



Features

- 9.95~11.3Gbps bi-directional fiber link
- Compliant with IEEE802.3ae 10GBase-ZR/ZW Ethernet
- Compatible with 1200-SM-LL-L 10G Fibre Channel
- Compliant to SONET OC-192/ SDH STM-64 with ITU-T G.959.1 P1L1-2D2
- Compliant to SONET OC-192/ SDH STM-64 with ITU-T G.709
- Compliant with XFP MSA INF-8077i
- Compliant with SFF8472 diagnostic monitoring interface for Optical Transceivers (DOM)
- 1550nm cooled EML transmitter and APD receiver
- Built-in Tx CDR and Rx CDR
- Single +3.3V power supply
- SMF 80km point-to-point transmission
- Duplex LC receptacle connector
- 2-wire I2C interface for management and diagnostic monitor
- RoHS Compliant

Application

- 10GBase-ZR/ZW
- 10x Fibre Channel
- SONET OC-192 & SDH STM-64

Ordering Information

PART NO.	TX	RX	DISTANCE	DOM	TEMPERATURE
GL10G-XFP-ZR	1550 nm	1550nm	SMF 40km	Support	0~70°C
GL10G-XFP-ZR-I	1550 nm	1550nm	SMF 40km	Support	-40~85°C

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10GBase-ZR/ZW XFP Optical Transceiver Single-Mode 1550nm, 80km, DOM



Absolute Maximum Ratings

PARAMETER	SYMBOL	MIN	MAX	UNITS	NOTE
Storage Temperature	T_s	-40	+85	°C	
Supply Voltage	V_{cc}	-0.5	4.0	V	
Storage Relative Humidity	RH	5	95	%	

Recommended Operating Conditions

PARAMETER	SYMBOL	MIN	TYP.	MAX	UNITS	NOTE
Case Operating Temperature	T_c	0	---	70	°C	GL10G-XFP-ZR
		-40	---	85	°C	GL10G-XFP-ZR-I
Supply Voltage	V_{cc}	3.13	3.3	3.47	V	
Supply Current	$I_{TX} + I_{RX}$	---		690	mA	
Power Consumption	P			2.5	W	

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Transmitter Electro-optical Interface

PARAMETER	SYMBOL	MIN	TYP.	MAX	UNITS	NOTE
Data Rate	DR	9.95	10.3125	11.3	Gbps	
Optical Output Power	P _O	0		+4	dBm	1
Optical Extinction Ratio	ER	8.2			dB	
Center Wavelength	λ_c	1530	1550	1565	nm	
Spectral Width (-20dB)	$\Delta\lambda$			1	nm	
Side Mode Suppression Ratio	SMSR	30			dB	
Relative Intensity Noise	RIN			-130	dB/Hz	
Output Eye		Compliant with IEEE802.3ae				
Output Power @Tx_Dis Asserted	P _{OFF}			-30	dBm	
Differential Input Voltage Swing	V _{DIFF}	180		950	mV	
Differential Input Impedance	Z _d	90	100	110	Ω	
Tx_Fault – High (Tx Fault)	V _{Fault_H}	2.0		V _{cc}	V	
Tx_Fault – Low (Tx Normal)	V _{Fault_L}	V _{ee}		0.8	V	
Tx_Disable – High (Tx Off)	V _{Disable_H}	2.0		V _{cc}	V	
Tx_Disable – Low (Tx On)	V _{Disable_L}	V _{ee}		0.5	V	
Tx_Disable Assert Time	TX _{Dis_Off}			10	μ s	
Tx_Enable Assert Time	TX _{Dis_On}			2	ms	

Note 1: Coupling into a 9/125 μ m single-mode fiber.

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Receiver Electro-optical Interface

PARAMETER	SYMBOL	MIN	TYP.	MAX	UNITS	NOTE
Data Rate	DR	9.95	10.3125	11.3	Gbps	
Optical Input Power-maximum	P _{IN}			-7	dBm	
Receiver Sensitivity	P _{IN}			-23	dBm	1
Receiver Sensitivity (OMA)	P _{IN}			-22.1	dBm	1
Operating Center Wavelength	λ _c	1260		1600	nm	
Receiver Reflectance	RR			-27	dB	
Loss of Signal (LOS) - Asserted	P _A	-35			dBm	
Loss of Signal (LOS) - De-asserted	P _D			-24	dBm	
Differential Output Voltage Swing	V _{DIFF}	400		800	mV	
Differential Input Impedance	Z _d	90	100	110	Ω	
LOS Signal Output Voltage - Low	LOS _{VL}	V _{ee}		0.8	V	
LOS Signal Output Voltage - High	LOS _{VH}	2.4		V _{cc}	V	
LOS Assert Time (Low to High)	LOS _{AT}			100	μs	
LOS De-Assert Time (Low to High)	LOS _{DT}			100	μs	

Note 1: With BER better than or equal to 1×10^{-12} , measured in the center of the eye opening with 10.3125Gbps, PRBS 2³¹-1

