

# SO-SFP-100BASE-FXD

SFP, 100/155Mbps FE, 1310nm, MM, DDM, 8dB 2km

## OVERVIEW

The SO-SFP-100Base-FXD series transceiver is small form factor pluggable module for duplex optical data communications such as Fast Ethernet and OC-3/STM-1 SDH/SONET. It is with the SFP 20-pin connector to allow hot plug capability. This module is designed for multi-mode fibre and operates at a nominal wavelength of 1310 nm and compliant to the IEEE 100Base-FX standard. The transmitter section uses a multiple quantum well 1310nm laser and is a class 1 laser compliant according to International Safety Standard IEC 60825. The receiver section uses an integrated GaAs detector preamplifier (IDP) mounted in an optical header and a limiting post-amplifier IC. The SO-SFP-100BASE-FXD series are designed to be compliant with SFF-8472 SFP Multi-source agreement (MSA).

## PRODUCT FEATURES

- Operating data rate up to 155Mbps
- 1310nm FP laser transmitter
- 2km with 50/125  $\mu$ m MMF
- 1km with 62.5/125  $\mu$ m MMF
- Single 3.3V power supply and TTL logic interface
- Hot-Pluggable SFP footprint duplex LC
- Connector interface
- Class 1 FDA and IEC60825-1 laser safety compliant
- Operating temperature
  - Standard: 0 °C~+70 °C
  - Industrial: -40 °C~+85 °C
- Compliant with MSA SFP specification
- Digital Diagnostic Monitor (DDM) interface compatible with SFF-8472
- RoHS 6/6 compliant

## APPLICATIONS

- SDH/ SONET
- Fast Ethernet
- Optical networking

## ORDERING INFORMATION

Part Number	Description
SO-SFP-100Base-FXD	SFP, 100/155Mbps FE, 1310nm, MM, DDM, 8dB 2km
SO-SFP-100Base-FXD-I	SFP, 100/155Mbps FE, 1310nm, MM, DDM, 8dB 2km, ind.temp.

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For more information, visit [smaroptics.com](http://smaroptics.com).

## ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Min	Max	Unit
Storage Temperature	TS	-40	+85	°C
Supply Voltage	VCC	-0.5	3.6	V
Operating Relative Humidity			95	%

## RECOMMENDED OPERATING CONDITIONS

Parameter	Symbol	Min	Typ	Max	Unit
Case Operating Temperature	Tc	SO-SFP-100Base-FXD	0	+70	°C
		SO-SFP-100Base-FXD-I	-40	+85	
Power Supply Voltage	Vcc	3.15	3.3	3.45	V
Power Supply Current	Icc			300	mA
Data rate	OC-3/STM-1		155		Gbps
	100M		100		

## PERFORMANCE SPECIFICATIONS – ELECTRICAL TRANSMITTER

Parameter	Symbol	Min	Typ	Max	Unit	Notes
LVPECL Inputs(Differential)	$V_{IN}$	400		2000	mVpp	AC coupled inputs
Input Impedance (Differential)	$Z_{IN}$	85	100	115	ohms	$R_{in} > 100 \text{ kohms @ DC}$
TX Disable	Disable	2		Vcc	V	
	Enable	0		0.8		
TX FAULT	Fault	2		Vcc+0.3	V	
	Normal	0		0.5		

## PERFORMANCE SPECIFICATIONS – ELECTRICAL RECEIVER

Parameter	Symbol	Min	Typ	Max	Unit	Notes
LVPECL Outputs (Differential)	$V_{out}$	400		2000	mVpp	AC coupled outputs
Output Impedance (Differential)	$Z_{out}$	85	100	115	ohms	
Rx_LOS Output Voltage – High		2		Vcc+0.3	V	
Rx_LOS Output Voltage – Low		0		0.8	V	
MOD_DEF ( 2:0 )	$VoH$	2.5			V	With Serial ID
	$VoL$	0		0.5	V	

## OPTICAL AND ELECTRICAL CHARACTERISTICS

Parameter	Symbol	Min	Typ	Max	Unit
50µm Core Diameter MMF	L		2		km
Data Rate			100/155		Mbps

