

SO-SFP-1000BASE-TX

SFP, 10/100/1000Base-T SERDES/SGMII Interface

OVERVIEW

The SO-SFP-1000Base-TX series are 10/100/1000BASE-T Copper Small Form Pluggable (SFP), which is based on the SFP Multi Source Agreement (MSA). It is compliant with the Gigabit Ethernet standard as specified in IEEE STD 802.3 and can fully satisfy the 10/100/1000BASE-T application

PRODUCT FEATURES

- Support 10/100/1000BASE-T operation in host systems with SGMII interface
- 100m transmission over Cat 5 UTP Cable
- Hot-Pluggable SFP footprint
- Fully metallic enclosure for low EMI
- Low power dissipation (1.05 W typical)
- Compact RJ-45 connector assembly
- Access to physical layer IC via 2-wire serial bus
- Detailed product information in EEPROM
- Operating case temperature
 - Standard: 0 °C~+70 °C
 - Industrial: -40 °C ~+85 °C
- Compliant with SFP MSA
- Compliant with IEEE Std 802.3

APPLICATIONS

- LAN 10/100/1000Base-T
- Gigabit Ethernet over Cat 5 cable
- Switch-to-Switch interface
- Router/Server interface

ORDERING INFORMATION

Part Number	Description
SO-SFP-1000Base-TX	SFP, 10/100/1000Base-T SERDES/SGMII Interface
SO-SFP-1000Base-TX-I	SFP, 10/100/1000Base-T SERDES/SGMII Interface, ind.temp.

ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Min	Max	Unit
Maximum Supply Voltage	VCC	-0.5	4.0	V
Storage Temperature	TS	-40	85	°C

RECOMMENDED OPERATING CONDITIONS

Parameter	Symbol	Min	Typ	Max	Unit
Case Operating Temperature	T_c	SO-SFP-1000Base-TX	0	+70	°C
		SO-SFP-1000Base-TX -I	-40	+85	
Power Supply Voltage	Vcc	3.15	3.3	3.45	V
Data rate		10		1000	Mbps

ELECTRICAL CHARACTERISTICS +3.3 VOLT ELECTRICAL POWER INTERFACE

Parameter	Symbol	Min	Typ	Max	Unit	Notes
Supply Current	I_{cc}		300	350	mA	
Input Voltage	Vcc	3.15	3.3	3.45	V	
Surge Current	I_{surge}			30	mA	

ELECTRICAL CHARACTERISTICS LOW-SPEED SIGNALS, ELECTRONIC CHARACTERISTICS

Parameter	Symbol	Min	Typ	Max	Unit	Notes
SFP Output LOW	VOL	0		0.5	V	4.7k to 10k pull-up to host_Vcc, measured at host side of connector
SFP Output HIGH	VOH	host_Vcc0.5		host_Vcc +0.3	V	4.7k to 10k pull-up to host_Vcc, measured at host side of connector
SFP Input LOW	VIL	0		0.8	V	4.7k to 10k pull-up to Vcc, measured at SFP side of connector
SFP Input HIGH	VIH	2		Vcc + 0.3	V	4.7k to 10k pull-up to Vcc, measured at SFP side of connector

ELECTRICAL CHARACTERISTICS HIGH-SPEED ELECTRICAL INTERFACE, TRANSMISSION LINE-SFP

Parameter	Symbol	Min	Typ	Max	Unit	Notes
Line Baud Rates	f_L		1250		MHz	5-level encoding, per IEEE 802.3
TX Output impedance	$Z_{out, TX}$		100		Ohm	Differential, for all frequencies between 1MHz and 1250MHz
RX Input Impedance	$Z_{in, RX}$		100		ohm	Differential, for all frequencies between 1MHz and 1250MHz

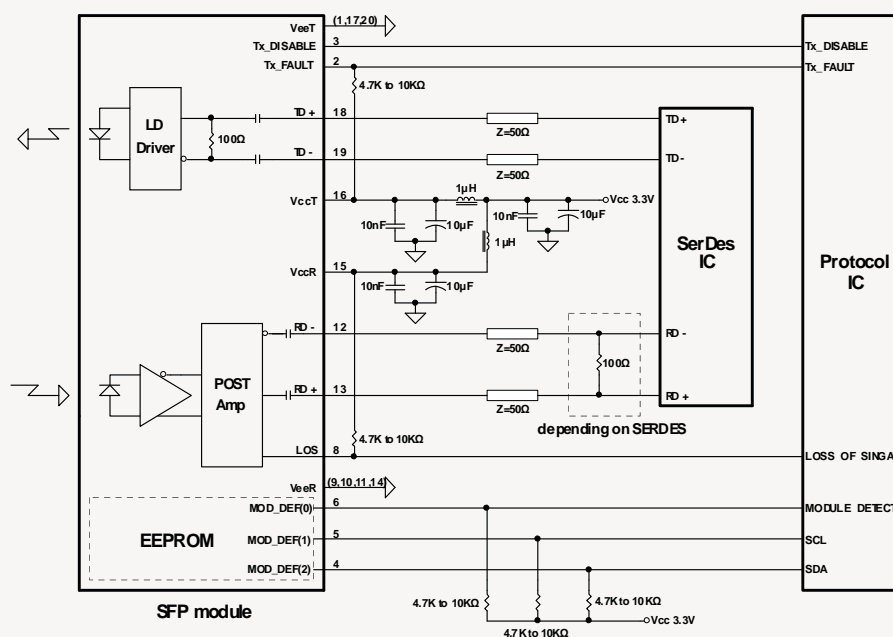
ELECTRICAL CHARACTERISTICS HIGH-SPEED ELECTRICAL INTERFACE, HOST-SFP

Parameter	Symbol	Min	Typ	Max	Unit	Notes
Single ended data input swing	V_{in}	250		1200	mV	Single ended
Single ended data output swing	V_{out}	350		800	mV	Single ended
Rise/Fall Time	T_r, T_f		175		psec	20%-80%
TX Input Impedance	Z_{in}		50		Ohm	Single ended
RX Output Impedance	Z_{out}		50		ohm	Single ended

GENERAL SPECIFICATIONS

Parameter	Symbol	Min	Typ	Max	Unit	Notes
Data rate		10		1000	Mbps	
Distance				100	m	Category 5 UTP. BER <10 ⁻¹²

RECOMMENDED CIRCUIT SCHEMATIC



Subject to change without notice.

For more information, visit smaroptics.com.

PIN FUNCTION DEFINITIONS

PIN	Signal Name	Description	PIN	Signal Name	Description
1	V _{EE} T	Transmitter Signal Ground	11	V _{EE} 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 _{EE} R	Receiver Signal Ground
5	SDL	Modulation Definition 1 – Two wires serial ID Interface	15	V _{CC} R	Receiver Power – 3.3V±5%
6	MOD-ABS	Modulation Definition 0 – Ground in Module	16	V _{CC} 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 _{EE} 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 _{EE} R	Receiver Signal Ground	20	V _{EE} T	Transmitter Signal Ground

MECHANICAL DRAWING

