

Product Specification Sheet

OLSP3106L-C(D)40

RoHS Compliant 622Mbps 1310nm 40KM Reach SFP Optical Transceiver



Product Features

- Up to 622Mbps data rate operation
- 1310nm FP laser and PIN photo detector for 40km transmission
- 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
- Compatible with RoHS
- Case operating temperature
 - Commercial: 0°C to +70°C
 - Extended: -10°C to +80°C
 - Industrial: -40°C to +85°C

Applications

- SDH STM-1, S-1.1, L-1.1, L-1.2
- SONET OC-3 IR1, LR1, LR2
- Other optical transmission systems

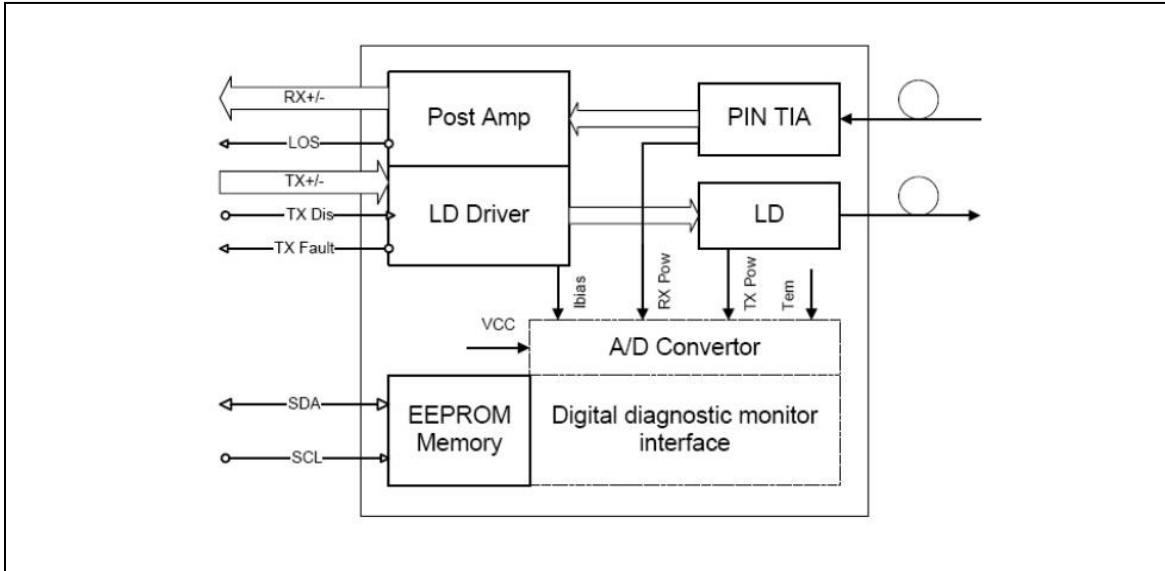
Description

The SFP transceivers are high performance, cost effective modules supporting 622Mbps data-rate and 40km transmission distance with SMF.

The transceiver consists of three sections: a FP laser transmitter, a PIN 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



Ordering information

Product part Number	Data Rate (Mbps)	Media	Wavelength (nm)	Transmission Distance(km)	Temperature Range (Tcase) (°C)	
OLSP3106L-C(D)40	622	Single mode fiber	1310	40	0~70	commercial
OLSP3106L-E(D)40	622	Single mode fiber	1310	40	-10~80	extended
OLSP3106L-I(D)40	622	Single mode fiber	1310	40	-45~85	industrial

Absolute Maximum Ratings

Parameter	Symbol	Min.	Max	Unit	Notes
Supply Voltage	Vcc	-0.5	3.60	V	
Storage Temperature		-40	85	°C	
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			622		Mb/s	
Supply Voltage	V _{cc}	3.1	3.3	3.5	V	
Supply Current	I _{cc}			220	mA	
Operating Case Temperature	T _c	0		70	°C	
		-10		80		
		-40		85		

Electrical Input/Output Characteristics

● Transmitter

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Diff. Input Voltage Swing		300		1860	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	Notes
Diff. Output Voltage Swing		370		1800	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

• Transmitter

Parameter	Symbol	Min.	Type	Max.	Unit	Notes
Ave. Output Power (Enable)	P _o	-9		-3	dBm	1
Extinction Ratio	ER	10			dB	2
Rise/Fall Time (20%-80%)	Tr-Tf			0.26	ns	
Wavelength Range		1270	1310	1360	nm	
Spectral Width (RMS)				4	nm	
Output Optical Eye	ITU G.957 Compliant					

