

SO-XFP-8G-SD

XFP, 8/4/2 Gbps FC/FICON, 850nm, MM, DDM, 4.3dB, 150m

OVERVIEW

The SO-XFP-8G-SD is a multi-purpose optical transceiver module for 8.5Gbit/s data transmission applications at 850nm. It is ideally suited for 8G storage area network (SAN/NAS) application based on the Fibre Channel standards designed for short range distances, the transceiver module comprises a transmitter with a vertical cavity surface emitting laser (VCSEL) and a receiver with a PIN photodiode. Transmitter and receiver are separate within a wide temperature range and offers optimum heat dissipation and excellent electromagnetic shielding thus enabling high port densities for 10 GbE systems.

PRODUCT FEATURES

- Fully compliant to XFP MSA Rev.4.5
- Compliance to Fiber Channel 800-M5-SN-I, 800-M5E-SN-I, 800-M6-SN-I at 8.5Gbit/s
- Transmission distance up to
 - 300m with OM3 MMF
 - 82m with OM2 MMF
 - 33m with OM1 MMF
- Low power consumption 1.5W(typ.)
- Wide operating temperature range:
 - Standard: 0C to +70C
 - Industrial: -40C to +85C
- Laser Class 1M compliant

APPLICATIONS

- 8.5G Fiber Channel Links
- Other optical links

ORDERING INFORMATION

Part Number	Description
SO-XFP-8G-SD	XFP, 8/4/2 Gbps FC/FICON, 850nm, MM, DDM, 4.3dB, 150m
SO-XFP-8G-SD-I	XFP, 8/4/2 Gbps FC/FICON, 850nm, MM, DDM, 4.3dB, 150m-I

ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Min.	Max.	Unit
Storage Ambient Temperature Range		-40	+85	°C
Powered case Temperature Range	SO-XFP-8G-SD SO-XFP-8G-SD-I <i>TA</i>	0 -40	+70 +85	°C
Operating Relative Humidity	<i>RH</i>	8	80	%
Supply Voltage Range @ 3.3V	<i>Vcc3</i>	0.5	3.6	V
Open Drain VCC level	<i>VOD</i>		4.0	V
Static Discharge Voltage on XFI High	HBM human body model per JEDEC JESD22- A114-B		500	V
Static Discharge Voltage excluding XFI High Speed Pins	HBM human body model		2,000	V
Static Discharge Voltage on XFP Module	EN61000-4-2 Criterion B: Air Discharge Direct Contact discharge		15,000 8,000	V

RECOMMENDED OPERATING CONDITIONS

Parameter	Symbol	Min.	Typ	Max.	Unit
Operating Case Temperature Range	SO-XFP-8G-SD SO-XFP-8G-SD-I <i>TA</i>	0 -40		+70 +85	°C
Transceiver total Power Consumption	<i>TOT P</i>		1.5	2	W
Power Supply Voltage @ 3.3V	<i>Vcc3</i>	3.135	3.300	3.465	V
Supply Current	<i>Icc3</i>			600	mA

HIGH SPEED LINE CHARACTERISTICS

Parameter	Symbol	Min.	Typ	Max.	Unit
Baud Rate nominal			8.5		Gdb
Baud Rate Tolerance		-100		+100	ppm

HIGH SPEED LINE OUTPUT-DC CHARACTERISTICS

Parameter	Symbol	Min.	Typ	Max.	Unit
Single Ended Output Impedance	<i>ZSE</i>	40	50	60	Ω
Differential Output Impedance	<i>ZOD</i>	80	100	120	Ω

HIGH SPEED LINE OUTPUT-AC CHARACTERISTICS

Parameter	Symbol	Min.	Typ	Max.	Unit
Differential Output Amplitude	V_{OSPP}	340		850	mV
Output Common Mode	V_{CM}	0		3.6	V
Transition Time Low to High	T_r	24			ps
Transition Time High to Low	t_f	24			ps
Differential Output Return Loss	0.05—0.1GHz 0.1— 5.5GHz 5.5 12GHz	20	8		dB
Common Mode Output Return Loss ²	0.1—15GHz	3			dB
Total Peak-to-peak Jitter	DJ			0.34	UI
Output AC Common Mode Voltage				15	mV (RMS)

HIGH SPEED LINE INPUT-DC CHARACTERISTICS

Parameter	Symbol	Min.	Typ	Max.	Unit
Differential Output Impedance	R_{IND}	80	100	120	Ω
Input AC Common Mode Input Voltage		0		25	mV (RMS)
Source to Sink DC Potential Difference	V_{CM}	0		3.6	V

