

10GBASE-SR SFP+ 850NM 300M DOM TRANSCEIVER -  
 MULTIMODE FIBER - 1EA

SCP PART#:  
**F-SFP10G-MM**

## PRODUCT SUMMARY

The F-SFP10G-MM transceivers are designed for use in 10-Gigabit Ethernet links over multimode fiber. They are compliant with SFF-8431, SFF-8432, IEEE 802.3ae 10GBASE-SR/SW and 10G Fibre Channel 1200-Mx-SN-I. Digital diagnostics functions are available via a 2-wire serial interface, as specified in SFF-8472.

The transceiver is a “limiting module”, i.e., it employs a limiting receiver. Host board designers using an EDC PHY IC should follow the IC manufacturer’s recommended settings for interoperating the host-board EDC PHY with a limiting receiver SFP+ module. The optical transceivers are compliant per the RoHS Directive 2011/65/EU.



## FEATURES & BENEFITS

- Hot-pluggable SFP+ footprint
- Supports 9.95 to 10.5 Gb/s bit rates
- Power dissipation < 1W
- RoHS-6 compliant (lead-free)
- Commercial temperature range 0 to 70°C
- Single 3.3V power supply
- Maximum link length of 300m on 2000 MHz-km OM3 MMF
- Heated 850nm VCSEL laser
- Receiver limiting electrical interface
- Duplex LC connector
- Built-in digital diagnostic functions

## SPECIFICATIONS

Form Type	SFP+
Max Data Rate	10.3125 Gbps
Wavelength	850nm
Max Cable Distance	300m over OM3 MMF
Interface	LC duplex
Optical Components	VCSEL 850nm
Cable Type	MMF
DOM Support	Yes
TX Power	-7.3~-1dBm
Receiver Sensitivity	< -11.1dBm
Commercial Temperature Range	0 to 70°C (32 to 158°F)

## SPECIFICATIONS

General Product Characteristics					
Parameter	Symbol	Min	Typ.	Max	Unit
Bit Rate	BR	9.95		10.5	Gbps
Bit Error Ratio	BER			$10^{-12}$	
Max. Supported Link Length on 50 $\mu$ m Fiber OM2	L <sub>MAX</sub>			82	m
Max. Supported Link Length on 50 $\mu$ m Fiber OM3	L <sub>MAX</sub>			300	m
Max. Supported Link Length on 50 $\mu$ m Fiber OM4	L <sub>MAX</sub>			400	m
Absolute Maximum Ratings					
Parameter	Symbol	Min	Typ.	Max	Unit
Storage Temperature	T <sub>S</sub>	-40		+85	°C
Case Operating Temperature	T <sub>A</sub>	-40		+85	°C
Supply Voltage	V <sub>CC</sub>	-0.5		4.0	V
Operating Relative Humidity	RH	0		85	%
Electrical Characteristics (TOP = 0 to 70°C, V <sub>CC</sub> = 3.14 to 3.46 V)					
Parameter	Symbol	Min	Typ.	Max	Unit
Power Supply Voltage	V <sub>CC</sub>	3.15	3.3	3.45	V
Power Supply Current	I <sub>CC</sub>			300	Ma
Transmitter					
Parameter	Symbol	Min	Typ.	Max	Unit
Input Differential Impedance	R <sub>in</sub>		100		$\Omega$
Differential Data Input Swing	V <sub>in,pp</sub>	180		700	mV
Transmit Disable Voltage	V <sub>D</sub>	2		V <sub>CC</sub>	V
Transmit Enable Voltage	V <sub>EN</sub>	V <sub>ee</sub>		V <sub>ee</sub> + 0.8	V
Receiver					
Parameter	Symbol	Min	Typ.	Max	Unit
Differential Data Output Swing	V <sub>out,pp</sub>	300		850	mV
Output Rise Time and Fall Time	t <sub>r</sub>	28			ps
LOS De-Assert	V <sub>LOS norm</sub>	V <sub>ee</sub>		V <sub>ee</sub> + 0.8	V
LOS Assert	V <sub>LOS fault</sub>	2		V <sub>CC HOST</sub>	V
Power Supply Noise Tolerance	V <sub>cc T</sub> /V <sub>cc R</sub>		Per SFF-8431 Rev 4.1		mV <sub>pp</sub>
Optical Characteristics (TOP = 0 to 70°C, V <sub>CC</sub> = 3.14 to 3.46 V)					
Transmitter					
Parameter	Symbol	Min	Typ.	Max	Unit
Optical Modulation Amplitude	P <sub>OMA</sub>		-1.5		dBm
Average Launch Power	P <sub>AVE</sub>	-5		-1	dBm
Optical Wavelength	$\lambda$	840	850	860	nm
RMS Spectral Width	$\Delta\lambda_{rms}$			0.45	dB
Optical Extinction Ratio	ER	3.0	5.5		dB
Transmitter and Dispersion Penalty	TDP			3.9	dB
Average Launch Power of OFF Transmitter	P <sub>OFF</sub>			-30	dBm
Tx Jitter	Tx <sub>j</sub>	Per IEEE 802.3ae requirements			
Encircled Flux	<4.5 $\mu$ m <19 $\mu$ m	86		30	%
Relative Intensity Noise	RIN <sub>12</sub> OMA			-128	dB/Hz
Receiver					
Parameter	Symbol	Min	Typ.	Max	Unit
Receiver Sensitivity (OMA) @ 10.3 Gbps	R <sub>SENS1</sub>			-11.1	dBm
Stressed Receiver Sensitivity (OMA) @ 10.3 Gbps	R <sub>SENS2</sub>			-7.5	dBm
Maximum Input Power	P <sub>MAX</sub>	+0.5			dBm
Wavelength Range	$\lambda_C$	840		860	Nm
Receiver Reflectance	LOS <sub>D</sub>			-12	dB
LOS De-Assert	LOS <sub>A</sub>			-14	dBm
LOS Assert	LOS <sub>A</sub>	-30	-23		dBm
LOS Hysteresis		0.5			dB

# TECHNICAL DRAWING