• Receiver

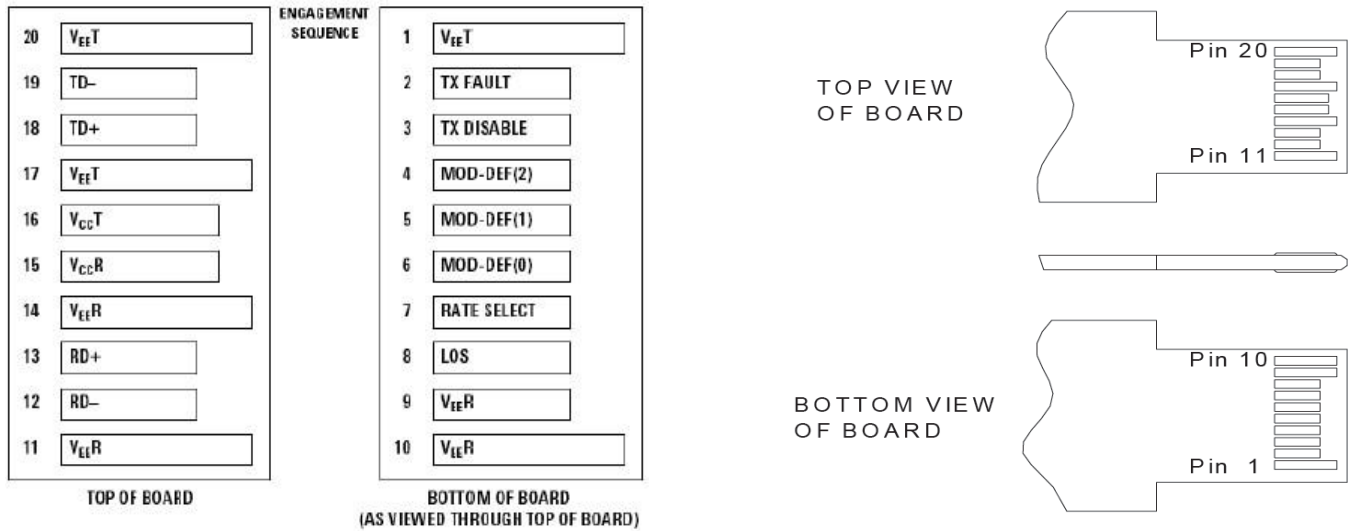
Parameter	Symbol	Min.	Type	Max.	Unit	Notes
Operating Wavelength		1270		1610	nm	
Sensitivity	P _{imin}			-20	dBm	3
Min. Overload	P _{imax}	-3			dBm	3
Optical Path Penalty				1	dB	
LOS Assert	P _a	-45			dBm	
LOS De-assert	P _d			-23	dBm	
LOS Hysteresis	P _d -P _a	0.5		6	dB	

Note 1) Measured at 622 Mb/s with PRBS 2²³ - 1 NRZ test pattern.

Note 2) Unfiltered, measured with a PRBS 2²³-1 test pattern @622Mbps

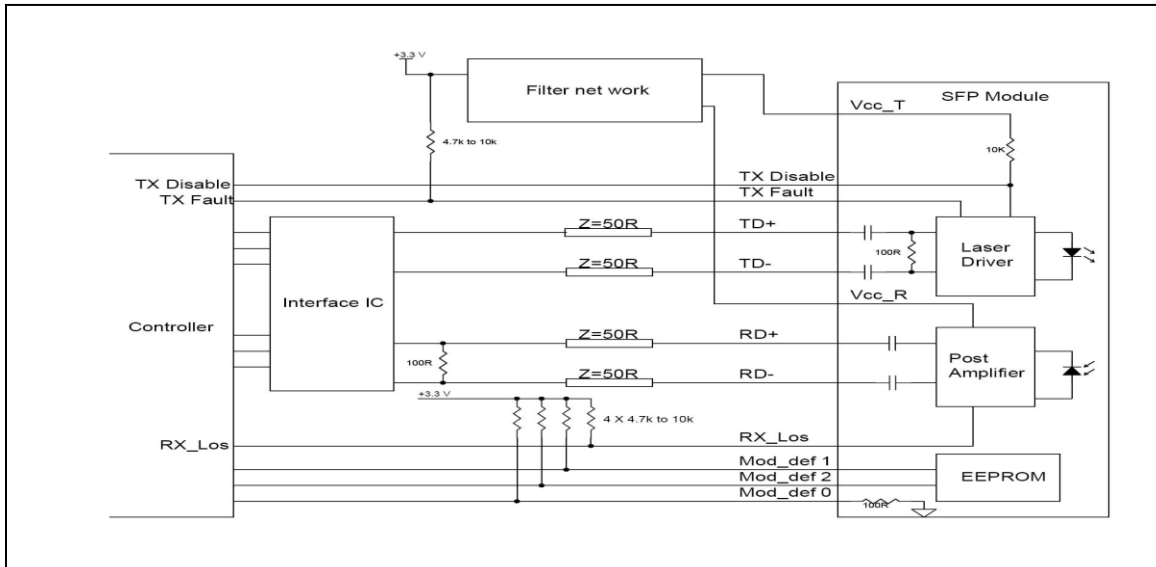
Note 3) Measured at 622 Mb/s with PRBS 2²³ - 1 NRZ test pattern for BER < 1x10⁻¹⁰

