

XFP-10G-MM-SR-NT

Cisco XFP, 10GBASE-SR 10G Ethernet Module
850nm, 300m, MMF, LC RoHS6



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10Gbps XFP Transceiver

Features

- Supports IEEE 802.3ae
- 10GBASE-SR at 10.3125Gbits/s
- Maximum link length of 300m over MMF
- Low power consumption 1.5W
- Duplex LC connector
- Temperature range -0°C to 70°C
- Built-in digital diagnostic functions

Applications

Compliance to Fiber Channel
1200-M5-SN-I, 1200-M5E-SN-I
1200-M6-SN-I, 10.51875Gbit/s
Vertical Cavity Surface Emitting
Laser at 850nm(VCSEL)

Regulatory Compliance

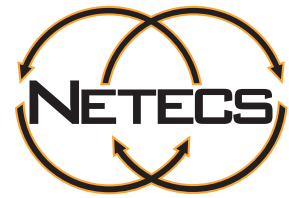
Feature	Standard	Performance
Electrostatic Discharge (ESD) to the Electrical Pins	MIL-STD-883E Method 3015.7	Class 1(>500 V)
Electromagnetic Interference (EMI)	FCC Part 15 Class B	Compatible with standards
Laser Eye Safety	FDA 21CFR 1040.10 and 1040.11 EN60950, EN (IEC) 60825-1,2	Compatible with Class I laser product. Compatible with T _{UV} standards
Component Recognition	UL and CUL	UL file E317337
Green Products	RoHS	RoHS6

Electrical Characteristics

Standard	Description	Nominal Baud Rate	Unit
IEEE 802.3ae-2002	10 GBASE-SR	10.3125	GBd
1200-Mxx-SN-I	10G Fiber Channel	10.51875	GBd

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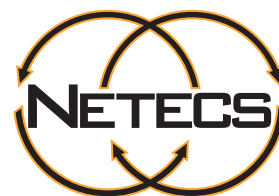
Absolute Maximum Ratings

Rating	Conditions	Symb	Min.	Max.	Unit
Storage Ambient Temperature Range			-40	+85	°C
Powered case Temperature Range			0	75	°C
Operating Relative Humidity		RH	8	80	%
Supply Voltage Range @ 5.0V		V _{CC5}	0.5	6.0	V
Supply Voltage Range @ 3.3V		V _{CC3}	0.5	3.6	V
Open Drain VCC level		V _{OD}		4.0	V
Static Discharge Voltage on XFI High	HBM human body model per JEDEC JESD22-A114-B			500	V
Static Discharge Voltage excluding XFI High Speed Pins	HBM human body model			2000	V
Static Discharge Voltage on XFP Module	EN61000-4-2 Criterion B: Air Discharge Direct Contact discharge			15000 8000	V V

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

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Recommended Operating Conditions

Parameter	Conditions	Symbol	Min.	Typical	Max.	Units
Operating Case Temperature Range			0		+70	°C
Transceiver total Power Consumption		P		1.5	2.3	W
Power Supply Voltage @ 5.0V		V	4.75	5.00	5.25	V
Power Supply Voltage @ 3.3V		V	3.135	3.300	3.465	V
Supply Current	@ V_{CC5}	I_{VCC5}		50	100	mA
Supply Current	@ V_{CC3}	I_{VCC3}		325	500	mA

High Speed Line Characteristics

Parameter	Conditions	Symbol	Min	Ty	Max	Units
Baud Rate nominal			9.95		10.7	Gbd
Baud Rate Tolerance			-100		+100	ppm

High Speed Line Output-DC Characteristics

Parameter	Conditions	Symbol	Min	Typ	Max	Units
Single Ended Output Impedance		Z_{SE}	40	50	60	Ω
Differential Output Impedance		Z_{OD}	80	100	120	Ω

High Speed Line Output-AC Characteristics

Parameter	Conditions	Symbol	Min	Typ	Max	Units
Differential Output Amplitude		V_{OSPP}	340		850	mV
Output Common Mode		V_{CM}	0		3.6	V
Transition Time Low to High		t_r	24			ps
Transition Time High to Low		t_f	24			ps
Differential Output Return Loss	0.05—0.1GHz 0.1—5.5GHz 5.5—12GHz		20 8 (See1)			dB
Common Mode Output Return Loss ²)	0.1—15GHz	SCC 22	3			dB
Total Peak-to-peak Jitter		D_j			0.34	UI

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Output AC Common Mode Voltage					15	mV (RMS)
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- 1) $SDD_{22}(dB) = 8 - 20.66 \log_{10}(f/15.5)$ with f in GHz
- 2) Common mode reference impedance is 2Ω . Common mode return loss helps absorb reflection and noise improving EMI.

High Speed Line Input-DC Characteristics

Parameter	Conditions	Symbol	Min	Typ	Max	Units
Differential Output Impedance		R_{IND}	80	100	120	Ω
Input AC Common Mode Input Voltage			0		25	mV (RMS)
Source to Sink DC Potential Difference		V_{CM}	0		3.6	V

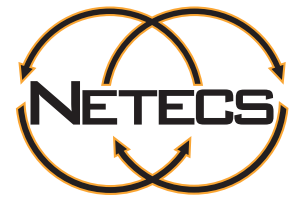
High Speed Line Input-AC Characteristics

Parameter	Conditions	Symbol	Min	Typ	Max	Units
Differential input Voltage Swing		V_{ID}	120 (See2)			mV
Differential Return Loss	0.05—0.1GHz 0.1—5.5GHz 5.5—12GHz	SDD 11	20 8 (See1)			dB
Common Mode Return Loss	0.1—15GHz	SCC 11	3			dB
Total Jitter		T_j			TBD	UI

- 1) $SDD_{11}(dB) = 8 - 20.66 \log_{10}(f/15.5)$ with f in GHz
- 2) Beneath this level the signal can't meet the specification Optical Characteristics

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General parameters Optical Transmitter

Parameter	Conditions	Symbol	Min	Typ	Max	Units
Nominal Wavelength		λ_{TRP}	840	850	860	nm
Spectral Width		Δ		0.4	0.45	nm

Optical Receiver

Parameter	Conditions	Min Modal Bandwidth (MHz*Km)	Symbol	Min	Typ	Max	Units
Operating Range	62.5/125 μ m MMF	160	I_{op}	2		26	m
	50/125 μ m MMF	400		2		66	
	62.5/125 μ m MMF	200		2		33	
	50/125 μ m MMF	500		2		82	
	50/125 μ m MMF	2000		2		300	
Nominal Signaling Speed			f_{OPT}	9.95		10.71	GBd
Launch Power	in OMA		P_{optOMA}	-4.3			dBm
Average Launch Power			P_{optavg}	-7.3	-2.6	-1	dBm
Extinction Ratio			ER	3.5	5.5		dB
Relative Intensity Noise			RIN			-128	dB/Hz
Center Wavelength			c	840	850	860	nm
Receiver Sensitivity	in OMA , BER 10^{-12} @ $2^{31}-1$		P_{IN}		-13.5	-11.1	dBm
Stressed Receiver Sensitivity	in OMA		P_{IN}			-7.5	dBm
Saturation Input Power			P_{SAT}			1	dBm

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Mechanical Specifications

XFP transceivers are compliant with the dimensions defined by the XFP Multi-Sourcing Agreement (MSA).

