

T-10G-XENPAK-SM-40KM

10Gbps XENPAK Single Mode Transceiver 40km

Features

- XENPAK MSA Compliant
- 70-PIN Connector
- SC duplex receptacle package
- Cooled EA-DFB/PIN-PD
- Power Supply: +5.0V,+3.3V, APS:+1.2V
- Power Dissipation 4W Maximum
- 0°C to 70°C Operating Case Temperature
- Digital Diagnostic Monitoring
- Management and control with MDIO 2 wire bus
- XAUI electrical interface 4X3.125Gb/s Ethernet
- ≤40km ER (Extended Range) 10GBE
- RoHS compliant



Applications

- 10Gb/s Ethernet Switched and Routers
- 10GE Core-routers
- 10GE Storage
- Other 10Gbps Ethernet Transmission System

Ordering Information

Part No.	Data Rate	Fiber	Distance	Interface	Temperature	DDMI
T-10G-XANPAK-SM-40KM	9.95~10.3 Gbps	SMF	1550nm 40KM	SC	Standard	YES

Regulatory Compliance

Feature	Agency	Standard	Certificate / Comments
Laser Safety	FDA	CDRH 21 CFR 1040 and Laser Notice No.50	1120292-000
Product Safety	UL	UL and CUL EN60950-2:2007	WT10093766-D-E-E
Environmental Protection	SGS	RoHS Directive 2002/95/EC	GZ1001008918/CHEM
EMC	WALTEK	EN55022:2006+A1:20077 EN55024:1998+A1+A2:2003	WT10093759-D-E-E

Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Unit
Supply Voltage +5V	Vcc5		6.0	V
Supply Voltage +3.3V	Vcc3		4	V
Supply Voltage APS	Vaps		2	V
Storage Temperature	Tst	-20	85	°C
Optical Input Received Power	PIN		-1	dBm

Recommended Operating Conditions

Parameter	Symbol	Min.	Typical	Max.	Unit
Operating Case Temperature	Tca	0		70	°C
Supply Voltage +5V	Vcc5	4.75	5	5.25	V
Supply Current +5V	Icc5			500	mA
Supply Voltage +3.3V	Vcc3	3.14	3.3	3.47	V
Supply Current +3.3V	Icc3			1000	mA
Supply Voltage APS	Vaps	1.14	1.2	1.26	V
Supply Current APS	Iaps			1100	mA
Module Power Dissipation	Pm			4	W

Transmitter Specifications-Optical

Parameter	Symbol	Min.	Typical	Max.	Unit
Center Wavelength	λ_c	1530		1565	nm
Optical Transmit Power	Po	-1		2	dBm
Optical Transmit Power(disable)	Ptx-dis			-40	dBm
Extinction Ratio	ER	9			dB
Side Mode Suppression Ratio	SMSR	30			dB
Eye Mask	IEEE 802.3ae Compliant				

Receiver Specifications-Optical

Parameter	Symbol	Min.	Typical	Max.	Unit
Input Operating Wavelength	λ_c	1280		1600	nm
Average Receive Power	Pavg	-15.8		-1.0	dBm
Receiver Sensitivity in 10.3Gbps(OMA)	Rsen1			-14.1	nm
Stressed Receiver Sensitivity in 10.3Gbps(OMA)	Rsen2			-11.3	dBm
Reflectance	Rrx			-28	dB
LOS Asserted	Lsa	-28			dBm
LOS De-Asserted	Lda			-19	dBm
LOS Hysteresis	Lh	0.5			dB

Transmitter Specification-Electrical

Parameter	Symbol	Min.	Typ.	Max	Unit
Data Rate(TXLINE0-3)	TX-xaui		3125		Mbps
Differential Impedance	Zo	80	100	120	Ω
Differential Input Amplitude	Vin P-P	180		2000	mVpp
Input Rise/Fall	TR /TF	60		130	ps
Differential Impedance of Zin	Zin		100		ohm