Pin Definitions and Functions

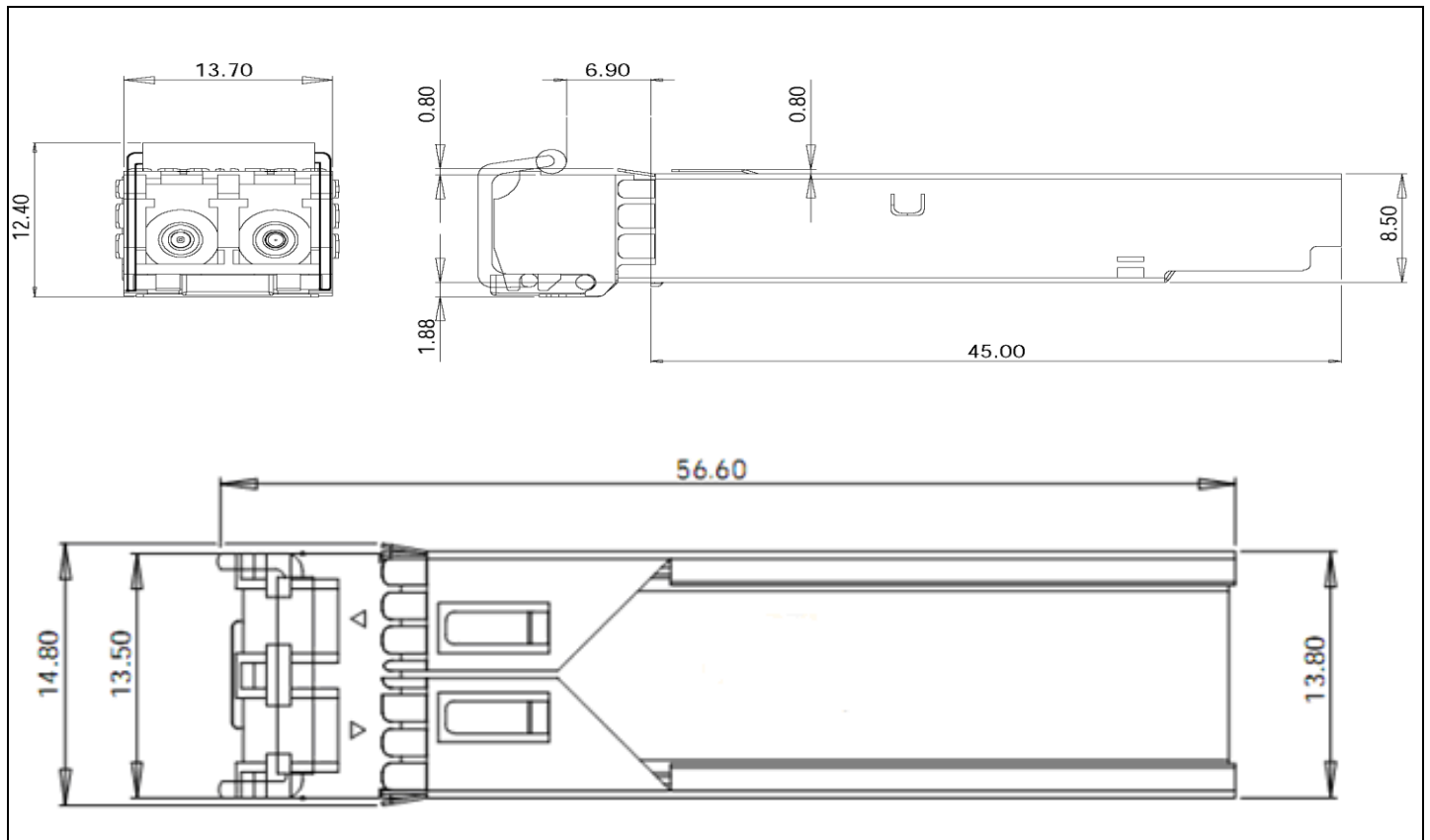


PIN #	Name	Function	Notes
1	V _{EE} T	Tx ground	
2	Tx Fault	Tx fault indication, Open Collector Output, active “H”	Note 1
3	Tx Disable	LVTTL Input, internal pull-up, Tx disabled on “H”	Note 2
4	MOD-DEF2	2 wire serial interface data input/output (SDA)	Note 3
5	MOD-DEF1	2 wire serial interface clock input (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	V _{EE} R	Rx ground	
10	V _{EE} R	Rx ground	
11	V _{EE} R	Rx ground	
12	RD-	Inverse received data out	Note 5
13	RD+	Received data out	Note 5
14	V _{EE} R	Rx ground	
15	V _{CC} R	Rx power supply	
16	V _{CC} T	Tx power supply	
17	V _{EE} T	Tx ground	
18	TD+	Transmit data in	Note 6
19	TD-	Inverse transmit data in	Note 6
20	V _{EE} T	Tx ground	

Typical Interface Circuit



Package Dimensions



Ordering Information & Related Products

OLSP3106L-CN40	Dual Fiber SFP, 622Mbps, 1310nm, 40KM, without DDM
OLSP3106L-CD40	Dual Fiber SFP, 622Mbps, 1310nm, 40KM, with DDM