SFP-1G-T-AXR

1000Base-T SFP
Copper (SERDES)
100m Reach

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Features

- Supports 1000Mb Data rate
- Up to 100m on Cat 5 copper cable
- Compact RJ-45 connector assembly
- Fully metal enclosure, for lower EMI
- RoHS compliant and lead-free
- No DDM functions
- Single +3.3V power supply
- Power consumption less than 1.05 W
- Operating case temperature: 0°C to +70°C

Applications

- 1000Base-T
- Gigabit Ethernet over Cat 5 Cable

Part number	Product description
SFP-1G-T-AXR	1000Base-T SerDes SFP Copper 100m 0°C to 70°C RJ45 Auto-negX Rx_LOS No DDM
SFP-1G-T-AXR-I	1000Base-T SerDes SFP Copper 100m -40°C to 85°C RJ45 Auto-negX Rx_LOS No DDM

PIN Description

PIN	Symbol	Name - Description	Notes
1	VEET	Transmitter Ground (Common with Receiver Ground)	
2	TFAULT	Transmitter Fault. Not supported.	1
3	TDIS	Transmitter Disable. Laser output disabled on high or open.	2
4	MOD_DEF(2)	Module Definition 2. Data line for Serial ID.	1
5	MOD_DEF(1)	Module Definition 1. Clock line for Serial ID.	1
6	MOD_DEF(0)	Module Definition 0. Grounded within the module.	1
7	Rate Select	No connection required	
8	LOS	Loss of Signal indication. Logic 0 indicates normal operation.	3
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	4
13	RD+	Receiver Non-inverted DATA out. AC Coupled	4
14	VEER	Receiver Ground (Common with Transmitter Ground)	
15	VCCR	Receiver Power Supply	
16	VCCT	Transmitter Power Supply	
17	VEET	Transmitter Ground (Common with Receiver Ground)	
18	TD+	Transmitter Non-Inverted DATA in. AC Coupled.	5
19	TD-	Transmitter Inverted DATA in. AC Coupled.	5
20	VEET	Transmitter Ground (Common with Receiver Ground)	

Notes:
1. Open collector/drain output, which should be pulled up with a 4.7kΩ to 10kΩ resistor on the host board if intended for use. Pull up voltage should be between 2.0V to 3.6V. A high output indicates a transmitter fault caused by either the TX bias current or the TX output power exceeding the preset alarm thresholds. A low output indicates normal operation. In the low state, the output is pulled to <0.8V.
2. Laser output disabled on Tx_Disable >2.0V or open, enabled on Tx_Disable <0.8V.
3. LOS is open collector output. Should be pulled up with 4.7kΩ to 10kΩ on host board to a voltage between 2.0V and 3.6V. Logic 0 indicates normal operation; logic 1 indicates loss of signal.
4. RD-/+: These are the differential receiver outputs. They are internally AC-coupled 100Ω differential lines which should be terminated with 100Ω (differential) at the user SERDES.
5. TD-/+: These are the differential transmitter inputs. They are internally AC-coupled, differential lines with 100Ω differential termination inside the module.
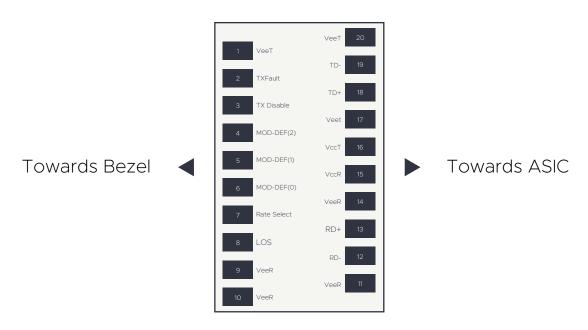
Towards Bezel ◄   ► Towards ASIC

1	VeeT
2	TXFault
3	TX Disable
4	MOD-DEF(2)
5	MOD-DEF(1)
6	MOD-DEF(0)
7	Rate Select
8	LOS
9	VeeR
10	VeeR

VeeT	20
TD-	19
TD+	18
Veet	17
VccT	16
VccR	15
VeeR	14
RD+	13
RD-	12
VeeR	11

Figure 1. Diagram of host board connector block pin numbers and names

Recommended Operating Conditions

Parameter	Symbol	Min	Typ	Max	Unit	Notes
Supply Voltage	Vcc	3.15	3.30	3.47	V	
Storage Temperature	Ts	-40	-	+85	°C	
Operating Temperature (Commercial)	Tc	0	-	+70	°C	
Operating Temperature (Industrial)	Ti	-40	-	+85	°C	
Relative Humidity	RH	5	-	85	%	1

Notes:
1.   Non-condensing.

Transmission Rate

Parameter	Symbol	Min	Typ	Max	Unit	Notes
Data Rate	-	-	-	1000	Mbps	1
Transmission Distance	Td	-	-	100	m	2

Notes:
1.   1000 BASE-T operation based on SERDES interfaces (preferred master mode)
2.   On Category 5 UTP cable, BER≤10^-12

High-speed Electrical Interface (Host SFP)

Parameter	Symbol	Min	Typ	Max	Unit	Notes
TD+, TD- Input voltage Swing	Vinsing	250	-	1200	mV	1
RD+, RD- Output voltage Swing	Voutsing	350	-	800	mV	1
Rise/Fall Time	Tr,Tf	-	175	-	ps	2
Tx Input Impedance	Zin	-	50	-	Ω	1
Rx Output Impedance	Zout	-5	50	-	Ω	1

Notes:
1.   Single ended
2.   20% to 80% value

High-speed Electrical Interface (Cable to SFP)

Parameter	Symbol	Min	Typ	Max	Unit	Notes
Transmission Frequency	fL	-	125	-	MHz	1
Tx Input Impedance	Zin	-	100	-	Ω	2
Rx Output Impedance	Zout	-	100	-	Ω	2

Notes:
1.   4D-PAM-5 encoding per IEEE802.3: 2002
2.   Differential for frequencies ranging from 1 MHz to 125 MHz

Mechanical Dimensions

Revision history

Revision	Date	Author	Description
V1.2	05-03-2020	JGN	Initial Document

Note : Nexgen A/S reserves the right to change this document without notice.