FTE-S1XG-S55Q-080D

XENPAK 10GBase-ZR, 1550nm, single-mode, 80km

Description

FTE-S1XG-S55Q-080D series XENPAK transceiver can be used to setup a reliable, high speed serial data link over single-mode fiber. Maximum link span can reach 80km. Casing made fully from metal alloys ensures very good EMI immunity. Module is fully compliant with XENPAK MSA specification and it is available in two hardware versions:

Model	Operating case temperature
FTE-S1XG-S55Q-080D	0~70°C
FTE-S1XG-S55Q-080DI	-40~85°C

Host device can access module internal EEPROM memory and DDMI via I^2C interface.
Built-in digital diagnostic interface (DOM, DDMI) allows a network administrator to monitor module parameters such as: transmitted and received optical power, temperature, supply voltage and laser current. Those information and data are very helpful e.g. in prediction and prevention of connection failures. A module is available in various dedicated versions, which can be compatible with devices from vendors such as Cisco, HP, Juniper, Extreme Networks, Alcatel-Lucent, 3Com, Linksys and more.

Applications

- 10G Ethernet
- SONET/SDH (OC-192/STM64)
- Gigabit Ethernet (1.25Gbps)

Fibrain Co., Ltd.
Address: ul. Wspólna 4A, 35-205 Rzeszów, Poland
Tel: +48 17 86-60-811, +48 17 86-60-812
Fax: +48 17 86-60-810
Email: info@fibrain.com http://www.fibrain.com

XENPAK Transceivers

Key features

- SC Duplex receptacle
- Transmission distance up to 80km*
- EML laser diode 1550nm transmitter, APD receiver
- Throughput up to 11.3Gb/s
- Fully compliant with XENPAK MSA INF-8474i
- Hot-Pluggable
- RoHS compliant
- Class 1 laser safety
- Low power dissipation (<1W)
- Metal case for low EMI
- Operating case temperature* : 0~70°C / -40~85°C

Specification

Supported transmission technology	10G Ethernet
Speed supported for Ethernet technology	10.25Gbps
Speed supported for Fibre Channel technology	N/A
Transmission medium	Single-mode fiber 9/125µm
Transmission distance**	80km
Receptacle type	SC Duplex
Wavelength	1550nm
Output power	0~+5dBm
Receiver sensitivity	-24dBm
Power supply voltage	3.3V
Total power consumption	< 1W
Operating environment – temperature*	0~70°C / -40~+85°C
Operating environment - humidity	5~95% non-condensing
Dimensions	Compliant with XENPAK Multi-Source Agreement

* - standard / industrial version

** - transmission distance depends on optical link attenuation

Fibrain Co., Ltd.
Address: ul. Wspólna 4A, 35-205 Rzeszów, Poland
Tel: +48 17 86-60-811, +48 17 86-60-812
Fax: +48 17 86-60-810
Email: info@fibrain.com http://www.fibrain.com

Detailed technical specification

Pin Description

Pin	Name	Function/Description	Logic
1	GND	Electrical Ground	-
2	GND	Electrical Ground	-
3	GND	Electrical Ground	-
4	5.0V	Reserved - Not Required	-
5	3.3V	Power Supply	I
6	3.3V	Power Supply	I
7	APS	Adaptive power supply	I
8	APS	Adaptive power supply	I
9	LASI	Link Alarm Status Interrupt. 10-22KΩ resistor pull-up to 1.2V on host	Open Drain-O
10	RESET	Low active Reset input ,10KΩ pull-up inside Transponder	Open Drain-I
11	VEND SPECIFIC	Vendor Specific Pin, leave unconnected	-
12	TX ON/OFF	High active Transmitter Enable, 10kΩ pull-up inside Transponder	Open Drain-I
13	RESERVED	Reserved	-
14	MOD DETECT	1KΩ to Ground inside Transponder	O
15	VEND SPECIFIC	Vendor Specific Pin, leave unconnected	-
16	VEND SPECIFIC	Vendor Specific Pin, leave unconnected	-
17	MDIO	Management Data I/O. Requires external 10-22KΩ pull-up to 1.2V on host	Open Drain-I/O
18	MDC	Management Clock Input	1.2V COMS-I
19	PRTAD4	Port Address bit 4(low=0)	1.2V COMS-I
20	PRTAD3	Port Address bit 3(low=0)	1.2V COMS-I
21	PRTAD2	Port Address bit 2(low=0)	1.2V COMS-I
22	PRTAD1	Port Address bit 1(low=0)	1.2V COMS-I
23	PRTAD0	Port Address bit 0(low=0)	1.2V COMS-I
24	VEND SPECIFIC	Vendor Specific Pin, leave unconnected	-
25	APS SET	Feedback input for APS, Input of APS setting resistor	I
26	RESERVED	Reserved	-
27	APS SENSE	APS Sense output for APS control circuit	O
28	APS	Adaptive power supply	I
29	APS	Adaptive power supply	I
30	3.3V	Power Supply	I
31	3.3V	Power Supply	I
32	5.0V	Reserved **- Not Required**	-
33	GND	Electrical Ground	-
34	GND	Electrical Ground	-
35	GND	Electrical Ground	-

