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SFP1G-RJ45-100

TYPE:

Sepitam-SFP1G-RJ45 –100

Sepitam SFP optical transceiver modules support data transmission rates ranging from 1Gbps to 10Gbps. These modules operate at basic and WDM wavelengths and are available in both industrial and non-industrial grades. They are compatible with single-mode and multi-mode optical fibers, covering transmission distances from 20 km to 120 km.

- TYPE: Sepitam-SFP1G-RJ45-100M
- RoHS Compliant 1.25Gb/s SFP
- 100m Optical Transceiver

Description:

The Sepitam-SFP1G-RJ45-100, copper SFP transceiver is high performance, cost effective module compliant with the Gigabit Ethernet and 1000BASE-T standards as specified in IEEE 802.3-2002 and IEEE 802.3ab, which supporting 1000Mbps data- rate up to 100 meters reach over unshielded twisted-pair category 5 cable. The SFP1G-RJ45-100 supports1000 Mbps full duplex datalinks with 5-level Pulse Amplitude Modulation (PAM) signals. All four pairs in the cable are used with symbol rate at 250Mbps on each pair. The SFP1G-RJ45-100 provides standard serial ID information compliant with SFP MSA, which can be accessed with address of A0h via the 2-wire serial CMOS EEPROM protocol. The physical IC can also be accessed via 2-wire serial bus at address ACh.

Properties:

- Up to 1.25Gb/s bi-directional data links
- Hot-pluggable SFP footprint
- Fully metallic enclosure for low EMI
- Low power dissipation
- Compact RJ45 connector assembly
- Detailed product information in EEPROM
- +3.3V single power supply
- Access to physical layer IC via 2-wire serial bus
- 1000BASE-T operation in host systems with SERDES interface
- Compliant with SFP MSA
- Compliant with IEEE Std 802.3TM-2002
- Compliant with FCC 47 CFR Part 15, Class B
- RoHS6 Compliant

Applications:

- 1.25 Gigabit Ethernet over Cat 5 cable
- Switch/Router to Switch/Router Link
- High speed I/O for file severs

SFP to Host Connector Pin Out:

Pin	Signal name	Description	MSA Notes
1	VEET	Transmitter ground (common with receiver ground)	
2	TFAULT	Transmitter Fault. Not supported	Note 1
3	TDIS	Transmitter Disable. PHY disabled on high or open	Note 2
4	MOD_DEF(2)	Module Definition 2. Data line for Serial ID.	Note 3
5	MOD_DEF(1)	Module Definition 1. Clock line for Serial ID.	Note 3
6	MOD_DEF(0)	Module Definition 0. Grounded within the module.	Note 3
7	Rate Select	No connection required	
8	LOS	Loss of Signal - High Indicates Loss of Signal	Note 4
9	VEER	Receiver Ground (common with transmitter ground)	
10	VEER	Receiver Ground (common with transmitter ground)	
11	VEER	Receiver Ground(common with transmitter ground)	
12	RD-	Receiver Inverted DATA out. AC Coupled	Note 5
13	RD+	Receiver Non-inverted DATA out. AC Coupled	Note 5
14	VEER	Receiver Ground (common with transmitter ground)	
15	VCCR	Receiver Power Supply	Note 6
16	VCCT	Transmitter Power Supply	Note 6
17	VEET	Transmitter Ground (Common with Receiver Ground)	
18	TD+	Transmitter Non-Inverted DATA in. AC Coupled.	Note 7
19	TD-	Transmitter Inverted DATA in. AC Coupled.	Note 7
20	VEET	Transmitter Ground(common with receiver ground)	

Notes:

1. TX Fault is not used and is always tied to ground through a 100 ohm resistor.

2. TX Disable as described in the MSA is not applicable to the 1000BASE-T module, but is used for convenience as an input to reset the internal ASIC. This pin is pulled up within the module with a 4.7 KW resistor.