Receiver Specification-Electrical

Parameter	Symbol	Min.	Typ.	Max	Unit
Data Rate(TXLINE0-3)	RX-xaui		3125		Mbps
Supply Voltage	VccRX	3.13	3.3	3.47	V
Differential Output Amplitude	Vout P-P	800		1600	mV
Rise / Fall Time	Tr / Tf	50		90	ps
Differential Impedence of Zout	Zout		100		ohm

Signal Specification-Electrical

Parameter	Symbol	Min.	Typ.	Max	Unit
1.2V CMOS					
Input High Voltage	VIL(MAX)			0.36	V
Input Low Voltage	VIH(MIN)	0.84		1.25	V
Capacitance				320	pF
Pull Up Resistance	Rpull	10k		22k	ohm
MDIO I/O					
Output Low Voltage	VOL	-0.3		0.2	V
Output Low Current	IOL			4	mA
Input High Voltage	VIH	0.84		1.5	V
Input Low Voltage	VIL	-0.3		0.36	V
Pull-up Supply Voltage	VPULL	1.14	1.2	1.26	
Input Capacitance	CIN			10	Pf
Load Capacitance	CLOD			470	Pf
External Pull-up Resistance	EPULL	200			Ohm

Pin Definition

Pin No	Name	Dir	Function	Notes
1	GND		Electrical Ground	1
2	GND		Electrical Ground	1
3	GND		Electrical Ground	1
4	5.0V		Power	2
5	3.3V		Power	2
6	3.3V		Power	2
7	APS=1.2V		Adaptive Power Supply	2
8	APS=1.2V		Adaptive Power Supply	2
9	LASI		Open Drain Compatible 10K-22K pull up on host. Logic High: Normal Operation Logic Low: LASI Asserted	4
10	RESET	I	Open Drain compatible. 10-22K pull-up on transceiver Logic high = Normal operation Logic low = Reset. Minimum reset assert time 1 ms	4
11	VEND SPECIFIC		Vendor Specific Pin.	8

