

SO-SFP-L80D-50G-Dxxxx

SFP, 1.25 Gbps GigE/FC, DWDM, 50GHz, SM, DDM, 28dB, 80km

OVERVIEW

The SO-SFP-L80D-50G-Dxxxx fiber optical SFP (Small Form Pluggable) transceivers include a PIN diode and a cooled DWDM DFB transmitter. The modules operate at multiple data-rates up to 1.25 Gbps and supports protocols like Gigabit Ethernet 1000BASE, Fibre Channel 1G. The DWDM modules operate at nominal Dense Wavelength Division Multiplexing (DWDM) wavelengths on the 50GHz grid as defined in the ITU-T 694.1 standard and all wavelengths of the fiber C-band are available (1529.94nm – 1561.42nm). The module has a duplex LC optical interface and all mechanical characteristics are compliant with the current SFP specification (SFF-8431 and SFF-8432). All SFP modules fulfill the content of the serial EEPROM described in the SFP MSA, Appendix B4, table 3.1, at base data fields (defined as addresses 0 to 63) and extended data fields (defined as addresses 64 to 95). The nominal transmitter output wavelength is stated at the reserved addresses 60-62 according to SFF document SFF-8472 rev 10.5, "Digital Diagnostics Monitoring Interface". Wavelengths stated in the specification are measured in vacuum. All requirements in this specification are valid throughout the specified lifetime and operational environmental temperature range unless otherwise stated. The transceiver modules are compliant to RoHS-6/6.

PRODUCT FEATURES

- Operating data rate up to 1.25 Gbps
- 50GHz DWDM wavelength ITU 20- ITU 59.5
- PIN receiver
- Duplex LC connector
- Hot-pluggable SFP footprint
- Built-in digital diagnostic functions
- Up to 80km on 9/125um SMF (G.652)
- Single power supply 3.3V
- RoHS6 compliant
- Class 1 laser product complies with EN 60825-1
- Operating temperature range: 0°C to 70°C standard
- Compliant with SFF-8472 (DDMI)

ORDERING INFORMATION

Part Number	Description
SO-SFP-L80D-50G-Dxxxx	SFP, 1.25 Gbps GigE/FC, DWDM, 50GHz, SM, DDM, 28dB, 80km

APPLICATIONS

- DWDM connectivity
- 1G Fibre Channel FC100
- 100Base-X/1000Base-X Ethernet

Subject to change without notice.

For more information, visit smaroptics.com.

GENERAL SPECIFICATIONS

Parameter	Symbol	Min	Typ	Max	Unit	Remarks
Data Rate	DR	0.1		1.25	Gbps	
Bit Error Rate	BER			10^{-12}		
Operating Temperature	T _{OP}	0		70	°C	Case temperature
Operating Relative Humidity				95	%	
Storage Temperature	T _{STO}	-40		85	°C	Ambient temperature
Supply Current	I _S			450	mA	For electrical power interface
Input Voltage	V _{CC}	3.15	3.3	3.45	V	
Maximum Voltage	V _{MAX}	-0.5		3.6	V	For electrical power interface

OPTICAL CHARACTERISTICS – TRANSMITTER

Parameter	Symbol	Min	Typ	Max	Unit	Remarks
Output Optical Power	P _{TX}	0		+5	dBm	Average, coupled into 9/125um SMF
Extinction ratio	Er	8.2			dB	
Optical Center Wavelength	λ _C		According to ITU-T 694.1		nm	
Deviation From Central Frequency		-6		6	GHz	
Spectral Width (-20dB)	Δλ			0.3	nm	
Side Mode Suppression Ratio	SMSR	30			dB	
Rise/Fall Time	t _r /t _f			260	psec	20% to 80%
Output Optical Eye			ANSI Fibre Channel and Gigabit Ethernet Compliant			
TX-DISABLE Assert Time	t _{off}			10	μsec	Average
Launch Power OFF	P _{off}			-45	dBm	Average
Channel Spacing	Δf		50		GHz	
TX Disable Asserted	P _{out}			-45	dBm	
Optical Signal Noise Ratio	OSNR		40		dB	
Relative Intensity Noise	RIN			-135	dB/Hz	
Dispersion Tolerance	DT		2080		ps/nm	

OPTICAL CHARACTERISTICS – RECEIVER

Parameter	Symbol	Min	Typ	Max	Unit	Remarks
Optical Receiver Power	P _{RX}			-3	dBm	Average
Optical Center Wavelength	λ _C	1528		1664	nm	
Receiver Sensitivity	R _{X_SENS}			-28	dBm	BER<10 ⁻¹² , PRBS 2 ³¹ -1
Loss of Signal-Asserted	P _{LOS_A}	-45			dBm	
Loss of Signal-Deasserted	P _{LOS_D}			-29	dBm	
Optical Return Loss	ORL	12			dB	
LOS Hysteresis		0.5			dB	

Subject to change without notice.