Fibrain Co., Ltd.
Address: ul. Wspólna 4A, 35-205 Rzeszów, Poland
Tel: +48 17 86-60-811, +48 17 86-60-812
Fax: +48 17 86-60-810
Email: info@fibrain.com http://www.fibrain.com

36	GND	Electrical Ground	-
37	GND	Electrical Ground	-
38	RESERVED	Reserved	-
39	RESERVED	Reserved	-
40	GND	Electrical Ground	-
41	RX LANE 0+	Module XAUI output lane 0+	O
42	RX LANE 0-	Module XAUI output lane 0-	O
43	GND	Electrical Ground	
44	RX LANE 1+	Module XAUI output lane 1+	O
45	RX LANE 1-	Module XAUI output lane 1-	O
46	GND	Electrical Ground	
47	RX LANE 2+	Module XAUI output lane 2+	O
48	RX LANE 2-	Module XAUI output lane 2-	O
49	GND	Electrical Ground	
50	RX LANE 3+	Module XAUI output lane 3+	O
51	RX LANE 3-	Module XAUI output lane 3-	O
52	GND	Electrical Ground	
53	GND	Electrical Ground	
54	GND	Electrical Ground	
55	TX LANE 0+	Module XAUI Input lane 0+	I
56	TX LANE 0-	Module XAUI Input lane 0-	I
57	GND	Electrical Ground	
58	TX LANE 1+	Module XAUI Input lane 1+	I
59	TX LANE 1-	Module XAUI Input lane 1-	I
60	GND	Electrical Ground	
61	TX LANE 2+	Module XAUI Input lane 2+	I
62	TX LANE 2-	Module XAUI Input lane 2-	I
63	GND	Electrical Ground	
64	TX LANE 3+	Module XAUI Input lane 3+	I
65	TX LANE 3-	Module XAUI Input lane 3-	I
66	GND	Electrical Ground	
67	RESERVED	Reserved	
68	RESERVED	Reserved	
69	GND	Electrical Ground	
70	GND	Electrical Ground	

Fibrain Co., Ltd.
Address: ul. Wspólna 4A, 35-205 Rzeszów, Poland
Tel: +48 17 86-60-811, +48 17 86-60-812
Fax: +48 17 86-60-810
Email: info@fibrain.com http://www.fibrain.com

Electrical parameters

Parameter		Symbol	Min.	Typ.	Max.	Unit	Notes
Transmitter Differential Input Volt		+/-TX_DAT	200		1600	mV p-p	1
Receiver Differential Output Volt		+/-RX_DAT	800		1600	mV p-p	1
XAUI Baud Rate Tolerance			-100		+100	ppm	
Total Jitter		T_{JXAUI}			0.35	UI	
Deterministic Jitter		D_{JXAUI}			0.37	UI	
1.2V CMOS I/O	Input Voltage – Low	V_{IL}			0.36	V	
	Input Voltage - High	V_{IH}	0.84		1.5	V	
	Output Voltage – Low	V_{OL}			0.15	V	
	Output Voltage - High	V_{OH}	1			V	
MDIO I/O	Input Voltage – Low	V_{ILM}	-0.3		0.36	V	
	Input Voltage - High	V_{IHM}	0.84		1.5	V	
	Output Voltage – Low	V_{OLM}	-0.3		0.2	V	
	Output Voltage - High	V_{OHM}	1		1.5	V	
	MDIO Data Hold Time	t_{HOLD}	10			ns	
	MDIO Data Setup Time	t_{SU}	10			ns	
	Delay from MDC Rising Edge to MDIO Data Change	t_{DELAY}			300	ns	
	MDC Clock Rate	f_{MAX}			2.5	MHz	
Throughput		B			11.3	Gb/s	

Transmitter parameters

Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Central wavelength	λc	1530	1550	1565	nm	
Spectral width	Δλ			1	nm	
Launch optical power	P_o	0		+5	dBm	
Extinction ratio	EX	8.2			dB	
Dispersion penalty				2	dB	
Optical Return Loss Tolerance	ORLT	20			dB	
Optical rise/fall time	T_{rise}/T_{fall}			30	ps	
Eye diagram	Compliant with IEEE802.3-2005 10G BASE-ZR					

