10GBASE-SR XFP 850nm 300m Transceiver

P/N: AE-XFP-SR

Features

- Supports 9.95Gbps to 10.5Gbps bit rates
- Maximum link length of 300m (50um,MMF,2000MHz.Km)
- 850nm VCSEL laser and PIN receiver
- Low power consumption <1.5W
- +5V, +3.3V power supply
- XFP MSA package with duplex LC connector
- XFI electrical interface
- No reference clock required
- Compatible with RoHS
- Excelllent EMI performance
- Built-in digital diagnostic functions
- Temperature range: 0℃ to +70℃
- High reliability

Applications

- 10GBASE-SR/SW 10G Ethernet
- 1200-Mx-SN-I 10G Fiber Channel
- Other optical links

I. Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Units	Ref.
Storage Ambient Temperature Range		-40	+85	℃	
Powered case Temperature Range		0	+75	℃	
Operating Relative Humidity	RH		80	%	
Supply Voltage Range @ 5V	Vcc5	-0.5	6.0	V	
Supply Voltage Range @ 3.3V	Vcc3	-0.5	4.0	V	
Static Discharge Voltage on XFI High			500	V	1
Static Discharge Voltage excluding XFI High Speed Pins			2,000	V	2
Static Discharge Voltage on XFP Module			15,000 8,000	V V	3

Any stress beyond the maximum ratings can result in permanent damage. The device specifications are guaranteed only under the recommended operating conditions.

Notes:

1, HBM human body model per JEDEC JESD22-A114-B.

2, HBM human body model.

3, EN61000-4-2 Criterion B: Air Discharge Direct Contact discharge

II. Recommend operating condition

Parameter	Symbol	Min	Typ	Max	Units	Ref.
Operating Case Temperature Range	Tc	0		+70	℃	
Transceiver total Power Consumption	P_{TOT}			1.5	W	1
Power Supply Voltage @ 5V	Vcc5	4.75	5.0	5.25	V	
Power Supply Voltage @ 3.3V	Vcc3	3.13	3.3	3.47	V	

Notes:

1, MAXIMUM TOTAL POWER VALUE IS SPECIFIED ACROSS THE FULL TEMPERATURE AND VOLTAGE RANGE.

III. Electrical Characteristics Electrical Transmitter

Parameter	Symbol	Min	Typ	Max	Units	Ref.
Input Differential Impedance	R_{IND}		100		Ω	1
Differential input Voltage Swing	V_{ID}	120		1000	mV	2
Transmit Disable Voltage	VDis	2.0		VCC		
Transmit Enable Voltage	VEN	GND		GND+0.8		
Transmit Disable Assert Time				10	us	

Notes:

1, AFTER INTERNAL AC COUPLING.

2，BENEATH THIS LEVEL THE SIGNAL CAN'T MEET THE SPECIFICATION

IV. Electrical Receiver

Parameter	Symbol	Min	Typ	Max	Units	Ref.
Differential Output Impedance	Z_{OD}		100		Ω	
Differential Output Amplitude	V_{OSPP}	500		800	mV	1
Transition Time Low to High	t_r	40			ps	2
Transition Time High to Low	t_f	40			ps	2
LOS Fault	L fault	Vcc-0.5		VCCHOST	V	3
LOS Normal	L normal	GND		GND+0.5	V	3

Notes:

1, INTO 100 OHMS DIFFERENTIAL TERMINATION.

2, 20 – 80 %.

3, LOSS OF SIGNAL IS OPEN COLLECTOR TO BE PULLED UP WITH A 4.7KΩ – 10KΩ RESISTOR TO 3.15 – 3.6V. LOGIC 0 INDICATES NORMAL OPERATION; LOGIC 1 INDICATES NO SIGNAL DETECTED.

V. Optical Characteristics Optical Transmitter

Parameter	Symbol	Min	Typ	Max	Units	Ref.
Nominal Wavelength	λ_{TRP}	840	850	860	nm	
Spectral Width	△λ		0.4	0.45	nm	
Average Power	P_{optavg}	-6.5		-0.5	dBm	1
Extinction Ratio	*ER*	3.0			dB	2
Relative Intensity Noise	*RIN*			-128	dB/Hz	

Notes:

1, LAUNCHED INTO MMF.

2, MEASURED WITH PRBS 231-1 @10.3125GBPS.

VI. Optical Receiver

Parameter	Symbol	Min	Typ	Max	Units	Ref.
Center Wavelength	λ_C	840	850	860	Nm	
Receiver Sensitivity	P_{IN}			-11.8	dBm	1
Receiver Sensitivity in OMA	P_{IN}			-11.1	dBm	1
Receiver Overload	*Pin*	-1.0			dBm	1
Receiver Reflectance				-13	dBm	
LOS De-Assert	*LOSD*			-12	dBm	
LOS Assert	*LOSA*	-30	-15		dBm	
LOS Hysteresis		0.5			dB	

Notes:

1, MEASURED WITH PRBS 231-1 @10.3125GBPS.WITH IDEAL TRANSMITTER

NOTE: THE SPECIFIED CHARACTERISTICS ARE MET WITHIN THE RECOMMENDED RANGE OF OPERATING CONDITIONS AND UNDER THE DEFAULT SETTINGS OF OUTPUT POWER AND MODULATION AMPLITUDE. A CHANGE IN SETTING OF THE

OPTICAL OUTPUT POWER INFLUENCES ESPECIALLY THE DYNAMIC BEHAVIOR OF THE OUTPUT SIGNAL. UNLESS OTHERWISE NOTED TYPICAL DATA ARE QUOTED AT NOMINAL VOLTAGES AND +25 ℃ AMBIENT TEMPERATURE.