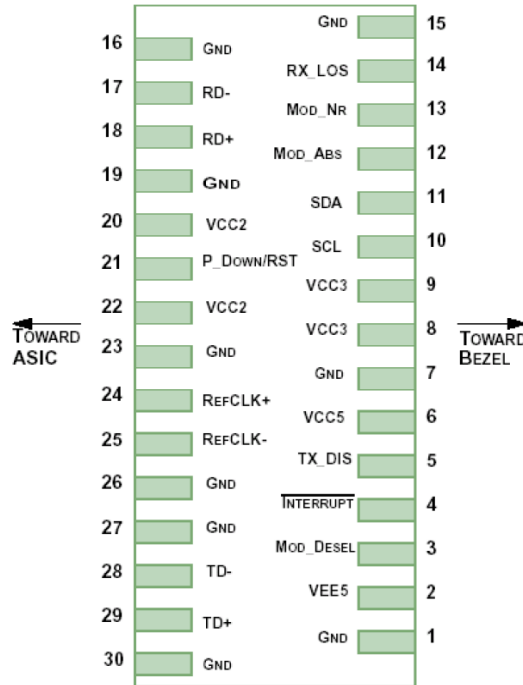
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Pin Assignment



PIN NO.	PIN NAME	FUNCTION	NOTE
1	GND	Ground	
2	VEE5	-5V Power Supply (Not required)	
3	MOD_DESEL	Module De-Select	LVTTL-I
4	INTERRUPT	Interrupt (bar)	LVTTL-O
5	TX_DIS	Transmitter Disable (Laser source turned Off)	LVTTL-I
6	VCC5	+5V Power Supply (Not required)	
7	GND	Ground	
8	VCC3	+3.3V Power Supply	
9	VCC3	+3.3V Power Supply	
10	SCL	Serial 2-wire interface Clock	LVTTL-I
11	SDA	Serial 2-wire interface Data	LVTTL-I/O
12	MOD_ABS	Module Absent (Indicates module is not present)	LVTTL-O

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13	MOD_Nr	Module Not Ready	LVTTL-O
14	RX_LOS	Receiver Loss of Signal Indicator	LVTTL-O
15	GND	Ground	
16	GND	Ground	
17	RD-	Receiver Inverted Data Out (AC coupled)	CML-O
18	RD+	Receiver Non-Inverted Data Out (AC coupled)	CML-O
19	GND	Ground	
20	VCC2	+1.8V Power Supply (Not required)	
21	P_DOWN/RST	Power Down/RESET	
22	VCC2	+1.8V Power Supply (Not required)	
23	GND	Ground	
24	REF_CLK+	Reference Clock Non-Inverted Input (Not required)	PECL-I
25	REF_CLK-	Reference Clock Inverted Input (Not required)	PECL-I
26	GND	Ground	
27	GND	Ground	
28	TD-	Transmitter Inverted Data In (AC coupled)	CML-I
29	TD+	Transmitter Non-Inverted Data In (AC coupled)	CML-I
30	GND	Ground	

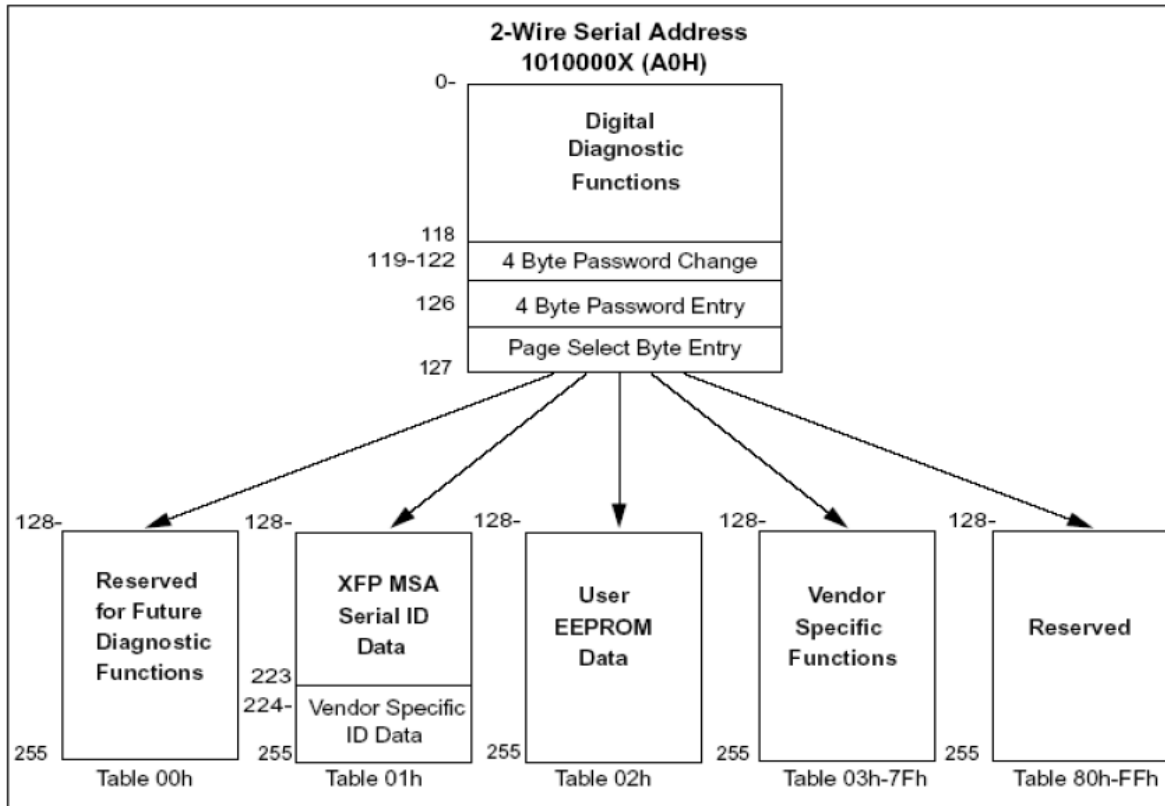
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Digital Diagnostic Memory Map