HIGH SPEED LINE INPUT-AC CHARACTERISTICS

Parameter	Symbol	Min.	Typ	Max.	Unit
Differential input Voltage Swing	V_{ID}	120			mV
Differential Output Return Loss	0.05—0.1GHz 0.1— 5.5GHz 5.5 12GHz	20	8		dB
Common Mode Output Return Loss	0.1—15GHz	3			dB
Total Jitter j	T_j			TDB	UI

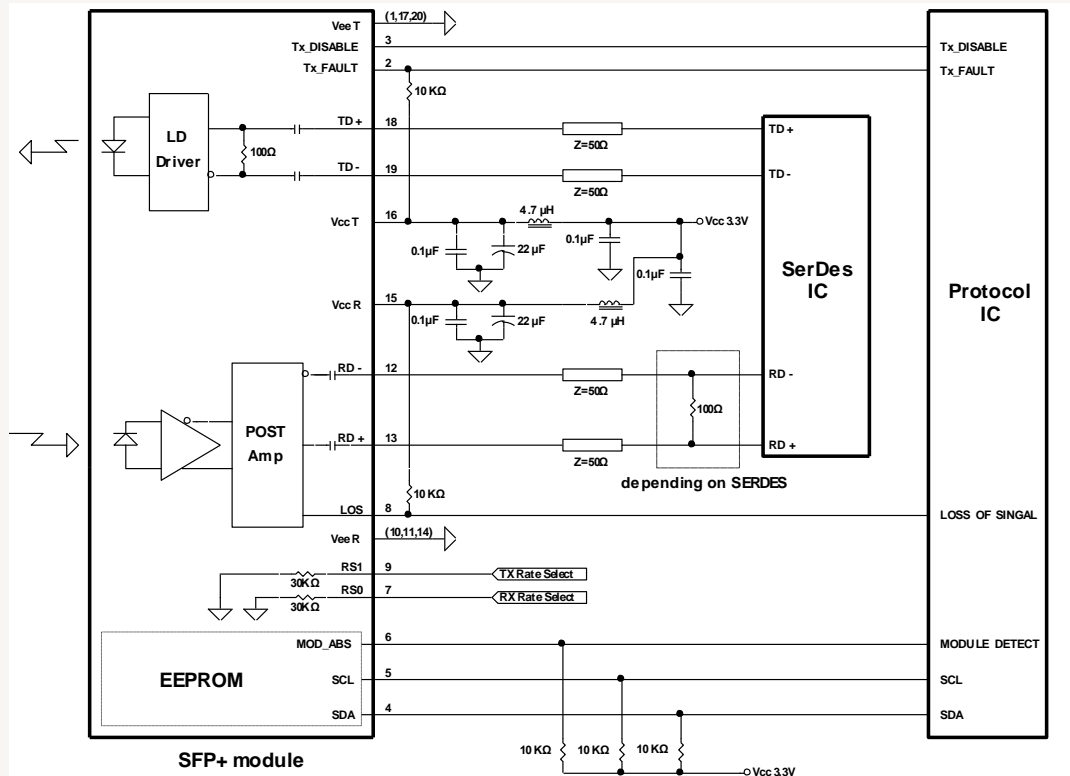
OPTICAL TRANSMITTER

Parameter	Symbol	Min.	Typ	Max.	Unit
Nominal Wavelength	λ_{TRP}	840	850	860	nm
Spectral Width	$\Delta\lambda$		0.4	0.45	nm
Operating Range	62.5/125 μ m MMF, 160 MHz*km			26	
	50/125 μ m MMF, 400 MHz*km			66	
	62.5/125 μ m MMF, 200 MHz*km			33	m
	50/125 μ m MMF, 500 MHz*km			82	
	50/125 μ m MMF, 2000MHz*km			300	
Nominal Signalling Speed			9.95		10.71
Average Launch Power	P_o	-7.3	-2.6	-1	dBm
Extinction Ratio	ER	3.5	5.5		dB
Relative Intensity Noise	RIN			-128	dB/Hz

OPTICAL RECEIVER

Parameter	Symbol	Min.	Typ	Max.	Unit
Centre Wavelength	λ_c	840	850	860	nm
Receiver Sensitivity	P_{in}		-13.5	-11	dBm
Stressed Receiver Sensitivity	P_{in}			-7.5	dBm
Saturation Input Power	$PSAT$			1	dBm

FUNCTIONAL DIAGRAM OF TRANSCEIVER AND 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 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 (LVTTTL). 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

Subject to change without notice.

For more information, visit smaroptics.com.

MECHANICAL DIMENSIONS

