10Gb/s Multirate DDMI XFP (XFP EZR)
1550nm cooled EML with APD Receiver
120km transmission distance

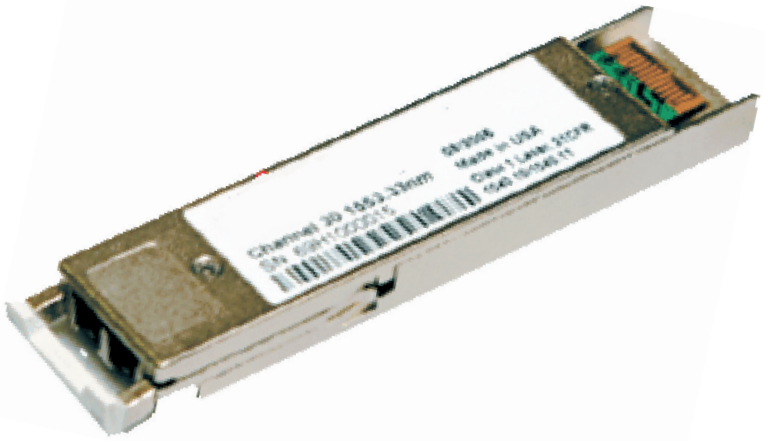
065-10GEZRXFP

FEATURE

- XFP MSA Rev 4.5 compliant
- 120km Reach on SMF-28 fi ber utilizing Electronic Dispersion
- Compensation (EDC)
- Supports 9.95, 10.31, 10.52, 10.7 and 11.1Gb/s
- XFI High Speed Electrical Interface
- Digital Diagnostics Monitor
- Cooled EML with isolator
- APD Receiver
- 120km Reach
- RoHS Compliant
- Power dissipation <3.5W
- -5 to 70 C temperature range
- Class 1 Laser, 21CFR 1040.10/1040.11
- EN 60825-1/A1:2002 Compliant
- Bail Latch Color: WHITE

APPLICATION

- 10G Ethernet at 9.953 & 10.3125Gbps
- 10G Fiber Channel at 10.51875Gbps
- OC192 over FEC at 10.709Gbps
- 10GE over G.709 at 11.09Gbps



ABSOLUTE MAXIMUM RATING

PARAMETER	SYMBOL	MIN	TYPICAL	MAX	UNIT
Maximum Supply Voltage (3.3V)	Vcc3	-0.3	–	3.6	V
Maximum Supply Voltage (5.0V)	Vcc5	-0.3	–	5.5	V
Maximum Supply Voltage (1.8V)	Vcc2	-0.3	–	2	V
Storage Temperature	T_{st}	-40	–	85	°C

REFERENCE CLOCK

PARAMETER	SYMBOL	MIN	TYPICAL	MAX	UNIT
Clock Differential Input Impedance	Zd	80	100	120	Ω
Differential Input Clock Amplitude (p–p)	–	640	–	1600	mV
Reference Clock Duty Cycle	–	40	–	60	%
Reference Clcok Rise/Fall Time (20%–80%)	Tr/Tf	200	–	1250	ps
Reference Clock Frequency	f0	–	Baud/64	–	MHz

GENERAL OPERATIONS

PARAMETER	SYMBOL	MIN	TYPICAL	MAX	UNIT
Supply Voltage (1.8V)	$V_{cc}2$	1.71	1.8	1.89	V
Supply Voltage (3.3V)	$V_{cc}3$	3.14	3.3	3.47	V
Supply Voltage (5V)	$V_{cc}5$	4.75	5	5.25	V
Total Current on any pin	I_{CC}	–	–	500	mA
Inrush Current (1.8V)	$I_{inrush}2$	–	–	1	A
Inrush Current (3.3V)	$I_{inrush}3$	–	–	0.75	A
Inrush Current (5V)	$I_{inrush}5$	–	–	0.5	A
Module current ramp rate	–	–	–	100	mA/µS
Power on 1.8V rail	P_{2rail}	–	–	1.8	W
Power on 3.3V rail	P_{3rail}	–	–	2.5	W
Power on 5V rail	P_{5rail}	–	–	2.5	W
Module Total Power consumption	P_t	–	–	3.5	W
Power Consumption-P_Down mode	P_{p_d}	–	–	1.5	W
Power Supply Noise Rejection	PSNR	Compliant to Section 2.7.2 of XFP MSA			
Bit Rate	BR	9.95	–	11.1	Gb/s
Operating Temperature (case)	T_{op}	-5	–	70	°C
Storage Temperature	T_{st}	-40	–	85	°C

TRANSMITTER SPECIFICATIONS (OPTICAL)

PARAMETER	SYMBOL	MIN	TYPICAL	MAX	UNIT
Output Power	PO	-2	0	2	dBm
Average Launch Power Tx_Off	Poff	–	–	-30	nm
Extinction Ratio	ER	8.2	–	–	dB
Eye Mask	ITU-T G.691, Telcordia GR-253-CORE, IEEE802.3 10GBASE-ZR Compliant				
Side Mode Suppression Ratio	SMSR	30	–	–	dB
Center Wavelength	λ	1530	–	1565	nm
Spectral Width	Δλ	–	–	1	nm
Jitter Generation (peak-to-peak)	Jgen(pk-pk)	–	–	0.1	UI
Jitter Generation (RMS)	Jgen(RMS)	–	–	0.01	UI
Dispersion Penalty at specified distance	DP	–	–	2	dB
Relative Intensity Noise	RIN	–	–	-130	dB/Hz
Reflectance Tolerance	refT	–	–	-27	dB