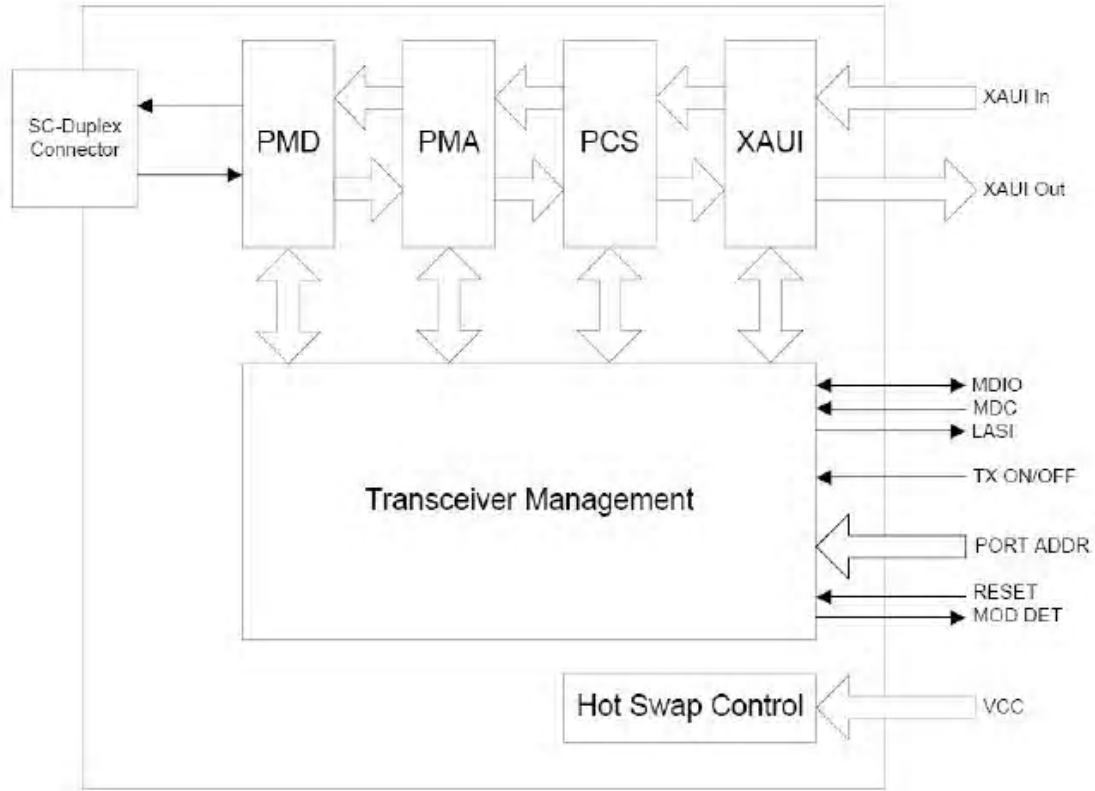
			Leave unconnected when not in use.	
12	TX ON/OFF	I	Open Drain compatible. 10-22K pull-up on transceiver Logic high = Transmitter On (capable) Logic low = Transmitter Off (always)	4
13	RESERVED		Reserved	4
14	MOD DETECT	O	Pulled low inside module through 1k	
15	VEND SPECIFIC		Vendor Specific Pin. Leave unconnected when not in use.	8
16	VEND SPECIFIC		Vendor Specific Pin. Leave unconnected when not in use.	8
17	MDIO	I/O	Management Data IO	4.5
18	MDC	I	Management Data Clock	4.5
19	PRTAD4	I	Port Address Bit 4 (Low = 0)	4
20	PRTAD3	I	Port Address Bit 3 (Low = 0)	4
21	PRTAD2	I	Port Address Bit 2 (Low = 0)	4
22	PRTAD1	I	Port Address Bit 1 (Low = 0)	4
23	PRTAD0	I	Port Address Bit 0 (Low = 0)	4
24	VEND SPECIFIC		Vendor Specific Pin. Leave unconnected when not in use.	8
25	APS SET		Feedback input for APS	
26	RESERVED		Reserved for Avalanche Photodiode use.	8
27	APS SENSE		APS Sense Connection	
28	APS=1.2V		Adaptive Power Supply	2
29	APS=1.2V		Adaptive Power Supply	2
30	3.3V		Power	2
31	3.3V		Power	2
32	5.0V		Power	2
33	GND		Electrical Ground	1
34	GND		Electrical Ground	1
35	GND		Electrical Ground	1
36	GND		Electrical Ground	1
37	GND		Electrical Ground	1
38	RESERVED		Reserved	
39	RESERVED		Reserved	
40	GND		Electrical Ground	1
41	RX LANE0+	O	Module XAUI Output Lane 0+	7
42	RX LANE0-	O	Module XAUI Output Lane 0-	7
43	GND		Electrical Ground	1
44	RX LANE1+	O	Module XAUI Output Lane 1+	7

45	RX LANE1-	O	Module XAUI Output Lane 1-	7
46	GND		Electrical Ground	1
47	RX LANE2+	O	Module XAUI Output Lane 2+	7
48	RX LANE2-	O	Module XAUI Output Lane 2-	7
49	GND		Electrical Ground	1
50	RX LANE3+	O	Module XAUI Output Lane 3+	7
51	RX LANE3-	O	Module XAUI Output Lane 3-	7
52	GND		Electrical Ground	1
53	GND		Electrical Ground	1
54	GND		Electrical Ground	1
55	TX LANE 0+	I	Module XAUI Input Lane 0+	7
56	TX LANE 0-	I	Module XAUI Input Lane 0-	7
57	GND		Electrical Ground	1
58	TX LANE 1+	I	Module XAUI Input Lane 1+	7
59	TX LANE 1-	I	Module XAUI Input Lane 1-	7
60	GND		Electrical Ground	1
61	TX LANE2+	I	Module XAUI Input Lane 2+	7
62	TX LANE2-	I	Module XAUI Input Lane 2-	7
63	GND		Electrical Ground	1
64	TX LANE3+	I	Module XAUI Input Lane 3+	7
65	TX LANE3-	I	Module XAUI Input Lane 3-	7
66	GND		Electrical Ground	1
67	RESERVED		Reserved	
68	RESERVED		Reserved	
69	GND		Electrical Ground	1
70	GND		Electrical Ground	1

Notes:

- 1) Ground connections are common for TX and RX.
- 2) All connector contacts are rated at 0.5A nominal.
- 4) 1.2V CMOS compatible.
- 5) MDIO and MDC timing must comply with IEEE802.3ae, Clause 45.3
- 7) XAUI output characteristics should comply with IEEE802.3ae Clause 47.
- 8) Transceivers will be MSA compliant when no signals are present on the vendor specific pins.