Low (0 – 0.8 V): Transceiver on

Between (0.8 V and 2.0 V): Undefined

High (2.0 – 3.465 V): Transceiver in reset state

Open: Transceiver in reset state

3. Mod-Def 0,1,2. These are the module definition pins. They should be pulled up with a 4.7-10 KW resistor on the host board to a supply less than VCCT + 0.3 V or VCCR + 0.3 V.

Mod Def 0 is tied to ground through a 100 ohm resistor to indicate that the module is present.

Mod-Def 1 is clock line of two wire serial interface for optional serial ID

Mod-Def 2 is data line of two wire serial interface for optional serial ID

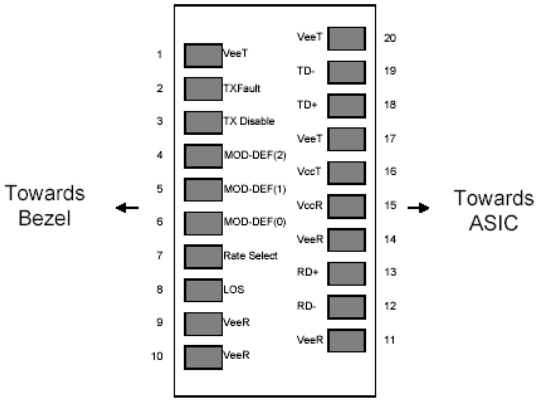
4. LVTTL compatible with a maximum voltage of 2.5V. Not supported on NSF-SFP-T

5. RD-/+: These are the differential receiver outputs. They are AC coupled 100 ohm differential lines which should be terminated with 100 ohm differential at the user SerDes. The AC coupling is done inside the module and is thus not required on the host board. The voltage swing on these lines will be between 370 and 2000 mV differential (185 – 1000 mV single ended) when properly terminated. These levels are compatible with CML and LVPECL voltage swings.

6. VCCR and VCCT are the receiver and transmitter power supplies. They are defined as 3.3 V ± 5% at the SFP connector pin. The maximum supply current is about 300mA and the associated in-rush current will typically be no more than 30 mA above steady state after 500 nanoseconds.

7. TD-/+: These are the differential transmitter inputs. They are ac coupled differential lines with 100 W differential termination inside the module. The ac coupling is done inside the module and is thus not required on the host board. The inputs will accept differential swings of 500 – 2400 mV (250 – 1200 mV single ended), though it is recommended that values between 500 and 1200 mV differential (250 – 600 mV single ended) be used for best EMI performance. These levels are compatible with CML and LVPECL voltage swings.

Functional Diagram:



+3.3V Volt Electrical Power Interface:

The SFP1G-RJ45-100 has an input voltage range of 3.3 V +/- 5%. The 4 V maximum voltage is not allowed for continuous operation.

Parameter	Symbol	Min.	Max.	Unit	Note
Supply Voltage	Is	320	375	mA	1.2W max power over full range of voltage and temperature. See caution note below
Storage Temperature	Vcc	3.3	3.47	v	Referenced to GND
Relative Humidity	Isurge	30		mA	Hot plug above steady state current. See caution note

Caution: Power consumption and surge current are higher than the specified values in the SFP MSA

Low-Speed Signals:

MOD_DEF(1) (SCL) and MOD_DEF(2) (SDA), are open drain CMOS signals.
Both MOD_ DEF(1) and MOD_DEF(2) must be pulled up to host_Vcc.

Parameter	Symbol	Min.	Max.	Unit	Notes/Conditions
SFP Output LOW	VOL	0	0.5	V	4.7k to 10k pull-up to host_Vcc.
SFP Output HIGH	VOH	host_Vcc -0.5	host_Vcc + 0.3	V	4.7k to 10k pull-up to host_Vcc.
SFP Input LOW	VIL	0	0.8	V	4.7k to 10k pull-up to Vcc.
SFP Input HIGH		2	Vcc + 0.3 V	V	4.7k to 10k pull-up to Vcc.

Low-speed signals, electronic characteristics

High-Speed Electrical Interface:

All high-speed signals are AC-coupled internally.