For more information, visit smaroptics.com.

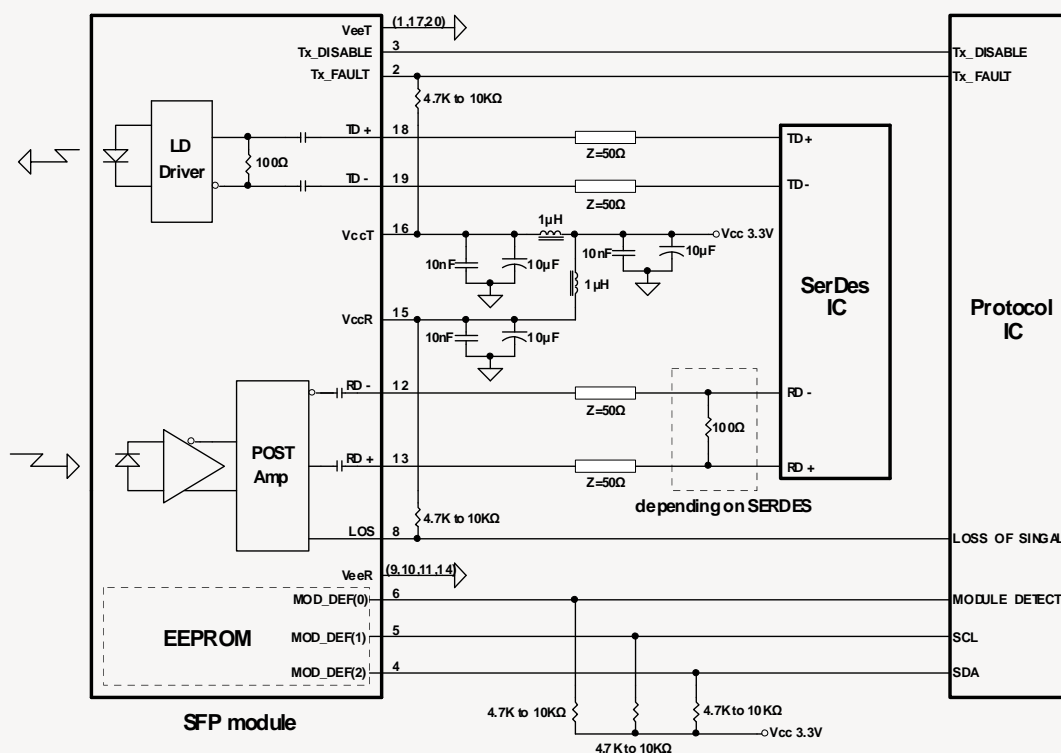
ELECTRICAL CHARACTERISTICS – HIGH-SPEED SIGNAL INTERFACE (CML)

Parameter	Symbol	Min	Typ	Max	Unit	Remarks
Differential Input Impedance	R_{IN}	85	100	115	Ω	
Differential data input swing	V_{IN_PP}	400		2000	mVpp	Internally AC coupled
Differential Output Impedance	R_{OUT}	85	100	115	Ω	
Differential data output swing	V_{OUT_PP}	400		2000	mVpp	Internally AC coupled

ELECTRICAL CHARACTERISTICS – LOW-SPEED SIGNAL INTERFACE (LVTTTL)

Parameter	Symbol	Min	Typ	Max	Unit	Remarks
Input High Voltage		2.0		$V_{CC}+0.3$	V	TX-DIS, TX-FAULT
Input Low Voltage		GND		0.8	V	
Output High Voltage		2.4		V_{CC}	V	RX-LOS
Output Low Voltage		GND		0.5	V	