VII. General Specifications

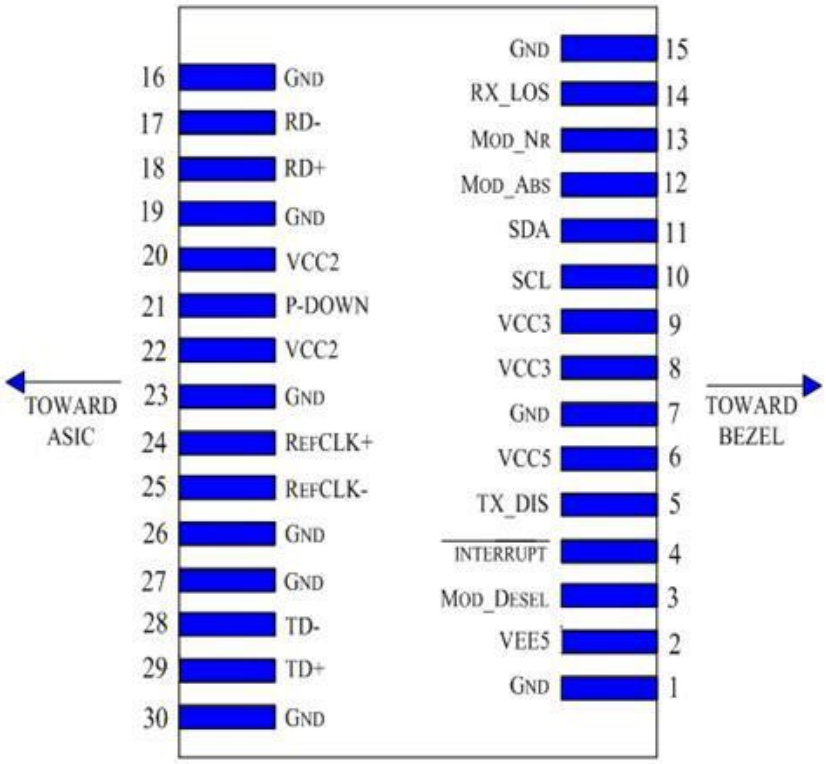
Parameter	Conditions	Min Modal Bandwidth (MHz*Km)	Symbol	Min	Typ	Max	Units	Ref.
Operating Range	62.5/125μm MMF	160	I_{OP}	2		26	m	
	50/125μm MMF	400				66		
	62.5/125μm MMF	200				33		
	50/125μm MMF	500				82		
	50/125μm MMF	2000				300		
Bit Rate			*BR*	9.95		10.5	Gbps	1
Bit Error Ratio			*BER*			10^{-12}		2

Notes:

1. 10GBASE-SR/SW, 1200-MX-SN-I

2. TESTED WITH A 231 – 1 PRBS

VIII. Host Board Connector Pinout



IX. Electrical Pin Definition

PIN	Logic	Symbol	Name I Description	Note
1		GND	Module Ground	1
2		VEE5	Optional-5.2V Power Supply	
3	LVTTL-I	Mod_DeSel	Mode De-select; When held low allows module to 2-wire serial interface commands	
4	LVTTL-O	Interrupt	Interrupt(inverted); Indicates Presence of an important condition which can be read over the 2-wire serial interface	2
5	LVTTL-I	TX_DS	Transmitter Disable; Turns off transmitter laser output	
6		VCC5	+5V Power Supply	
7		GND	Module Ground	1
8		VCC3	+3.3VPower Supply	
9		VCC3	+3.3VPower Supply	
10	LVTTL-I/O	SCL	2-Wire Serial Interface Clock	2
11	LVTTL-I/O	SDA	2-Wire Serial Interface Data Line	2
12	LVTTL-O	Mod_Abs	Indicates Module is not present. Grounded in the module	2
13	LVTTL-O	Mod_NR	Module Not Ready; Indicating module operational fault	2
14	LVTTL-O	RX_LOS	Receiver Loss Of Signal Indicator	2
15		GND	Module Ground	1
16		GND	Module Ground	1
17	CML-O	RD-	Receiver Inverted Data Output	
18	CML-O	RD+	Receiver Non-Inverted Data Output	
19		GND	Module Ground	1
20		VCC2	+1.8V Power Supply	
21	LVTTL-O	P-Down/RST	Power Down; When high; requires the module to limit power consumption to 1.5W or below. 2-Wire serial interface must be functional in the low Power mode Reset; The falling edge initiates a complete reset of the module including the 2-wire serial interface; equivalent to a power cycle	
22		VCC2	+1.8V Power Supply	
23		GND	Module Ground	1
24	PECL-I	RefCLK+	Reference Clock Non-Inverted Input; AC coupled on the host board	
25	PECL-I	RefCLK-	Reference Clock Inverted Input; AC coupled on the host board	
26		GND	Module Ground	1
27		GND	Module Ground	1
28	CML-I	TD-	Transmitter Inverted Data Input	
29	CML-I	TD+	Transmitter Non-Inverted Data Input	
30		GND	Module Ground	1

Notes:

1, Module ground pins GND are isolated from the module case and chassis ground within the module.

2, Shall be pulled up with 4.7kΩ-10 kΩ to a voltage between3.15V and 3.45V on the host board.

X. Ordering information

Part Number	Product Description
AE-XFP-SR	XFP,10Gbps ,850nm, MMF, 300M, DDM, LC connector, 0℃ ~ +70℃