Transmission Line-SFP						
Parameter	Symbol	Min.	Typical	Max.	Units	Notes/Conditions
Line Frequency	fL		125		MHz	5-level encoding, per IEEE 802.3
Tx Output Impedance	Zout,TX		100		Ohm	Differential
Rx Input Impedance	Zin,RX		100		Ohm	Differential

High-speed electrical interface, transmission line-SFP

Host-SFP						
Parameter	Symbol	Min.	Typical	Max.	Units	Notes/Conditions
Single ended data input swing	Vinsing	250		1200	mV	Single ended
Single ended data output swing	Voutsing	350	100	800	mV	Single ended
Rise/Fall Time	Tr,Tf		175		psec	20%-80%
Tx Input Impedance	Zin		50		Ohm	Single ended
Rx Output Impedance	Zout		50		Ohm	Single ended

High-speed electrical interface, host-SFP

General Specifications:

Parameter	Symbol	Min.	Typical	Max.	Units	Notes/Conditions
Data Rate	BR	100		1,000	Mb/s	IEEE 802.3 compatible.
Cable Length	L			100	M	Category 5 UTP. BER <10-12

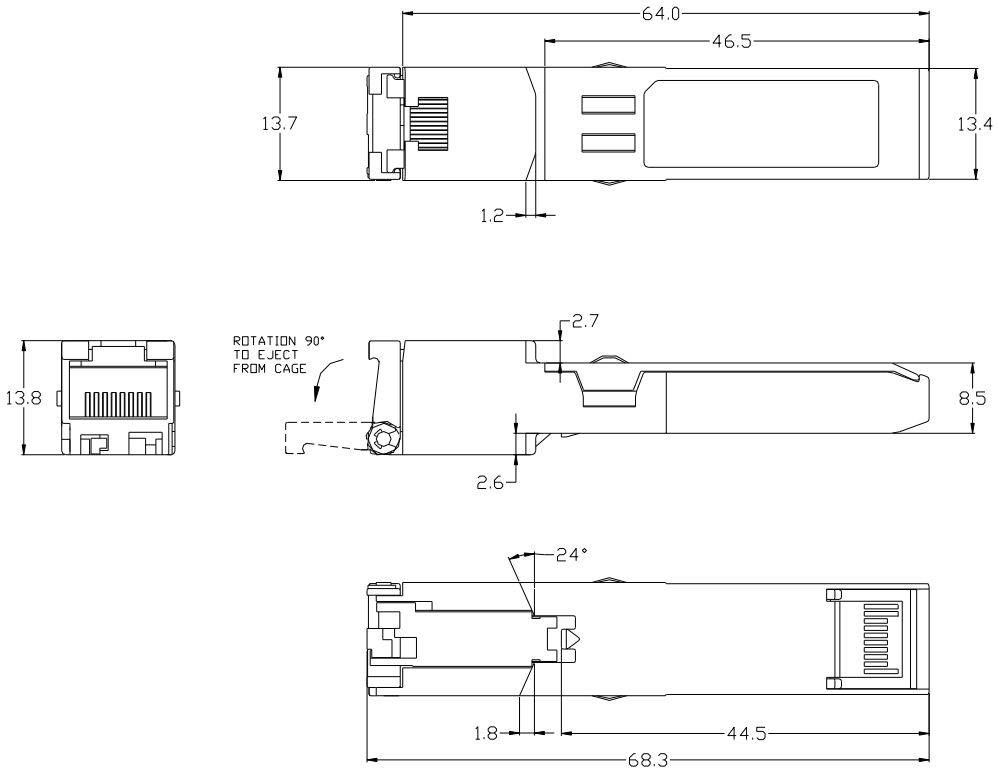
General specifications

Environmental Specifications:

