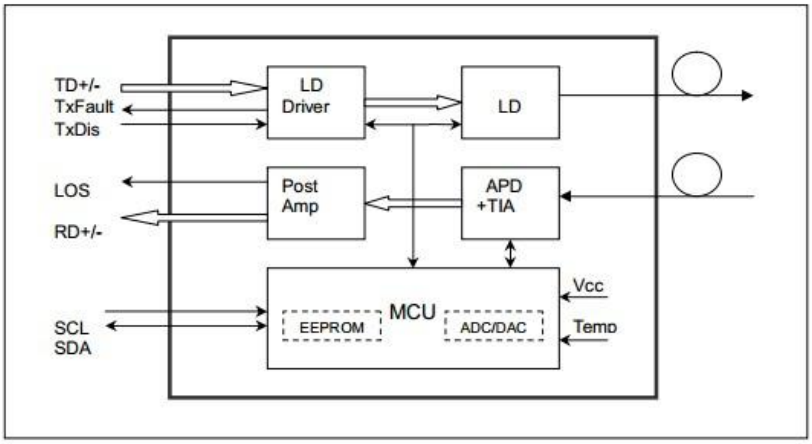
Description

The SFP transceivers are high performance, cost effective modules supporting data-rate of 1.25Gbps and 120km transmission distance with SMF

The transceiver consists of three sections: a DFB laser transmitter, a APD photodiode integrated with a trans-impedance preamplifier (TIA) and MCU control unit. All modules satisfy class I laser safety requirements.

The transceivers are compatible with SFP Multi-Source Agreement (MSA) and SFF-8472. For further information, please refer to SFP MSA.

Functional Diagram



Absolute Maximum Ratings

Parameter	Symbol	Min.	Max	Unit	Notes
Supply Voltage	Vcc	-0.5	3.60	V	
Storage Temperature		-40	85	℃	
Relative Humidity		5	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	Notes
Data Rate	Gigabit Ethernet			1.25		Gb/s	
	Fiber Channel			1.0625			
Supply Voltage		Vcc	3.1	3.3	3.47	V	
Supply Current		Icc			300	mA	
Operating Case Temperature		Tc	0		70	℃	

Electrical Input/Output Characteristics

● **Transmitter**

Parameter		Symbol	Min.	Typ.	Max.	Unit	Notes
Diff. Input Voltage Swing			300		1800	mVpp	1
Tx Disable Input	H	V_{IH}	2.0		Vcc+0.3	V	
	L	V_{IL}	0		0.8		
Tx Fault Output	H	V_{OH}	2.0		Vcc+0.3	V	2
	L	V_{OL}	0		0.8		
Input Diff. Impedance		Zin		100		Ω	

● **Receiver**

Parameter		Symbol	Min.	Typ.	Max.	Unit	Notes
Diff. Output Voltage Swing			400		1000	mVpp	3
Rx LOS Output	H	V_{OH}	2.0		Vcc+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 Vcc+0.3V.

Note 3) RD+/- outputs are internally AC coupled, and should be terminated with 100Ω (differential) at the user SERDES.

Optical Characteristics

● **Transmitter**

Parameter	Symbol	Min.	Type	Max.	Unit	Notes
Ave. Output Power (Enable)	Po	-1		6	dBm	1
Total Jitter	1.25G			0.431	UI	
Extinction Ratio	ER	9			dB	1
Rise/Fall Time (20%-80%)	Tr-Tf			0.26	ns	2
Wavelength Range		1530	1550	1570	nm	
Spectral Width (RMS)				1	nm	
Output Optical Eye	Compliant with IEEE802.3 z (class 1 laser safety)					

● **Receiver**

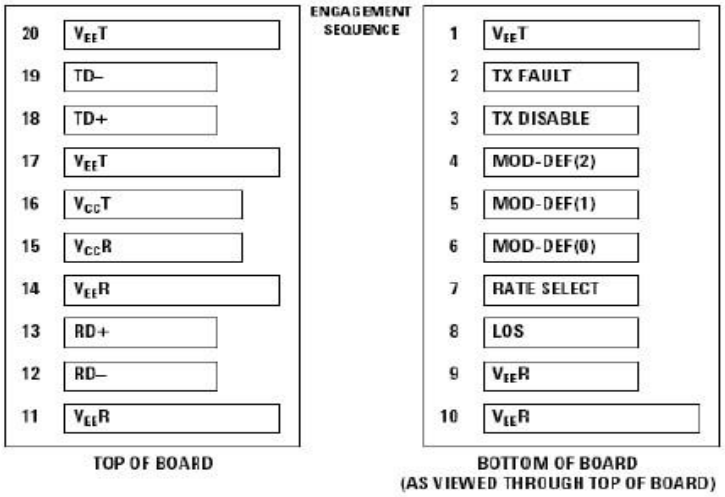
Parameter	Symbol	Min.	Type	Max.	Unit	Notes
Operating Wavelength		1270		1610	nm	
Sensitivity	Pimin			-32	dBm	3
Min. Overload	Pimax	-9			dBm	3
Total Jitter	1.25G			0.749	UI	
LOS Assert	Pa	-40			dBm	
LOS De-assert	Pd			-33	dBm	
LOS Hysteresis	Pd-Pa	0.5		6	dB	