Functional Diagram of Typical XENPAK Style Transceiver

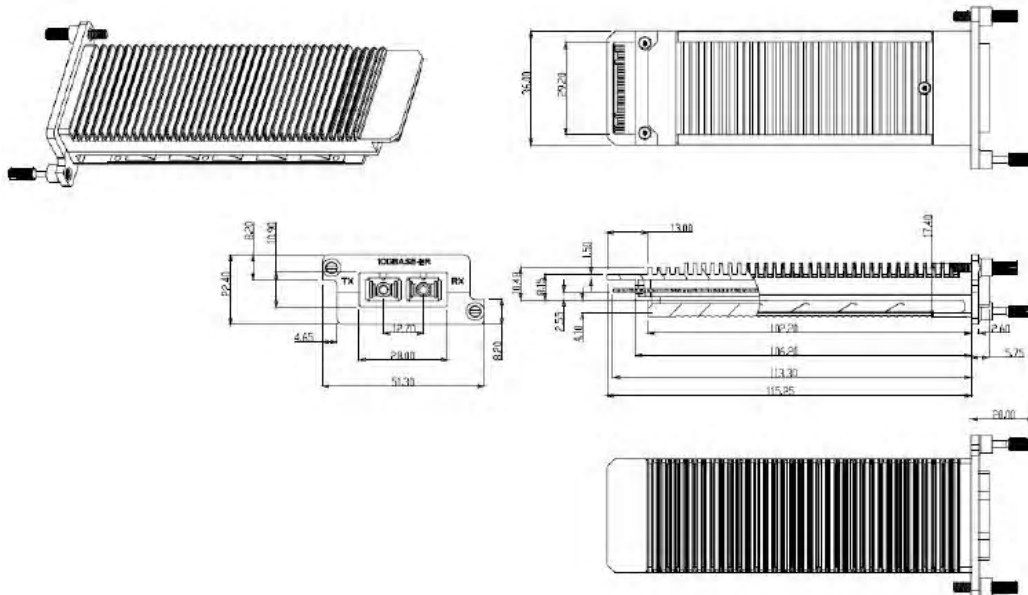


Electrical Pin-out Details

70	GND	1	GND
69	GND	2	GND
68	RESERVED	3	GND
67	RESERVED	4	5.0V
66	GND	5	3.3V
65	TX LANE3-	6	3.3V
64	TX LANE3+	7	APS
63	GND	8	APS
62	TX LANE2-	9	LAS1
61	TX LANE2+	10	RESET
60	GND	11	VEND SPECIFIC
59	TX LANE1	12	TX ON/OFF
58	TX LANE1+	13	RESERVED
57	GND	14	MOD DETECT
56	TX LANE0-	15	VEND SPECIFIC
55	TX LANE0+	16	VEND SPECIFIC
54	GND	17	MDIO
53	GND	18	MDC
52	GND	19	PRTAD4
51	RX LANE3-	20	PRTAD3
50	RX LANE3+	21	PRTAD2
49	GND	22	PRTAD1
48	RX LANE2-	23	PRTAD0
47	RX LANE2+	24	VEND SPECIFIC
46	GND	25	APS SET
45	RX LANE1-	26	RESERVED
44	RX LANE1+	27	APS SENSE
43	GND	28	APS
42	RX LANE0-	29	APS
41	RX LANE0+	30	3.3V
40	GND	31	3.3V
39	RESERVED	32	5.0V
38	RESERVED	33	GND
37	GND	34	GND
36	GND	35	GND



Mechanical Specification



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