

SP-MM31022D-GP

**1310nm SFP+ Multi-Mode for 10GBASE-LRM
Duplex SFP+ Transceiver
RoHS 6 Compliant**

Features

- ◆ Operating data rate up to 11.3Gbps
- ◆ 1310nm FP Transmitter
- ◆ Distance up to 220m with MMF
- ◆ Single 3.3V Power supply and TTL Logic Interface
- ◆ Duplex LC Connector Interface
- ◆ Hot Pluggable
- ◆ Power Dissipation < 1.0W
- ◆ Operating Case Temperature
Standard: 0C~+70C
- ◆ Compliant with MSA SFP+ Specification SFF-8431
- ◆ Compliant with IEEE 802.3aq 10GBASE-LRM

Applications

- ◆ 10GBASE-LRM
- ◆ Other optical links

Ordering information

Part No.	Description
SP-MM31022D-GP	SFP+ LRM 10Gbs 1310nm LC DDM MMF 220m

Note1: 220m is over 50/125 MMF with a modal bandwidth of 2000MHz*km.

Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Unit
Storage Temperature	TS	-40	+85	°C
Supply Voltage	VCC	-0.5	3.6	V

Recommended Operating Conditions

Parameter	Symbol	Min.	Typical	Max.	Unit
Operating Case	Tc SP-MM31022D-GP	0		+70	°C
Power Supply Voltage	VCC	3.15	3.3	3.45	V
Power Supply Current	ICC			300	mA
Surge Current	ISurge			+30	mA
Baud Rate				11.3	Gbps

Performance Specifications - Electrical

Parameter	Symbol	Min.	Typ.	Max	Unit	Notes
Transmitter						
CML Inputs(Differential)	Vin	150		1200	mVpp	AC coupled inputs
Input Impedance (Differential)	Zin	85	100	115	ohm	Rin > 100 kohms @ DC
Tx_DISABLE Input Voltage - High		2		3.45	V	
Tx_DISABLE Input Voltage - Low		0		0.8	V	
Tx_FAULT Output Voltage -- High		2		Vcc+0.3	V	Io = 400µA; Host Vcc
Tx_FAULT Output Voltage -- Low		0		0.5	V	Io = -4.0mA
Receiver						
CML Outputs (Differential)	Vout	350		700	mVpp	AC coupled outputs
Output Impedance (Differential)	Zout	85	100	115	ohm	
Rx_LOS Output Voltage - High		2		Vcc+0.3	V	Io = 400µA; Host Vcc
Rx_LOS Output Voltage - Low		0		0.8	V	Io = -4.0mA
MOD_DEF (2:0)	VoH	2.5			V	With Serial ID
	VoL	0		0.5	V	

Performance Specifications - Optical

Parameter	Symbol	Min.	Typical	Max.	Unit
Data Rate		0.6		11.3	Gbps
Transmitter					
Centre Wavelength	λ_C	1260	1310	1355	nm
Spectral Width (RMS)	$\Delta\lambda$			3.5	nm
Average Output Power@10.3Gbps	P_{out}	-6.5		0.5	dBm
Extinction Ratio@10.3Gbps	ER	3.5			dB
Average Power of OFF Transmitter	P_{off}			-30	dBm
TX Disable Assert Time	t_{off}			10	us
Receiver					
Centre Wavelength	λ	1260		1555	nm
Sensitivity@10.3Gbps	P_{min}			-10	dBm
Receiver Overload	P_{max}	1.5			dBm
Optical Return Loss	ORL			-12	dB
LOS De-Assert	LOSD			-11	dBm
LOS Assert	LOSA	-25			dBm

Mechanical Specifications

