SO-SFP-1000BASE-L40D

SFP, 1.25 Gbps GigE, 1310nm, SM/MM, DDM, 22dB, 40km

OVERVIEW

The SO-SFP-1000BASE-LXD series single-mode transceivers are small form factor pluggable module for bi-directional serial optical data communications such as IEEE 802.3z Gigabit Ethernet 1000BASE-LX and Fibre Channel 1x SM-LC-L FC-PI. It is with the SFP 20-pin connector to allow hot plug capability. This module is designed for single mode fiber and operates at a nominal wavelength of 1310nm. The transmitter section uses a multiple quantum well 1310nm laser and is a class 1 laser compliant according to International Safety Standard IEC-60825. The receiver section uses an integrated InGaAs detector preamplifier (IDP) mounted in an optical header and a limiting post-amplifier IC. The SO-SFP-1000BASE-LXD series are designed to be compliant with SFF-8472 SFP Multi-source Agreement (MSA).

PRODUCT FEATURES

- Operating data rate up to 1.25Gbps
- 40km with 9/125 µm SMF
- Single 3.3V power supply and TTL logic interface
- Hot-Pluggable SFP footprint duplex LC connector interface
- Class 1 FDA and IEC60825-1 laser safety compliant
- Operating temperature
  - Standard: 0 ℃~+70 ℃
  - Industrial:-40 ℃~+85 ℃
- Compliant with MSA SFP specification
- Compliant with SFF-8472
- RoHS 6/6 compliant

APPLICATIONS

- Gigabit Ethernet switches and routers
- Fibre Channel switch infrastructure
- Other optical links

ORDERING INFORMATION

Part Number	Description
SO-SFP-1000BASE-L40D	SFP, 1.25 Gbps GigE, 1310nm, SM/MM, DDM, 22dB, 40km
SO-SFP-1000BASE-L40D-I	SFP, 1.25 Gbps GigE, 1310nm, SM/MM, DDM, 22dB, 40km, ind temp.

ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Min	Max	Unit
Storage Temperature	TS	-40	+85	°C
Supply Voltage	VCC	-0.5	3.6	V
Operating Relative Humidity			95	%

RECOMMENDED OPERATING CONDITIONS

Parameter		Symbol		Min	Typ	Max	Unit
Case Operating Temperature		*Tc*	*SO-SFP-1000BASE-LXD*	0		+70	°C
			SO-SFP-1000BASE-LXD-I	-40		+85	
Power Supply Voltage		*Vcc*		3.15	3.3	3.45	V
Power Supply Current		*Icc*				300	mA
Data rate	GBE				1.25		Gbps
	FC				1.063		

PERFORMANCE SPECIFICATIONS – ELECTRICAL TRANSMITTER

Parameter		Symbol	Min	Typ	Max	Unit	Notes
LVPECL Inputs(Differential)		V_{IN}	400		2000	mVpp	AC coupled inputs
Input Impedance (Differential)		Z_{IN}	85	100	115	ohms	Rin > 100 kohms @ DC
TX Disable	Disable		2		Vcc	V	
	Enable		0		0.8		
TX FAULT	Fault		2		Vcc+0.3	V	
	Normal		0		0.5		

PERFORMANCE SPECIFICATIONS – ELECTRICAL RECEIVER

Parameter	Symbol	Min	Typ	Max	Unit	Notes
LVPECL Outputs (Differential)	*Vout*	400		2000	mVpp	AC coupled outputs
Output Impedance (Differential)	*Zout*	85	100	115	ohms	
Rx_LOS Output Voltage – High		2		Vcc+0.3	V	
Rx_LOS Output Voltage – Low		0		0.8	V	
MOD_DEF (2:0)	*VoH*	2.5			V	With Serial ID
	VoL	0		0.5	V	

OPTICAL AND ELECTRICAL CHARACTERISTICS

Parameter	Symbol	Min	Typ	Max	Unit
9µm Core Diameter MMF	L		40		km
Data Rate			1.063/1.25		Gbps

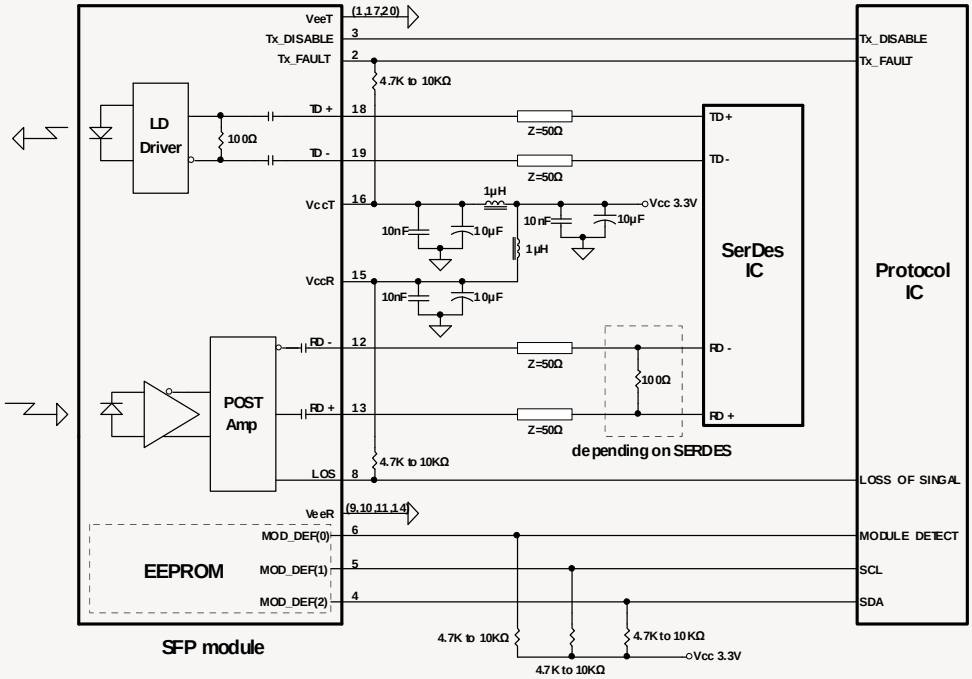
OPTICAL AND ELECTRICAL CHARACTERISTICS TRANSMITTER

Parameter	Symbol	Min	Typ	Max	Unit
Centre Wavelength	*Λc*	1260	1310	1360	nm
Spectral Width (RMS))	*Δλ*			1	nm
Side Mode Suppression Ratio	*SMSR*	30			dB
Average Output Power	*Pout*	-2		3	dBm
Extinction Ratio	*ER*	9			dB
Rise/Fall Time(20%~80%)	*tr/tf*			0.26	ns
Total Jitter	*TJ*			0.43	UI
Output Optical Eye		Compliant with IEEE 802.3ah-2004			
TX Disable Assert Time	*t_off*			10	us
Pout@TX Disable Asserted	*Pout*			-45	dBm

OPTICAL AND ELECTRICAL CHARACTERISTICS RECEIVER

Parameter	Symbol	Min	Typ	Max	Unit
Centre Wavelength	*Λ*	1260		1600	nm
Receiver Sensitivity	*Pmin*			-24	dBm
Receiver Overload	*Pmax*	-3			dBm
LOS De-Assert	*LOSD*			-25	dBm
LOS Assert	*LOSA*	-38			dBm
LOS Hysteresis		0.5			dB

RECOMMENDED CIRCUIT SCHEMATIC



PIN FUNCTION DEFINITIONS

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 (LVTTL). This pin has an internal 30k pulldown 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 (LVTTL). This pin has an internal 30k pulldown 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 DRAWING