## OPTICAL AND ELECTRICAL CHARACTERISTICS TRANSMITTER

Parameter	Symbol	Min	Typ	Max	Unit
Centre Wavelength	$\lambda_c$	1260	1310	1360	nm

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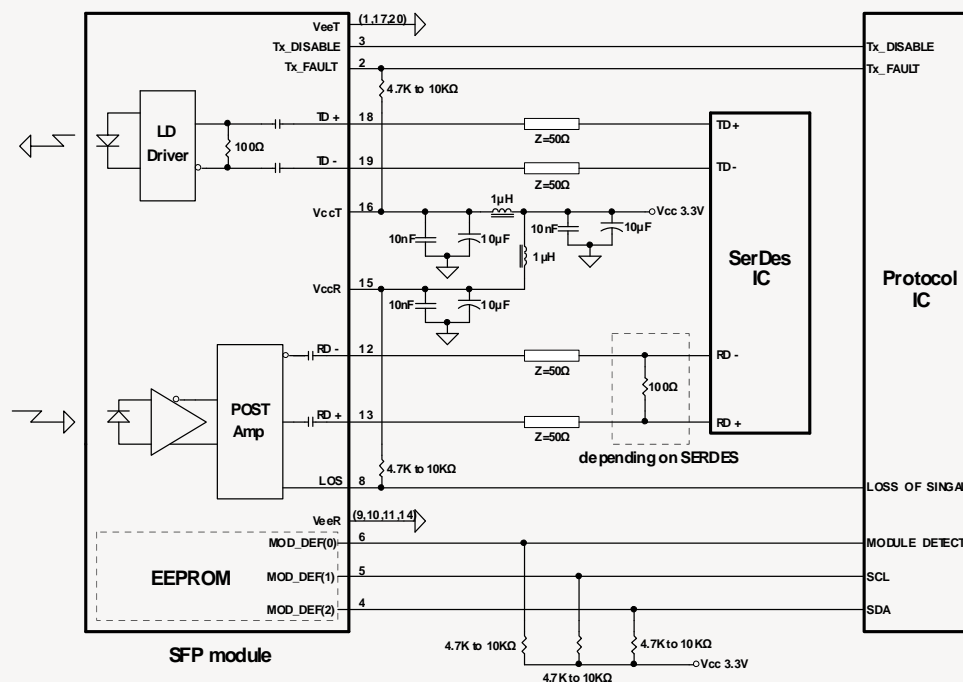
For more information, visit [smaroptics.com](http://smaroptics.com).

Spectral Width (RMS))	$\Delta\lambda$		4	nm
Average Output Power	$P_{out}$	-19	-14	dBm
Extinction Ratio	$ER$	8.2		dB
Rise/Fall Time(20%~80%)	$tr/tf$		2	ns
Total Jitter	$TJ$		1	ns
Output Optical Eye	Telcordia GR-253-CORE and IUT-T G.957 Compliant			
TX Disable Assert Time	$t_{off}$		10	us

### OPTICAL AND ELECTRICAL CHARACTERISTICS RECEIVER

Parameter	Symbol	Min	Typ	Max	Unit
Centre Wavelength	$\lambda$	1260		1600	nm
Receiver Sensitivity	$P_{min}$			-30	dBm
Receiver Overload	$P_{max}$	-5			dBm
Return Loss		14			dB
LOS De-Assert	$LOSD$			-31	dBm
LOS Assert	$LOSA$	-44			dBm
LOS Hysteresis		0.5			dB