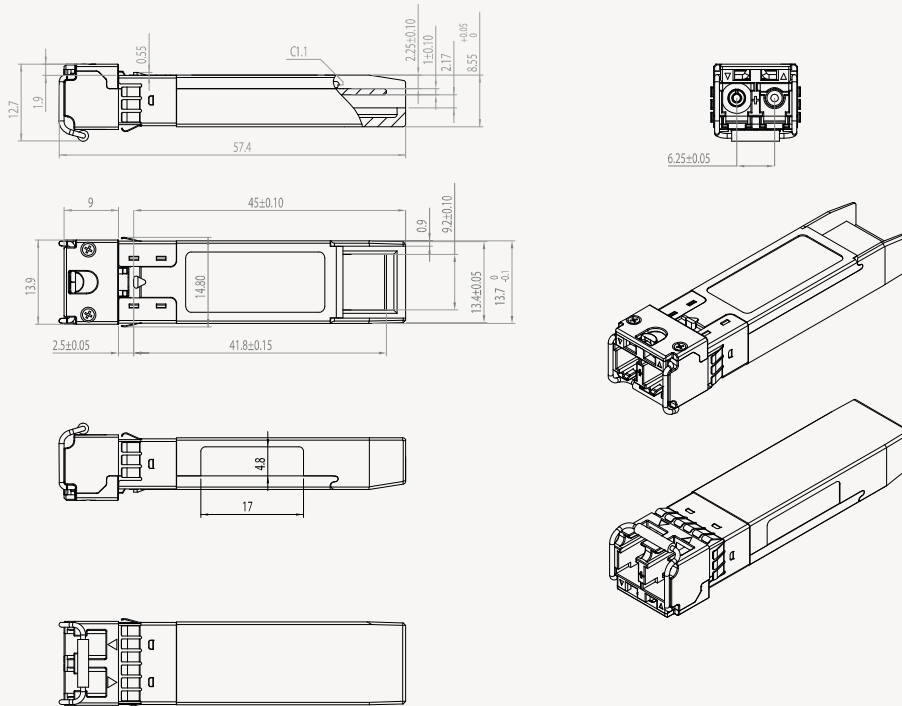
RECOMMENDED CIRCUIT SCHEMATIC



PIN ASSIGNMENT ACCORDING TO MSA

PIN	Signal Name	Description	PIN	Signal Name	Description
1	V _{EE} T	Transmitter Signal Ground	11	V _{EE} R	Receiver Signal Ground
2	TX_Fault	Transmitter Fault Indication. Logic "1" Output = Laser Fault. Logic "0" Output = Normal Operation	12	RD-	Inverse Receiver Data Out
3	TX_Disable	Logic "1" Input (or no connection) = Laser off, Logic "0" = Laser on.	13	RD+	Receiver Data Out
4	SDA	Modulation Definition 2 – Two wires serial ID Interface	14	V _{EE} R	Receiver Signal Ground
5	SDL	Modulation Definition 1 – Two wires serial ID Interface	15	V _{CC} R	Receiver Power – 3.3V±5%
6	MOD-ABS	Modulation Definition 0 – Ground in Module	16	V _{CC} T	Transmitter Power – 3.3V±5%
7	RS0	RX Rate Select (LVTTTL). This pin has an internal 30k pull-down to ground. A signal on this pin will not affect module performance.	17	V _{EE} T	Transmitter Signal Ground
8	RX_LOS	Loss of Signal Out (OC).	18	TD+	Transmitter Data In
9	RS1	TX Rate Select (LVTTTL). This pin has an internal 30k pull-down to ground. A signal on this pin will not affect module performance.	19	TD-	Inverse Transmitter Data In
10	V _{EE} R	Receiver Signal Ground	20	V _{EE} T	Transmitter Signal Ground

MECHANICAL DIMENSIONS



Subject to change without notice.

For more information, visit smaroptics.com.