Receiver parameters

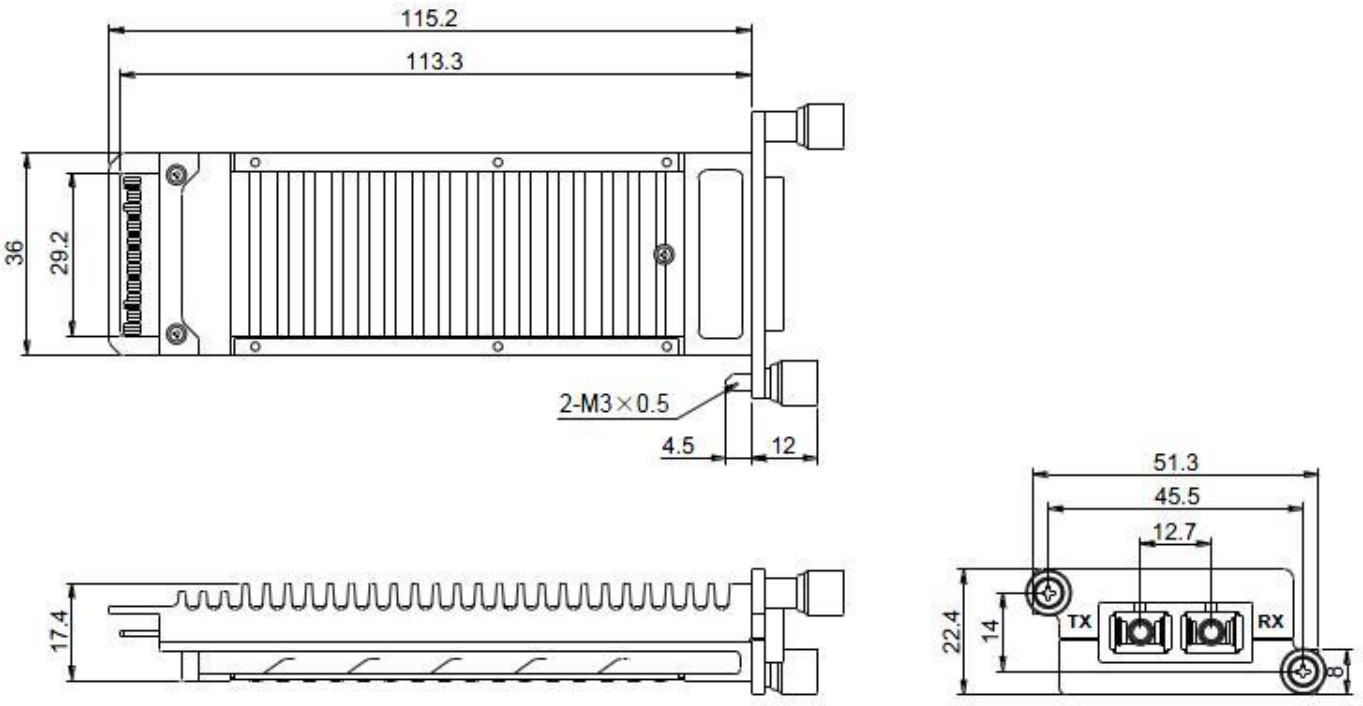
Parameter	Symbol	Min.	Typ.	Max.	Unit	Notes
Sensitivity	P_{min}			-24	dBm	
Stressed Sensitivity (OMA)				-22	dBm	
Central wavelength	λc	1500		1600	nm	
Receiver overload	P_{MAX}	-7			dBm	
RX_LOS Asserted	S_A	-33			dBm	
RX_LOS De-Asserted	S_D			-25	dBm	
RX_LOS Hysteresis	-		3.0		dB	

Notes:

1. Internally AC coupled.

Fibrain Co., Ltd.
Address: ul. Wspólna 4A, 35-205 Rzeszów, Poland
Tel: +48 17 86-60-811, +48 17 86-60-812
Fax: +48 17 86-60-810
Email: info@fibrain.com http://www.fibrain.com

Mechanical specification



Recommended environment conditions

Parameter	Symbol	Min	Typ	Max	Unit
Operating Temperature Range (industrial)	T	-40	-	85	^{0}C
Operating Temperature Range (standard)	T	0	25	70	^{0}C
Supply Voltage	V_{CC}	3.135	3.3	3.465	V
Supply Voltage	V_{aps}	1.152	1.2	1.248	V
Relative Humidity	RH	5	-	95	%

Ordering information

FTE-S1XG-S55Q-080**D**– 1550nm, 80km, single-mode, SC duplex, **DDMI**, commercial temperature (0~70°C)
FTE-S1XG-S55Q-080**DI**– 1550nm, 80km, single-mode, SC duplex, **DDMI**, **extended temperature** (-40~85°C)

For further information regarding host device PCB layout recommendation, power supply requirements, EEPROM memory map, DDMI specification please check:

INF-8474i - Technical specification for XENPAK transceiver

Pictures used for reference only, actual product look may differ. For most actual information please contact technical support via aktywa@fibrain.pl

Fibrain Co., Ltd.
Address: ul. Wspólna 4A, 35-205 Rzeszów, Poland
Tel: +48 17 86-60-811, +48 17 86-60-812
Fax: +48 17 86-60-810
Email: info@fibrain.com http://www.fibrain.com