

SFP Module 1.25G MULTIMODE

Duplex LC Connector, 850nm VCSEL for Multimode Fibre, RoHS Compliant



Applications

- Gigabit Ethernet Links
- Fibre Channel Links at 1.06 Gbps
- High Speed Backplane Interconnects
- Switched Backbones

Description

The SFPMM is a high performance and cost-effective module for serial optical data communication applications specified for multimode of 1.25 Gb/s. It operates on +3.3V power. The module is intended for multimode fibre, operates at a nominal wavelength of 850nm, and complies with Multi-Source Agreement (MSA) Small Form Factor Pluggable (SFP). Each module consists of a transmitter optical subassembly, a receiver optical subassembly, and an electrical subassembly. All are housed in a metal package and the combination produces a reliable component.

The module is a duplex LC connector transceiver designed for use in Gigabit Ethernet applications and to provide IEEE-802.3z compliant link for 1.25Gb/s short reach applications. The characteristics are performed in accordance with Telcordia Specification GR-468-CORE.

Features

RoHS Pb

- 850nm VCSEL
- Data Rate: 1.25Gbps, NRZ
- Single +3.3V Power Supply
- RoHS Compliant and Lead-free
- AC/AC Differential Electrical Interface
- Compliant with Multi-Source Agreement (MSA) Small Form Factor Pluggable (SFP)
- Duplex LC Connector
- Compliance with specifications for IEEE-802.3z Gigabit Ethernet at 1.25 Gbps
- Compliance with ANSI specifications for Fibre Channel applications at 1.06 Gbps
- Eye Safety
 - Designed to meet Laser Class 1, complies with EN60825-1

EMC

Most equipment utilizing high-speed transceivers will be required to meet the following requirements:

- 1) FCC in the United States
- 2) CENELEC EN55022 (CISPR 22) in Europe

To assist the customer in managing the overall equipment EMC performance, the transceivers have been designed to satisfy FCC class B limits and provide good immunity to radio-frequency electromagnetic fields.

EYE SAFETY

The transceivers have been designed to meet Class 1 eye safety and comply with EN 60825-1.

PRODUCT INFORMATION

Model Number	Operating Voltage & SD Output	Wavelength	Output Power	Sensitivity	Distance
SFPMM	3.3V TTL AC/AC	850 nm	-9.5 ~ -4 dBm	≤-17 dBm	550 m(50/125μm) 275 m(62.5/125μm)

ABSOLUTE MAX RATINGS

PARAMETER	SYMBOL	MIN	MAX	UNIT	NOTE
Storage Temperature	TS	-40	85	°C	
Supply Voltage	VCC	0	6	V	
Supply Current	IS		240	mA	

OPERATING CONDITIONS

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	NOTE
Case Operating Temperature	T _A	0		70	°C	
Supply Voltage	V _{CC}	3.1		3.5	V	
Data Input Voltage Swing	V _{ID}	300		1660	mV	

ELECTRICAL CHARACTERISTICS

PARAMETER	SYMBOL	MIN	MAX	UNIT	NOTE
Transmitter					
Transmitter Supply Current	I _{CCT}		140	mA	
Tx_Disable Input Voltage - Low	V _{IL}	0	0.8	V	
Tx_Disable Input Voltage - High	V _{IH}	2.0	V _{CC}	V	
Tx_Fault Output Voltage - Low	V _{OL}	0	0.8	V	
Tx_Fault Output Voltage - High Receiver	V _{OH}	2.0	V _{CC}	V	
Receiver Supply Current					
	I _{CCR}		100	mA	
Receiver Data Output Differential Voltage	V _{OD}	0.4	1.3	V	
Rx_LOS Output Voltage - Low	V _{OL}	0	0.8	V	
Rx_LOS Output Voltage - High	V _{OH}	2.0	V _{CC}	V	
MOD_DEF (1) , MOD_DEF (2) - Low	V _{IL}	-0.6	V _{CC} × 0.3	V	
MOD_DEF (1) , MOD_DEF (2) - High	V _{IH}	V _{CC} × 0.7	V _{CC} + 0.5	V	

TRANSMITTER ELECTRO-OPTICAL CHARACTERISTICS

PARAMETER	SYMBOL	MIN	TYP.	MAX	UNIT	NOTE
Optical Output Power	P _o	-9.5		-4	dBm	1
Extinction Ratio	ER	9			dB	
Center Wavelength	λ_c	830			nm	
Spectral Width (RMS)	$\Delta\lambda$		850	860	nm	
RIN	RIN			0.85	dB/Hz	
Coupled Power Ratio	CPR			-117	dB	
Optical Rise time (20%-80%)	t _r	9			ps	2
Optical Fall time (20%-80%)	t _f		260		ps	3
Output Eye			260			3
Compliant with IEEE802.3z/D5.0						

RECEIVER ELECTRO-OPTICAL CHARACTERISTICS

PARAMETER	SYMBOL	MIN	TYP.	MAX	UNIT	NOTE
Maximum Input Optical Power	P _{max}	-3			dBm	4
Minimum Input Optical Power	P _{min}				dBm	4
Operating Wavelength	λ			-17	nm	
Optical Return Loss	ORL	720 12		860	dB	
Receiver Electrical 3dB Upper Cutoff Frequency	---			1500	MHz	
LOS of Signal - Asserted	P _A	-35			dBm	
LOS of Signal - Deasserted	P _D			-17	dBm	
Loss of Signal -Hysteresis	P _D -P _A	0.5			dB	

Notes:

1. Measured average power coupled into 62.5/125µm, 0.275 NA or 50/125µm, 0.2 NA graded index multimode Fibre.
 2. CPR is measured in accordance with EIA/TIA-526-14A as referenced in IEEE 802.3 section 38.6.10.
 3. These are 20-80% values.
- 7-12
4. Measured with 2 -1 PRBS at BER<10

TIMING CHARACTERISTICS

PARAMETER	SYMBOL	MIN	TYP.	MAX	UNIT
TX_DISABLE Assert Time	t_off			10	µs
TX_DISABLE Negate Time	t_on			1	ms
Time to initialize, include reset of TX_FAULT	t_init			300	ms
TX_FAULT from fault to assertion	t_fault			100	µs
TX_DISABLE time to start reset	t_reset				µs
Receiver Loss of Signal Assert Time (off to on)					
Receiver Loss of Signal Assert Time (on to off)	tA,RX_LOS			100	µs
	tD,RX_LOS			100	