EXTENDED ORDERING INFORMATION

Part Number	ITU channel no.	Frequency [THz]	Center Wavelength (nm)
SO-SFP-L80D-50G-D9200	20.0	192.00	1561.42
SO-SFP-L80D-50G-D9205	20.5	192.05	1561.01
SO-SFP-L80D-50G-D9210	21.0	192.10	1560.61
SO-SFP-L80D-50G-D9215	21.5	192.15	1560.20
SO-SFP-L80D-50G-D9220	22.0	192.20	1559.79
SO-SFP-L80D-50G-D9225	22.5	192.25	1559.39
SO-SFP-L80D-50G-D9230	23.0	192.30	1558.98
SO-SFP-L80D-50G-D9235	23.5	192.35	1558.58
SO-SFP-L80D-50G-D9240	24.0	192.40	1558.17
SO-SFP-L80D-50G-D9245	24.5	192.45	1557.77
SO-SFP-L80D-50G-D9250	25.0	192.50	1557.36
SO-SFP-L80D-50G-D9255	25.5	192.55	1556.96
SO-SFP-L80D-50G-D9260	26.0	192.60	1556.55
SO-SFP-L80D-50G-D9265	26.5	192.65	1556.15
SO-SFP-L80D-50G-D9270	27.0	192.70	1555.75
SO-SFP-L80D-50G-D9275	27.5	192.75	1555.34
SO-SFP-L80D-50G-D9280	28.0	192.80	1554.94
SO-SFP-L80D-50G-D9285	28.5	192.85	1554.54
SO-SFP-L80D-50G-D9290	29.0	192.90	1554.13
SO-SFP-L80D-50G-D9295	29.5	192.95	1553.73
SO-SFP-L80D-50G-D9300	30.0	193.00	1553.33
SO-SFP-L80D-50G-D9305	30.5	193.05	1552.93
SO-SFP-L80D-50G-D9310	31.0	193.10	1552.52
SO-SFP-L80D-50G-D9315	31.5	193.15	1552.12
SO-SFP-L80D-50G-D9320	32.0	193.20	1551.72
SO-SFP-L80D-50G-D9325	32.5	193.25	1551.32
SO-SFP-L80D-50G-D9330	33.0	193.30	1550.92
SO-SFP-L80D-50G-D9335	33.5	193.35	1550.52
SO-SFP-L80D-50G-D9340	34.0	193.40	1550.12
SO-SFP-L80D-50G-D9345	34.5	193.45	1549.72
SO-SFP-L80D-50G-D9350	35.0	193.50	1549.32
SO-SFP-L80D-50G-D9355	35.5	193.55	1548.91
SO-SFP-L80D-50G-D9360	36.0	193.60	1548.51
SO-SFP-L80D-50G-D9365	36.5	193.65	1548.11
SO-SFP-L80D-50G-D9370	37.0	193.70	1547.72
SO-SFP-L80D-50G-D9375	37.5	193.75	1547.32
SO-SFP-L80D-50G-D9380	38.0	193.80	1546.92
SO-SFP-L80D-50G-D9385	38.5	193.85	1546.52
SO-SFP-L80D-50G-D9390	39.0	193.90	1546.12
SO-SFP-L80D-50G-D9395	39.5	193.95	1545.72
SO-SFP-L80D-50G-D9400	40.0	194.00	1545.32
SO-SFP-L80D-50G-D9405	40.5	194.05	1544.92
SO-SFP-L80D-50G-D9410	41.0	194.10	1544.53
SO-SFP-L80D-50G-D9415	41.5	194.15	1544.13
SO-SFP-L80D-50G-D9420	42.0	194.20	1543.73
SO-SFP-L80D-50G-D9425	42.5	194.25	1543.33
SO-SFP-L80D-50G-D9430	43.0	194.30	1542.94
SO-SFP-L80D-50G-D9435	43.5	194.35	1542.54

Subject to change without notice.

For more information, visit smaroptics.com.

SO-SFP-L80D-50G-D9440	44.0	194.40	1542.14
SO-SFP-L80D-50G-D9445	44.5	194.45	1541.75
SO-SFP-L80D-50G-D9450	45.0	194.50	1541.35
SO-SFP-L80D-50G-D9455	45.5	194.55	1540.95
SO-SFP-L80D-50G-D9460	46.0	194.60	1540.56
SO-SFP-L80D-50G-D9465	46.5	194.65	1540.16
SO-SFP-L80D-50G-D9470	47.0	194.70	1539.77
SO-SFP-L80D-50G-D9475	47.5	194.75	1539.37
SO-SFP-L80D-50G-D9480	48.0	194.80	1538.98
SO-SFP-L80D-50G-D9485	48.5	194.85	1538.58
SO-SFP-L80D-50G-D9490	49.0	194.90	1538.18
SO-SFP-L80D-50G-D9495	49.5	194.95	1537.79
SO-SFP-L80D-50G-D9500	50.0	195.00	1537.40
SO-SFP-L80D-50G-D9505	50.5	195.05	1537.00
SO-SFP-L80D-50G-D9510	51.0	195.10	1536.61
SO-SFP-L80D-50G-D9515	51.5	195.15	1536.22
SO-SFP-L80D-50G-D9520	52.0	195.20	1535.82
SO-SFP-L80D-50G-D9525	52.5	195.25	1535.43
SO-SFP-L80D-50G-D9530	53.0	195.30	1535.04
SO-SFP-L80D-50G-D9535	53.5	195.35	1534.64
SO-SFP-L80D-50G-D9540	54.0	195.40	1534.25
SO-SFP-L80D-50G-D9545	54.5	195.45	1533.86
SO-SFP-L80D-50G-D9550	55.0	195.50	1533.47
SO-SFP-L80D-50G-D9555	55.5	195.55	1533.07
SO-SFP-L80D-50G-D9560	56.0	195.60	1532.68
SO-SFP-L80D-50G-D9565	56.5	195.65	1532.29
SO-SFP-L80D-50G-D9570	57.0	195.70	1531.90
SO-SFP-L80D-50G-D9575	57.5	195.75	1531.51
SO-SFP-L80D-50G-D9580	58.0	195.80	1531.12
SO-SFP-L80D-50G-D9585	58.5	195.85	1530.72
SO-SFP-L80D-50G-D9590	59.0	195.90	1530.33
SO-SFP-L80D-50G-D9595	59.5	195.95	1529.94