SFP Transceiver
1.25 Gbps
Extended Temp. Range

MICROSENS

Description

The actual SFP transceivers from MICROSENS offer an optical transmission over multimode or single mode fiber. Depending on the model the transceiver can cover distances up to 120 km.

The SFP (Small Form Factor Pluggable) is based on the same principle as the GBIC. The main difference is the size of the transceiver with only half of the width (mechanical dimensions) due to the use of the LC connector.

The optical transceiver from MICROSENS comply to the SFP specifications Revision 5.4.. Additional they are compliant to the Gigabit Ethernet specifications according IEEE Std. 802.3®, the Fibre Channel specifications FC-PH, PH2, PH3, FC-PI 10.0 and all common ATM (OC-12, OC-48) and Sonet (SDH STM-4, SDH STM-16) standards.

The transceivers are available with different wavelengths. For multimode applications such as Gigabit Ethernet, Fibre Channel or Double Rate Fibre Channel VCSEL lasers with a wavelength of 850 nm are used. This allows to realise distances up to 550 m using a 50/125 µm multimode fiber.

For single mode applications there are FP and DFB lasers with the wavelengths of 1310 and 1550 nm available. Depending on the model it is possible to cover distances from 10 km up to 120 km. The transceivers offer the highest flexibility and can be installed during operation (hot swap).

Technical Specifications

Type	SFP (Small Form Factor Pluggable) Transceiver for data transmission up to Gigabit speed
Fiber type	Single Mode 9/125 µm duplex, LC-connector
Data Rates	1.0625 Gbps to 1.25 Gbps
Standards	CDRH and IEC 825-1 class 1 eye safety
Operating temperature	-40°C up to +85° C
Supply Voltage	3.3 V

Detailed optical Parameters

Transmitter Electro-optical Characteristics

Vcc = 3.1 V to 3.5 V, T_C = 0 °C to 70 °C (-40 °C to 85 °C)

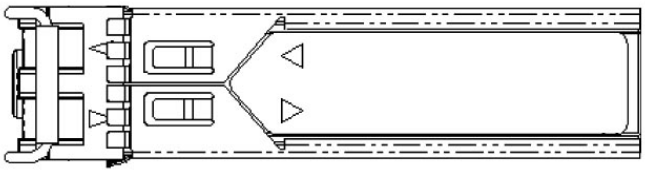
PARAMETER	SYMBOL	MIN	TYP.	MAX	UNITS	NOTE
Output Optical Power 9/125 μm fiber	P_{out}	-9	---	-3	dBm	Average
Extinction Ratio	ER	9	---	---	dB	
Center Wavelength	λ_C	1280	1310	1355	nm	
Spectral Width (RMS)	$\Delta\lambda$	---	---	2.5	nm	
Rise/Fall Time, (20–80%)	$T_{r,f}$	---	---	260	ps	
Relative Intensity Noise	RIN	---	---	–120	dB/Hz	
Total Jitter	TJ	---	---	227	ps	
Output Eye			Compliant with IEEE802.3z			
Max. P_{out} TX-DISABLE Asserted	P_{OFF}	---	---	–45	dBm	
Differential Input Voltage	V_{DIFF}	0.4	---	2.0	V	

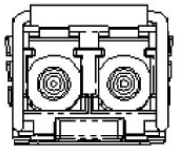
Receiver Electro-optical Characteristics

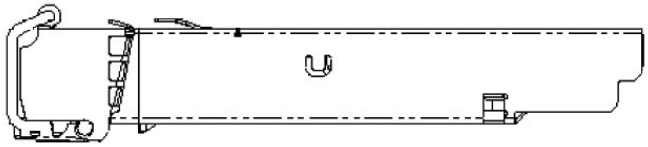
Vcc = 3.1 V to 3.5 V, T_C = 0 °C to 70 °C (-40 °C to 85 °C)

PARAMETER	SYMBOL	MIN	TYP.	MAX	UNITS	NOTE
Optical Input Power-maximum	P_{IN}	–3	---	---	dBm	BER < 10^{-12}
Optical Input Power-minimum (Sensitivity)	P_{IN}	---	-26	–21	dBm	BER < 10^{-12}
Operating Center Wavelength	λ_C	1260	---	1610	nm	
Optical Return Loss	ORL	12	---	---	dB	
Signal Detect-Asserted	P_A	---	---	–21	dBm	
Signal Detect-Deasserted	P_D	–35	---	---	dBm	
Differential Output Voltage	V_{DIFF}	0.5	---	1.2	V	
Data Output Rise, Fall Time (20–80%)	$T_{r,f}$	---	---	0.35	ns	
Receiver Loss of Signal Output Voltage-Low	RX_LOS_L	0	---	0.5	V	
Receiver Loss of Signal Output Voltage-High	RX_LOS_H	2.4	---	V_{CC}	V	

Construction







Diagnostic Function (optional)

Optional the transceivers are available with Diagnostic function (Extension of article number with "D", e.g. MS100200D), to monitor detailed all operating information.

This offers to read information such as optical transmit power, receive power, the optical budget, the resulting possible distances and the real used data rate via the management system.

This feature is particular useful in combination with the MICROSENS xWDM systems, because it increases the functionality significant.

Eye Safety

Attention: Visible and invisible light emitted from fiber optical component may cause permanent damage to your eyes!

To avoid damage to the eyes

- *never look straight into the output of fiber optic components – danger of blinding!*
- *cover all unused optical connections with caps.*
- *commission the transmission link only after completing all connections.*

The active laser components used with this product comply with the provisions of **Laser Class 1**.

Order Information

Art.-No.	Description	Connectors
MS100210DX	SFP, Gigabit Ethernet / Fibre Channel 1310 nm Single Mode Transceiver, max. 1.25 Gbps, min. 10 km extended temp. range -40 to +85 degrees, diagnostics interface	LC duplex

*) Option "D" for Diagnostic Function (e.g. MS100200D)
*) Option "X" for extended Temperature -40°C up to +85°C (e.g. MS100200DX)