TRANSMITTER SPECIFICATIONS (ELECTRICAL)

PARAMETER	SYMBOL	MIN	TYPICAL	MAX	UNIT
Input Differential Impedence	Rin	–	100	–	Ω
Differential Data Input Swing	Vin,p-p	120	–	820	mV
TxDisable_Disable	Vd	2	–	Vcc3	V
TxDisable_Enable	Ven	GND	–	GND+0.8	V

RECEIVER SPECIFICATIONS (OPTICAL)

PARAMETER	SYMBOL	MIN	TYPICAL	MAX	UNIT
Sensitivity (9.95Gb/s)[a]	$Rx_{sens995}$	–	–	-24	dBm
Sensitivity (10.7Gb/s)[a]	$Rx_{sens1070}$	–	–	-23	dBm
Overload[a]	Rx_{OL}	-7	–	–	dBm
Wavelength[b]	λ	1528	–	1565	nm
Optical Return Loss	ORL	–	–	-27	dB
LOS Assert	–	-34	–	–	dBm
LOS De-assert	–	–	–	-24	dBm
LOS Hysteresis	–	0.5	–	–	dB

a) At 9dB ER, 1E-12 BER, 2^{31}-1 PRBS, back to back
b) Operational over 1200 - 1625nm range

RECEIVER SPECIFICATIOINS (ELELCTRICAL)

PARAMETER	SYMBOL	MIN	TYPICAL	MAX	UNIT
Reference Differential Output Impedence	Z_d	–	100	–	Ω
Differential Data Output Swing	Vout,p-p	340	–	850	mV
Output Rise Time, 20–80%	t_r	24	–	–	ps
Output Fall Time, 20–80%	t_f	24	–	–	ps
LOS Fault	V_{LOS_fault}	host_Vcc3 - 0.5	–	host_Vcc3	V
LOS Normal	V_{LOS_normal}	GND	–	GND + 0.4	V

SUGGEST TRANSCEIVER / HOST INTERFACE

MOD_NR

The Mod_NR is an output pin that when High, indicates that the module has detected a condition that renders transmitter and or receiver data invalid, shall consist of logical OR of the following signals:

- Transmit Signal Conditioner Loss of Lock
- Transmitter Laser Fault
- Receiver Signal Conditioner Loss of Lock

MOD_DESEL

The Mod_DeSel is an input pin. When held Low by the host, the module responds to 2-wire serial communication commands. The Mod_DeSel allows the use of multiple XFP modules on a single 2-wire interface bus.
When the Mod_DeSel pin is "High", the module shall not respond to or acknowledge any 2-wire interface communication from the host.

INTERRUPT

Interrupt is an output pin. When "Low", indicates possible module operational fault or a status critical to the host system.

TX_DIS

TX_DIS is an input pin. When TX_DIS is asserted High, the XFP module transmitter output must be turned off.

MOD_ABS

Mod_ABS is pulled up to Host_Vcc on the host board and grounded in the XFP module. Mod_ABS is then asserted "High" when the XFP module is physically absent from a host slot.

RX_LOS

The RX_LOS when High indicates insufficient optical power for reliable signal reception.

P_DOWN/RST

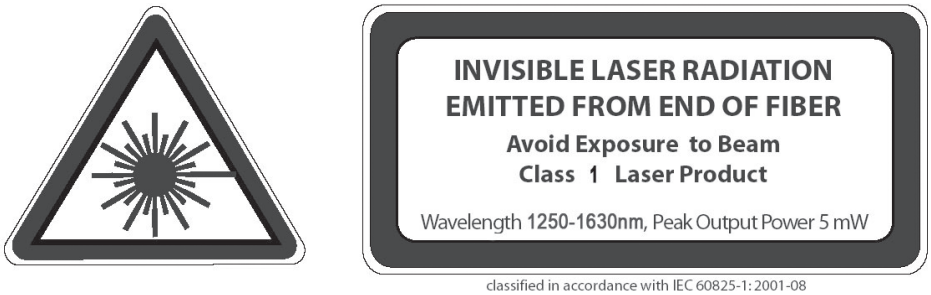
This is a multifunction pin for module Power Down and Reset. The P_Down/RST pin must be pulled up to VCC3 in the XFP module.

POWER DOWN FUNCTION

The P_Down pin, when held High by the host, places the module in the standby (Low Power) mode with a maximum power dissipation of 1.5W. This protects hosts which are not capable of cooling higher power modules which may be accidentally inserted.

SAFETY INFORMATION

- All versions of this laser are Class 1 laser products per IEC* 60825-1:2001. Users should observe safety precautions such as those recommended by ANSI** Z136.1-2000, ANSI Z36.2-1997 and IEC 60825-1:2001.
- Caution: use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.



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**ANSI is a registered trademark of the American National Standards Institute