### RECOMMENDED CIRCUIT SCHEMATIC



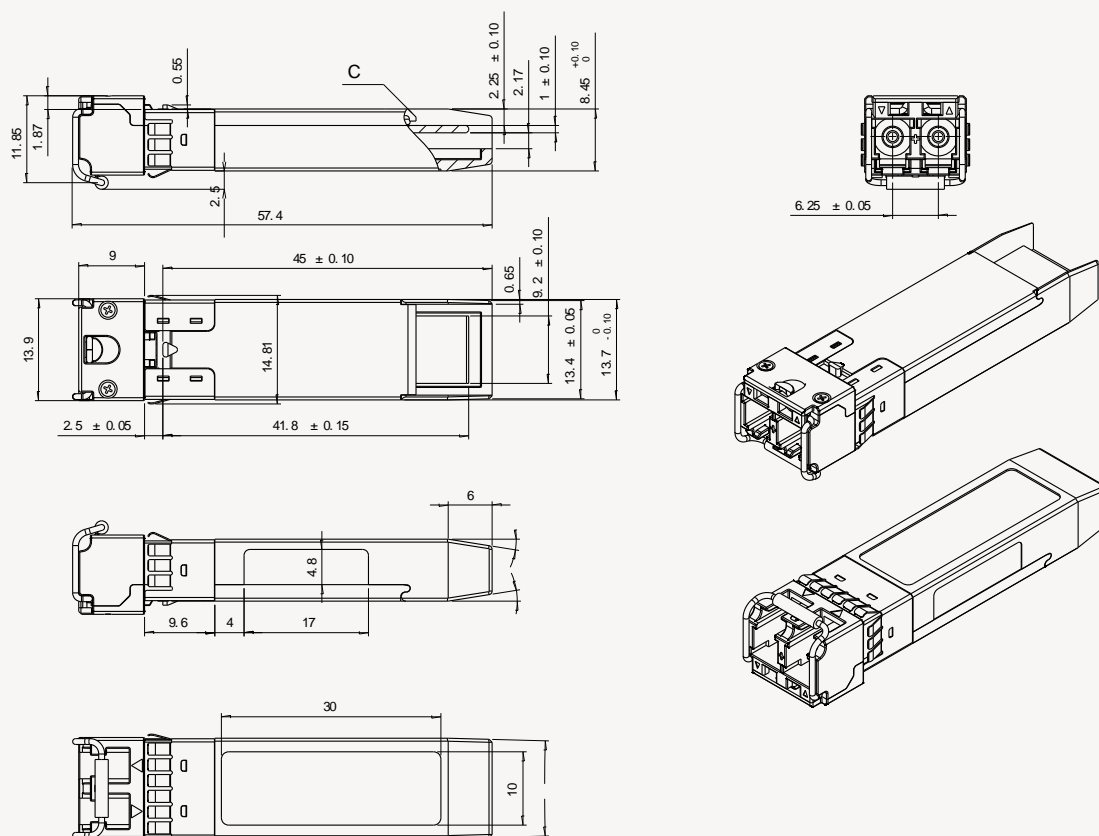
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### PIN FUNCTION DEFINITIONS

PIN	Signal Name	Description	PIN	Signal Name	Description
1	V <sub>EE</sub> T	Transmitter Signal Ground	11	V <sub>EE</sub> R	Receiver Signal Ground
2	TX_Fault	Transmitter Fault Indication. Logic "1" Output = Laser Fault. Logic "0" Output = Normal Operation	12	RD-	Inverse Receiver Data Out
3	TX_Disable	Logic "1" Input (or no connection) = Laser off, Logic "0" = Laser on.	13	RD+	Receiver Data Out
4	SDA	Modulation Definition 2 – Two wires serial ID Interface	14	V <sub>EE</sub> R	Receiver Signal Ground
5	SDL	Modulation Definition 1 – Two wires serial ID Interface	15	V <sub>CC</sub> R	Receiver Power – 3.3V±5%
6	MOD-ABS	Modulation Definition 0 – Ground in Module	16	V <sub>CC</sub> T	Transmitter Power – 3.3V±5%
7	RS0	RX Rate Select (LVTTTL). This pin has an internal 30k pulldown to ground. A signal on this pin will not affect module performance.	17	V <sub>EE</sub> T	Transmitter Signal Ground
8	RX_LOS	Loss of Signal Out (OC).	18	TD+	Transmitter Data In
9	RS1	TX Rate Select (LVTTTL). This pin has an internal 30k pulldown to ground. A signal on this pin will not affect module performance.	19	TD-	Inverse Transmitter Data In
10	V <sub>EE</sub> R	Receiver Signal Ground	20	V <sub>EE</sub> T	Transmitter Signal Ground

### MECHANICAL DRAWING



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