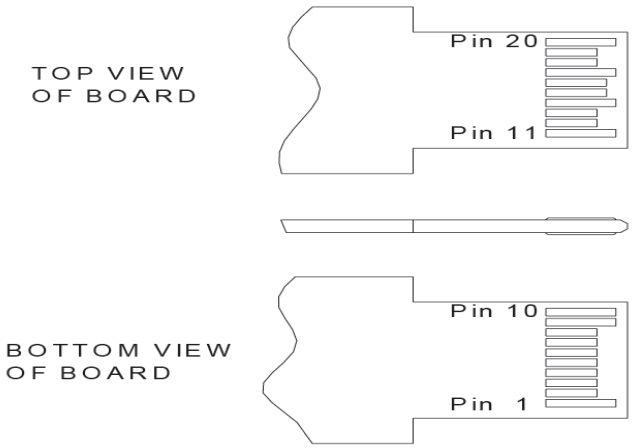
Note 1) Measured at 1250 Mb/s with PRBS 2^{23} – 1 NRZ test pattern.

Note 2) Unfiltered, measured with a PRBS 2^{23}-1 test pattern @1.25Gbps

Note 3) Measured at 1250 Mb/s with PRBS 2^{23} – 1 NRZ test pattern for BER < $1x10^{-12}$

Pin Definitions and Functions





PIN #	Name	Function	Notes
1	VeeT	Tx ground	
2	Tx Fault	Tx fault indication, Open Collector Output, active “H”	Note 1
3	Tx Disable	LVTTL Input, internal pull-up, Tx disabled on “H”	Note 2
4	MOD-DEF2	2 wire serial interface data input/output (SDA)	Note 3
5	MOD-DEF1	2 wire serial interface clock input (SCL)	Note 3
6	MOD-DEF0	Model present indication	Note 3
7	Rate select	No connection	
8	LOS	Rx loss of signal, Open Collector Output, active “H”	Note 4
9	VeeR	Rx ground	
10	VeeR	Rx ground	
11	VeeR	Rx ground	
12	RD-	Inverse received data out	Note 5
13	RD+	Received data out	Note 5
14	VeeR	Rx ground	
15	VccR	Rx power supply	
16	VccT	Tx power supply	
17	VeeT	Tx ground	
18	TD+	Transmit data in	Note 6
19	TD-	Inverse transmit data in	Note 6
20	VeeT	Tx ground	

Note 1) When high, this output indicates a laser fault of some kind. Low indicates normal operation. And should be pulled up with a 4.7 – 10KΩ resistor on the host board.

Note 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 4.7 – 10KΩ resistor. Its states are:

Low (0 – 0.8V): Transmitter on (>0.8, < 2.0V): Undefined

High (2.0V~Vcc+0.3V): Transmitter Disabled Open: Transmitter Disabled

Note 3) Mod-Def 0,1,2. These 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 between 2.0V~Vcc+0.3V.

Mod-Def 0 has been 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

Note 4) When high, this output indicates loss of signal (LOS). Low indicates normal operation.

Note 5) RD+/-: These are the differential receiver outputs. They are AC coupled 100Ω differential lines which should be terminated with 100Ω (differential) at the user SERDES. The AC coupling is

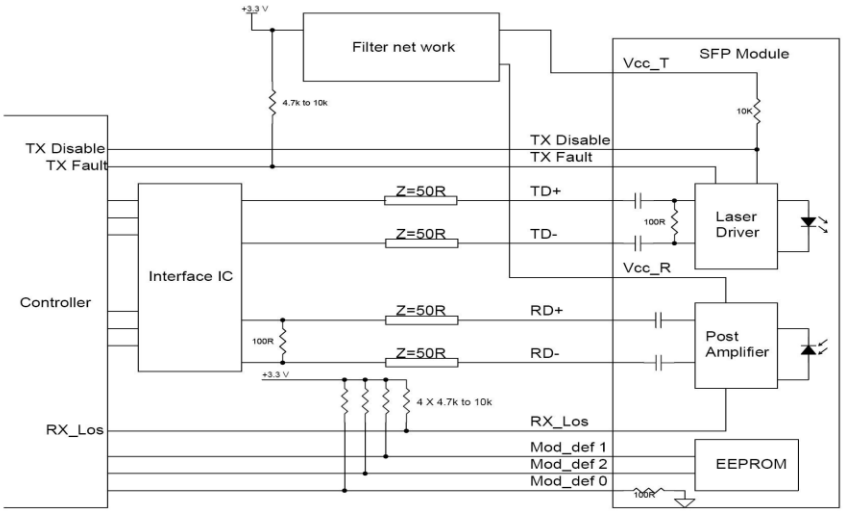
done inside the module and is thus not required on the host board.