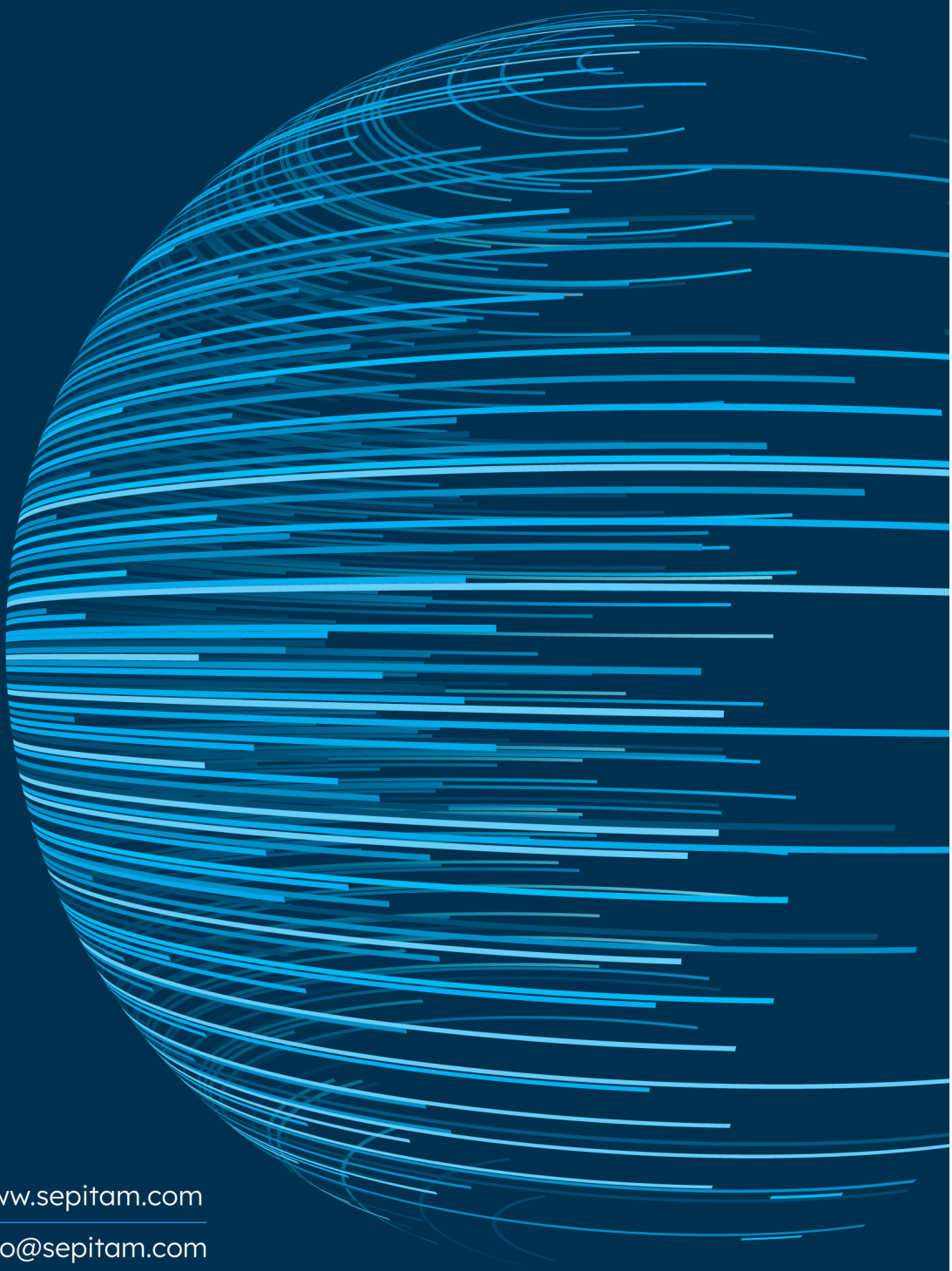
The SFP1G-RJ45-100 has an extended range from 0°C to +85°C case temperature as specified.

Parameter	Symbol	Min.	Typical	Max.	Units	Notes/Conditions
Operating Temperature	Top	-40		85	°C	Case temperature
Storage Temperature	Tsto	-40		100	°C	Ambient temperature

Mechanical drawing :



Technical Specification of
Sepitam-SFP1G-RJ45-100M



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