

## SP-MM85030D-GP

**850nm SFP+ Multi-Mode Transceiver, With Diagnostic Monitoring  
10G BASE-SR  
Duplex SFP+ Transceiver**

### Features

- ◆ Operating data rate up to 10.3Gbps
- ◆ 850nm VCSEL Transmitter
- ◆ Distance up to 300m @50 / 125 um MMF
- ◆ Single 3.3V Power supply and TTL Logic Interface
- ◆ Duplex LC Connector Interface, Hot Pluggable
- ◆ Compliant with MSA SFP+ Specification SFF-8431
- ◆ Compliant with IEEE 802.3ae 10GBASE-SR/SW
- ◆ Power Dissipation < 1.0W
- ◆ Dispersion tolerance up to 40ps/nm over G.651
- ◆ Operating Case Temperature

Standard: 0°C~+70°C

Industrial: -40°C~+85°C

### Applications

- ◆ 10GBASE-SR at 10.3125Gbps
- ◆ Other Optical Link

### Ordering information

Part No.	Description
SP-MM85030D-GP	SFP+ SR 10Gbs 850nm LC DDM MMF 300m

## Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Unit
Storage Temperature	T <sub>s</sub>	-40	+85	°C
Supply Voltage	V <sub>CC</sub>	-0.5	3.6	V
Input Voltage	V <sub>in</sub>	-0.5	V <sub>CC</sub>	V
Output Current	I <sub>o</sub>	-	50	mA

## Recommended Operating Conditions

Parameter	Symbol	Min.	Typical	Max.	Unit
Operating Case Temperature	T <sub>c</sub>	SP-MM85030D-GP	0	70	°C
		SP-MM85030DI-GP	-40	85	
Power Supply Voltage	V <sub>CC</sub>	3.15	3.3	3.45	V
Power Supply Current	I <sub>CC</sub>			300	mA
Surge Current	I <sub>Surge</sub>			+30	mA
Baud Rate		0.6		10.3	Gbps

## Performance Specifications – Electrical

Parameter	Symbol	Min.	Typ.	Max	Unit	Notes
<b>Transmitter</b>						
CML Inputs(Differential)	V <sub>in</sub>	150		1200	mVpp	AC coupled inputs
Input Impedance (Differential)	Z <sub>in</sub>	85	100	115	ohms	R <sub>in</sub> > 100 kohms @ DC
Tx_DISABLE Input Voltage – High		2		V <sub>CC</sub> +0.3	V	
Tx_DISABLE Input Voltage – Low		0		0.8	V	
Tx_FAULT Output Voltage – High		2		V <sub>CC</sub> +0.3	V	I <sub>o</sub> = 400µA; Host V <sub>CC</sub>
Tx_FAULT Output Voltage – Low		0		0.8	V	I <sub>o</sub> = -4.0Ma
<b>Receiver</b>						
CML Outputs (Differential)	V <sub>out</sub>	350		700	mVpp	AC coupled outputs
Output Impedance (Differential)	Z <sub>out</sub>	85	100	115	ohms	
Rx_LOS Output Voltage – High		2		V <sub>CC</sub> +0.3	V	I <sub>o</sub> = 400µA; Host V <sub>CC</sub>
Rx_LOS Output Voltage – Low		0		0.8	V	I <sub>o</sub> = -4.0Ma

## Optical and Electrical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Unit
50 / 125 um MMF			300		m
Data Rate		0.6		10.3	Gbps
<b>Transmitter</b>					
Centre Wavelength	$\lambda_C$	840	850	860	nm
Spectral Width (RMS)	$\Delta\lambda$			0.45	nm
Average Output Power	$P_{out}$	-6		-1	dBm
Extinction Ratio	ER	3.0	5.0		dB
Output Optical Eye		IEEE 802.3-2005 Compliant			
Transmitter Dispersion Penalty	TDP			3.9	dB
Input Differential Impedance	$Z_{IN}$	90	100	110	$\Omega$
TX_Disable Assert Time	$t_{off}$			10	us
TX_DISABLE Negate Time	$t_{on}$	-	-	1	ms
TX_BISABLE time to start reset	$t_{reset}$	10	-	-	us
Time to initialize, include reset of TX_FAULT	$t_{init}$	-	-	300	ms
TX_FAULT from fault to assertion	$t_{fault}$	-	-	100	us
Total Jitter	TJ	-	-	0.28	UI(p-p)
Data Dependant Jitter	DDJ	-	-	0.1	UI(p-p)
Uncorrelated Jitter	UJ	-	-	0.023	RMS
<b>Receiver</b>					
Centre Wavelength	$\lambda_C$	840	850	860	nm
Receiver Sensitivity	$P_{min}$			-11.1	dBm
Output Differential Impedance	$R_{IN}$	90	100	110	$\Omega$
Receiver Overload <sup>2</sup>	$P_{max}$	-1			dBm
Optical Return Loss	ORL			-12	dB
LOS De-Assert	$LOS_D$			-12.5	dBm
LOS Assert	$LOS_A$	-25			dBm
LOS Hysteresis		0.5			dB
LOS	High		2.0		$V_{CC}+0.3$
	Low		0		0.8

Note 2: Measured with a PRBS 2<sup>31</sup> -1 test pattern @ 10.3125Gbps, BER  $\leq 10^{-12}$

## Mechanical Specifications

