

**LP-OSFPLX03DWA2 Transceiver SFP Singlemode (SM) 9/125µm, LC simplex, DDM, 1000BASE-LX, Tx 1310nm /Rx 1550nm, WDM, up to 20 km Single side.**

LPOSFPLX03DWA2\_SS\_ENB01W

**Features**

- Supports 1.25Gbps / 1.0625 Gbps bit rates
- Bi-Directional LC connector
- Hot pluggable SFP footprint
- 1310nm FP laser and 1550nm PIN photo detector
- 1550nm DFB laser and 1310nm PIN photo detector
- Applicable for 20km SMF connection
- Low power consumption, < 0.8W
- Digital Diagnostic Monitor Interface
- Compliant with SFP MSA and SFF-8472
- Very low EMI and excellent ESD protection
- Operating case temperature:  
Commerical: 0 to 70 °C  
Industrial: -40 to 85 °C

**Applications**

- Gigabit Ethernet.
- 1x Fiber Channel.
- Switch to Switch interface.
- Switched backplane applications.
- Router/Server interface.
- Other optical transmission systems.



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The LP-OSFPLX03DWA2 SFP-BIDI transceivers are high performance, cost effective modules supporting dual data-rate of 1.25Gbps/1.0625Gbps and 20km transmission distance with SMF. The transceiver consists of three sections: a FP/DFB 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.

**A Pin Definition and Functions**



## B Pin Descriptions

Pin	Signal Name	Functional Description	Notes
1	VeeT	Tx ground	
2	TX FAULT	Tx fault indication, Open Collector Output, active "H"	1
3	TX DISABLE	LVTTTL Input, internal pull-up, Tx disabled on "H"	2
4	MOD DEF(2)	2 wire serial interface data input/output (SDA)	3
5	MOD DEF(1)	2 wire serial interface clock input (SCL)	3
6	MOD DEF(0)	Model present indication	3
7	Rate Select	No connection	
8	LOS	Rx loss of signal, Open Collector Output, active "H"	4
9	VeeR	Rx ground	
10	VeeR	Rx ground	
11	VeeR	Rx ground	
12	RD-	Inverse Received Data Out	5
13	RD+	Received Data Out	5
14	VeeR	Rx ground	
15	VccR	Rx power supply	
16	VccT	Tx power supply	
17	VeeT	Tx ground	
18	TD+	Transmitter Data In	6
19	TD-	Inverse Transmitter Data In	6
20	VeeT	Tx ground	

### Notes:

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

## D Absolute Maximum Ratings

Parameter	Symbol	Min	Typ	Max	Unit	Note
Maximum Supply Voltage	Vcc	-0.5		4.0	V	
Storage Temperature	TS	-40		85	°C	
Relative Humidity	RH	0		85	%	

**E Electrical Characteristics (TOP(C) = 0 to 70 °C, TOP(I) = -40 to 85 °C, VCC = 3.13 to 3.47 V)**

Parameter	Symbol	Min	Typ	Max	Unit	Note
<b>Transmitter</b>						
Differential data input swing	VIN,PP	120		820	mVpp	1
Tx Disable Input-High	VIH	2.0		Vcc+0.3	V	
Tx Disable Input-Low	VIL	0		0.8	V	
Tx Fault Output-High	VOH	2.0		Vcc+0.3	V	2
Tx Fault Output-Low	VOL	0		0.8	V	2
Input differential impedance	Rin		100		Ω	
<b>Receiver</b>						
Differential data output swing	Vout,pp	340	650	800	mVpp	3
Rx LOS Output-High	VROH	2.0		Vcc+0.3	V	2
Rx LOS Output-Low	VROL	0		0.8	V	2

<b>Notes:</b>	
1	TD+/- are internally AC coupled with 100Ω differential termination inside the module.
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.
3	RD+/- outputs are internally AC coupled, and should be terminated with 100Ω (differential) at the user SERDES.

**F Optical Characteristics (TOP(C) = 0 to 70 °C, TOP(I) = -40 to 85 °C, VCC = 3.13 to 3.47 V)**

Parameter	Symbol	Min	Typ	Max	Unit	Note
<b>Transmitter</b>						
Operating Wavelength	λ	1270	1310	1360	nm	
		1510	1550	1570		
Ave. output power (Enabled)	PAVE	-9		-3	dBm	1
Extinction Ratio	ER	9			dB	1
Side-Mode Suppression Ratio	SMSR	30			dB	
RMS spectral width 1310nm FP	Δλ			3	nm	
RMS spectral width 1550nm DFB				1	nm	
Rise/Fall time (20%~80%)	Tr/Tf			0.26	ns	2
Dispersion penalty	TDP			3.9	dB	
Output Optical Eye	Compliant with IEEE802.3 z (class 1 aser safety)					
<b>Receiver</b>						
Operating Wavelength	λ	1510	1550	1570	nm	
		1270	1310	1360		
Receiver Sensitivity	PSEN1			-22	dBm	3
Overload	PAVE	-3			dBm	3
LOS Assert	Pa	-35			dBm	
LOS De-assert	Pd			-24	dBm	
LOS Hysteresis	Pd-Pa	0.5			dB	

<b>Notes:</b>	
1	Measured at 1250Mb/s with PRBS 2 223 - 1NRZ test pattern.
2	Unfiltered, measured with a PRBS223 - 1 test pattern @1.25Gbps
3	Measured at 1250Mb/s with PRBS 223 - 1 NRZ test pattern for BER < 1x10-12

**G How to Order**

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