Note 6) TD+/-: These are the differential transmitter inputs. They are AC-coupled, differential lines with 100Ω differential termination inside the module. The AC coupling is done inside the module and is thus not required on the host board.

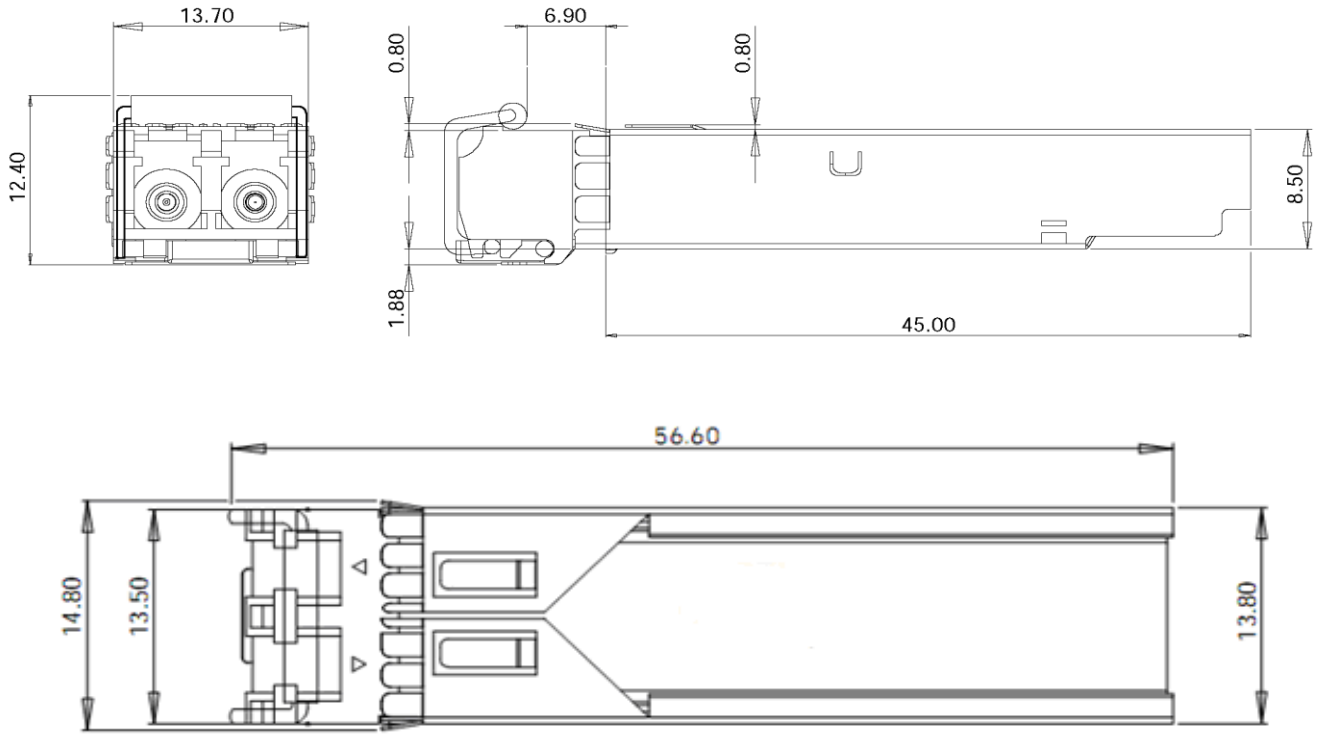
Ordering information

Product part Number	Data Rate (Mbps)	Media	Wavelength (nm)	Transmission Distance(km)	Temperature Range （Tcase） （℃）	
OLSP5512L-CDH3	1250	Single mode	1550	120	0~70	commercial
OLSP5512L-EDH3	1250	Single mode	1550	120	-10~80	extended
OLSP5512L-IDH3	1250	Single mode	1550	120	-45~85	industrial

Typical Interface Circuit



Package Dimensions



Ordering Information & Related Products

OLSP5512L-CNH3	Dual Fiber SFP, 1.25Gbps, 1550nm, 120km, without DDM
OLSP5512L-CDH3	Dual Fiber SFP, 1.25Gbps, 1550nm, 120km, with DDM