SFP-10G-SR+-SO

SFP+, 10Gbps, 550m, Multi Mode, 850nm, with DOM

General Description

The SFP-10G-SR+-SO optical transceivers are designed for Storage, IP network and LAN. It is a fully integrated 10.3 Gbps optical transceiver module that consists of a 850nm wavelength optical transmitter and receiver. The SFP-10G-SR+-SO is a hot pluggable module in the Z-direction that is mainly usable in typical router/switch line card applications. The Solid Optics SFP+ SR can reach 550m over Multimode Fiber.

Product Features

- Operating data rate up to 10.3Gbps
- 850nm transmitter
- 550m over multi mode fiber
- Single 3.3V power supply and TTL logic interface
- Duplex LC connector interface
- Hot pluggable
- Operating case temperature standard: from 0°C to +70°C
- Compliant with MSA SFP specification
- Digital diagnostic monitor interface (also called DOM or DDM)
- Compatible with SFF-8472

Optical Characteristics

Parameter	Min Modal Bandwidth (MHz*Km)	Conditions	Symbol	Min	Typ	Max	Units
Transmitter							
Nominal Wavelength			λTRP	840	850	860	nm
Spectral Width					0.4	0.45	nm
Operating Range	62.5/125 m MMF	160	Iop	2		26	m
	50/125 m MMF	400		2		66	
	62.5/125 m MMF	200		0.5		33	
	50/125 m MMF	500		0.5		82	
	50/125 m MMF	2000		0.5		550	
Nominal Signalling Speed			fOPT	9.95		10.71	GBd
Launch Power		in OMA	PoptOMA	-7.3		-1	dBm
Average Launch Power			Poptavg	-7.3	-2.6	-1	dBm
Extinction Ratio			ER	3.5			dB
Relative Intensity Noise			RIN			-128	dB/Hz

Optical Receiver

Parameter	Conditions	Symbol	Min	Typ	Max	Units
Maximum Input Power		P_{MAX}			-1	dBm
Center Wavelength		λ_C	840	850	860	nm
Receiver Sensitivity Ethernet	Pavg, PRBS 2^{31}-1, BER < $1*10^{-12}$@ 1.25GBd *)	P_{IN}	tbd			dBm
	OMA, PRBS 2^{31}-1, BER < $1*10^{-12}$@10.3125GBd		-11.1			
Receiver Sensitivity Fibre Channel	OMA, PRBS 2^{31}-1, BER < $1*10^{-12}$@2GBd	P_{IN}	-13.0			dBm
	OMA, PRBS 2^{31}-1, BER < $1*10^{-12}$@4GBd		-12.0			
	OMA, PRBS 2^{31}-1, BER < $1*10^{-12}$@8GBd		-11.2			
	OMA, PRBS 2^{31}-1, BER < $1*10^{-12}$@10GBd		-11.1			
Stressed Receiver Sensitivity Ethernet	OMA, PRBS 2^{31}-1, BER < $1*10^{-12}$@1.25GBd	P_{IN}	tbd			dBm
	Pavg, PRBS 2^{31}-1, BER < $1*10^{-12}$@ 10.3125GBd		-7.5			
Stressed Receiver Sensitivity Fibre Channel (OM3 fibers)	OMA, PRBS 2^{31}-1, BER < $1*10^{-12}$@2GBd	P_{IN}	-10.8			dBm
	OMA, PRBS 2^{31}-1, BER < $1*10^{-12}$@4GBd		-9.0			
	OMA, PRBS 2^{31}-1, BER < $1*10^{-12}$@8GBd		-8.3			
	OMA, PRBS 2^{31}-1, BER < $1*10^{-12}$@10.3125GBd		-17.5			

Loss of Signal		Pav_as	-30			dBm
		POMA_deas			-12	
	Ethernet:1.25GBd *)	Pav_deas			-17	

Electrical Performance

Parameter	Conditions	Symbol	Min	Typ	Max	Units
Supported Data Rate			1	10.3125	11.3	Gbd
Reference Differential Output Impedance		Zd		100		□
Termination Mismatch		ΔZd			5	%
Output AC Common Mode Output Voltage					15	mV (RMS)
Differential Output Amplitude	RLoad=100Ohm, Differential	VOSPP	350	650	800	mV
Output Rise and Fall time	20% to 80%	tRH, tFH	24		35	ps
Differential Input S-parameter	0.01 – 3.9GHz	SDD22			-10	dB
	3.9 – 11.1GHz				+10	dB
Common Mode Output Return Loss[2])	0.01 – 6.5Ghz	SCC22			-7	dB
	6.5– 11.1Ghz				-3	dB
Deterministic Jitter		DJ			0.42	UI(p-p)
Total Jitter	See SFP+ MSA	TJ			0.28	UI(p-p)

Dom Parameters

Parameter	Values			Unit
	min.	typ.	max.	
Transponder Temperature Monitor Accuracy[1)]	-5		+5	°C
Laser Bias Current Monitor Accuracy[2)]	-10		+10	%
Transmit Power Monitor Accuracy[3)]	-3		+3	dB
Receive Power Monitor Accuracy[3)]	-3		+3	dB

General Specifications

Standard	Fiber Type	Minimum Modal Bandwidth at 850 nm (MHz*km)	Operating Range [1)] (meters)
IEEE	62.5 µm MMF	160	2 to 26
	50 µm MMF	400	2 to 66
Fibre Channel	62.5 µm MMF	200	0.5 to 33
	50 µm MMF	500	0.5 to 82
	50 µm MMF	2000	0.5 to 300

MDIO Bidirectional Interface Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit
Input High Voltage	VIHM	0.84	-	1.5	V
Input Low Voltage	VILM	-0.3	-	0.36	V
Output High Voltage	VOHM	1.0	-	1.5	V
Output Low Voltage	VOLM	-0.3	-	0.2	V
MDC min high/low time	THM,TLM	160	-	-	ns
MDC Frequency	1/TCK	TBD	-	2.5	MHz
Setup time	TDIS	10	-	-	ns
Hold time	TDIH	10	-	-	ns
MDIO output delay after rising edge of MDC	TPD	0	-	300	ns
Input Capacitance	Ci	-	-	10	pF
Bus Loading	CL	-	-	470	pF