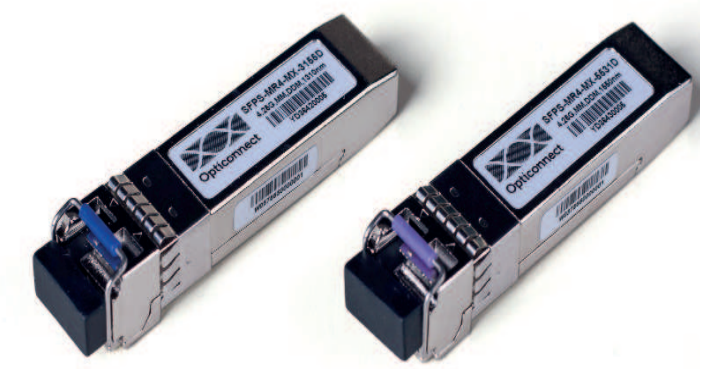
SFPS-MR4-MX-3155 and 5531 series

SFP Multi-Mode, Single-Fiber Transceiver
for 100Mbps to 4.25Gbps FE/GBE /FC



Features

- Up to 4.25Gbps Data Links
- A type: 1310nm FP TX /1550nm RX
- B type: 1550nm FP TX /1310nm RX
- 300m with 50/125 µm MMF
- Single 3.3V Power supply and TTL Logic Interface
- Hot-Pluggable SFP Footprint Simplex SC/ LC Connector Interface

Applications

- Fiber Channel Links
- Gigabit Ethernet Links
- Other Optical Links
- FTTX Application

Product Description

The-SFPS-MR4-MX-3155 and SFPS-MR4-MX-5531 series is small form factor pluggable module for 1XFC/2XFC/4XFC single fiber applications by using 1310nm / 1550nm transmitter and 1550nm / 1310nm receiver. It is with the SFP 20-pin connector to allow hot plug capability.
The transmitter section uses a distributed feed-back laser and is a class 1 laser compliant according to International Safety Standard IEC 60825. The receiver section uses an integrated B type / A type detector preamplifier (IDP) mounted in an optical header and a limiting post-amplifier IC.

The SFPS-MR4-MX series are designed to be compliant with SFF-8472 MSA.

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Opticonnect SYSTEMS B.V., an Optical Networking vendor with its headquarters in the Netherlands, provides Optical Transport solutions and Optical Transceivers at the best price performance ratio possible. Our goal is to simplify the planning, deployment and maintenance of complex Optical Networks. This is achieved by our user friendly planning apps and information, sophisticated products and transparent support. Relying on our superior product quality, all items are supplied with life time warranty.

Ordering Information

Part No.	Data Rate	Wavelength	Interface	Temp.	DDMI
SFPS-MR4-MX-3155D	Up to 4.25Gbps	1310nm	LC	Standard	YES
SFPS-MR4-MX-5531D	Up to 4.25Gbps	1550nm	LC	Standard	YES

Regulatory Compliance

Feature	Standard	Performance
Electrostatic Discharge (ESD) to the Electrical Pins	MIL-STD-883G Method 3015.7	Class 1C (>1000 V)
Electrostatic Discharge to the enclosure	EN 55024:1998+A1+A2 IEC-61000-4-2 GR-1089-CORE	Compliant with standards
Electromagnetic Interference (EMI)	FCC Part 15 Class B EN55022:2006 CISPR 22B :2006 VCCI Class B	Compliant with standards Noise frequency range: 30MHz to 6GHz. Good system EMI design practice required to achieve Class B margins. System margins are dependent on customer host board and chassis design.
Immunity	EN 55024:1998+A1+A2 IEC 61000-4-3	Compliant with standards. 1KHz sine-wave, 80% AM, from 80MHz to 1GHz. No effect on transmitter/receiver performance is detectable between these limits.
Laser Eye Safety	FDA 21CFR 1040.10 and 1040.11 EN (IEC) 60825-1:2007 EN (IEC) 60825-2:2004+A1	CDRH compliant and Class I laser product. TüV Certificate No. 50135086
Component Recognition	UL and CUL EN60950-1:2006	UL file E317337 TüV Certificate No. 50135086 (CB scheme)
RoHS6	2002/95/EC 4.1&4.2 2005/747/EC 5&7&13	Compliant with standards*note3

Note2: For update of the equipments and strict control of raw materials, EOPTOLINK has the ability to supply the customized products since Jan 1st, 2007, which meet the requirements of RoHS6 (Restrictions on use of certain Hazardous Substances) of European Union. In light of item 5 in RoHS exemption list of RoHS Directive 2002/95/EC, Item 5: Lead in glass of cathode ray tubes, electronic components and fluorescent tubes.
In light of item 13 in RoHS exemption list of RoHS Directive 2005/747/EC, Item 13: Lead and cadmium in optical and filter glass. The three exemptions are being concerned for Eoptolink's transceivers, because Eoptolink's transceivers use glass, which may contain Pb, for components such as lenses, windows, isolators, and other electronic components.