Digital Diagnostic Monitoring Characteristics

PARAMETER	SYMBOL	ACCURACY	UNIT	NOTE
Transceiver Temperature	T_{INT}	± 3	$^{\circ}C$	
Transceiver Supply Voltage	V_{INT}	± 3	%	
TX Bias Current	I_{BIAS}	± 10	%	
TX Output Power	P_{TX}	± 3	dB	
RX Received Optical Power	P_{RX}	± 3	dB	

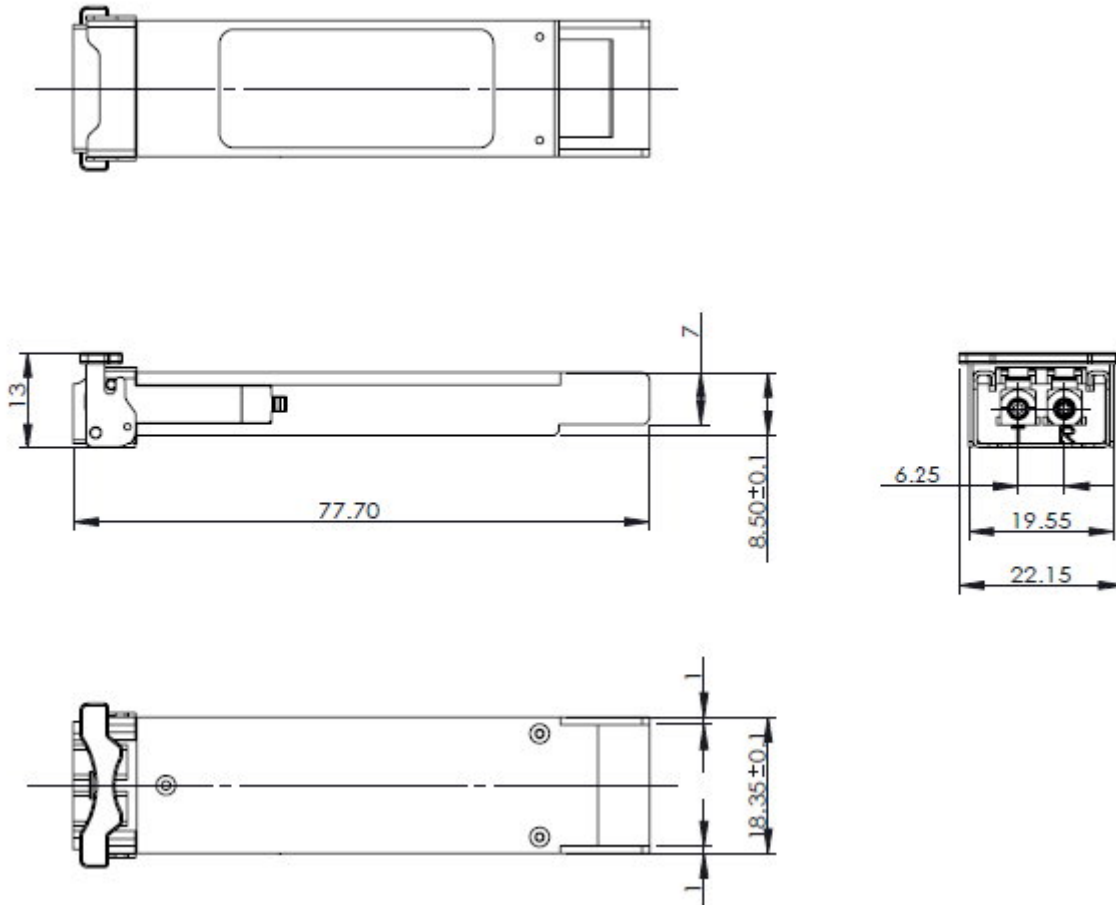
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Mechanical Dimensions (All dimensions are $\pm 0.20\text{mm}$ Unless Otherwise Specified, Unit: mm):



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