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	%

*Exceeding any one of these values may destroy the device immediately.

Recommended Operating Conditions

Parameter	Symbol		Min.	Typical	Max.	Unit
Operating Case Temperature	T_A	SFPS-MR4-MX-5531	0		+70	°C
Power Supply Voltage	Vcc		3.15	3.3	3.45	V
Power Supply Current	Icc			200	300	mA
Date Rate			1	4.25		Gbps

Performance Specifications - Electrical

Parameter		Symbol	Min.	Typ.	Max	Unit	Notes
Transmitter							
LVPECL Compatible Inputs(Differential)		Vin	400		2000	mVpp	AC coupled inputs*(note5)
Input Impedance (Differential)		Zin	85	100	115	ohm	Rin > 100 kohm @ DC
TX_Dis	Disable		2		Vcc+0.3	V	
	Enable		0		0.8		
TX_FAULT	Fault		2		Vcc+0.3	V	
	Normal		0		0.5		
Receiver							
CML Outputs (Differential)		Vout	400	800	2000	mVpp	AC coupled outputs*(note5)
Output Impedance (Differential)		Zout	85	100	115	ohm	
RX_LOS	LOS		2		Vcc+0.3	V	
	Normal		0		0.8	V	
MOD_DEF (0:2)		VoH	2.5			V	With Serial ID
		VoL	0		0.5	V	

Optical and Electrical Characteristics - SFPS-MR4-MX-3155

Parameter	Symbol	Min.	Typical	Max.	Unit
50/125 µm MM	L		300		m
Data Rate				4250	Mbps
Transmitter					
Center Wavelength	λ_C	1270	1310	1360	nm
Spectral Width (RMS)	$\Delta\lambda$		2		nm
Average Output Power*(note3)	Pout	-9		-2	dBm
Optical Modulation Amplitude @ 4250Mbps	OMA	290			dB

Rise/Fall Time(20%～80%)	tr/tf			175	ps
Total Jitter	TJ			61.2	ps
Output Optical Eye*(note4)	Compliant with IEEE 802.3z*(note7)				
TX_Disable Assert Time	t_off			10	us
P_{out}@TX Disable Asserted	Pout			-45	dBm
Receiver					
Center Wavelength	λ_C	1500	1550	1600	nm
Receiver Sensitivity*(note6)@4250Mbps	Pmin			-15	dBm
Receiver Overload	Pmax	0			dBm
LOS De-Assert@4250Mbps	LOSD			-16	dBm
LOS Assert	LOSA	-30			dBm
LOS Hysteresis*(note8)		1.0			dB

SFPS-MR4-MX-5531

Parameter	Symbol	Min.	Typical	Max.	Unit
50/125 μm MM	L		300		m
Data Rate				4250	Mbps
Transmitter					
Center Wavelength	λ_C	1530	1550	1570	nm
Spectral Width (RMS)	Δλ		2		nm
Average Output Power*(note3)	Pout	-9		-2	dBm
Optical Modulation Amplitude @ 4250Mbps	OMA	290			dB
Side Mode Suppression Ratio	SMSR	30			dB
Rise/Fall Time(20%～80%)	t_r/t_f			175	ps
Total Jitter	TJ			61.2	ps
Output Optical Eye*(note4)	Compliant with IEEE 802.3ah-2004*(note7)				
TX_Disable Assert Time	t_off			10	us
P_{out}@TX Disable Asserted	Pout			-45	dBm
Receiver					
Center Wavelength	λ_C	1260		1360	nm
Receiver Sensitivity*(note6)@4250Mbps	Pmin			-15	dBm

Receiver Overload	Pmax	0			dBm
Return Loss		12			dB
Optical Path Penalty				1	dB
LOS De-Assert@4250Mbps	LOSD			-16	dBm dBm
LOS Assert	LOSA	-30			dBm
LOS Hysteresis*(note8)		1.0			dB

Note3: Output is coupled into a 50/125μm Multi-mode fiber.
Note4: Filtered, measured with a PRBS 27-1.
Note5: CML logic, internally AC coupled.
Note6: Measured at all data rates specified in Data Rate table with 27-1 PRBS data pattern, BER <1E-12.
Note7: Eye Pattern Mask
Note8: LOS Hysteresis