




XENPAK LR Transponder, 10km Reach FXK-31192-LRC

Features

- ◆ Compatible with XENPAK MSA
- ◆ Support of IEEE 802.3ae 10GBASE-LR at 10.3125Gbps
- ◆ Transmission Distance up to 10km(SMF)
- ◆ SC Receptacle 1310nm DFB Laser
- ◆ SC Duplex Optical Connector
- ◆ Hot Pluggable 70-PIN Connector with XAUI Electrical Interface
- ◆ Management and control via MDIO 2-wire interface
- ◆ Power Supply :+3.3V, APS(+1.2V)
- ◆ Power Dissipation 4W Maximum
- ◆ Diagnostic Optics Monitoring
- ◆ Temperature Range: 0~ 70 °C
- ◆ ROHS6 Compatible 



Applications

- ◆ 10GE Ethernet switches and routers
- ◆ 10GE Core-routers
- ◆ 10GE Storage
- ◆ Other 10Gbps Ethernet Transmission System

Absolute Maximum Ratings

| Parameter | Symbol | Min | Max | Unit | Ref. |
|-----------------------------------|----------|------|-----|------|----------------------------|
| Storage Ambient Temperature Range | | -40 | +85 | °C | non condensing |
| Powered case Temperature Range | | 0 | +70 | °C | non condensing |
| Adaptable Power Supply (APS) | Vapsense | 0 | 1.5 | V | Voltage @ Pin APS Sense |
| Supply Voltage Range @ 3.3V | Vcc3 | -0.5 | 4.0 | V | |

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



Operating Conditions

| Parameter | Symbol | Min | Typical | Max | Unit |
|----------------------------|------------------|-------|---------|-------|------|
| Operating Case Temperature | T _c | 0 | | +70 | °C |
| Power Supply Voltage | V _{CC3} | 3.14 | 3.3 | 3.47 | V |
| | V _{APS} | 1.152 | 1.2 | 1.248 | |
| Power Dissipation | PD | | 3.5 | 4 | W |

Optical Interface

Transmitter Characteristics

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Note |
|------------------------------------|----------------|------|---------|------|------|------|
| Operating Range | | | | 10 | Km | |
| Operating Data Rate | | | 10.3125 | | Gb/s | |
| Average Optics Power | P _o | -8.2 | | 0.5 | dBm | |
| Input Centre Wavelength | λ | 1260 | 1310 | 1355 | nm | |
| SMSR. | SWSR | 30 | | | dB | |
| Extinction Ratio | ER | 3.5 | | | | |
| Optical Modulation Amplitude | OMA | 500 | | | μW | |
| Transmitter and Dispersion Penalty | TDP | | | 3.2 | dB | |

Receiver Characteristics

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Note |
|-----------------------------|-------------------|------|---------|-------|------|------|
| Operating Data Rate | | | 10.3125 | | Gb/s | |
| Average Optics Power | P _o | 0.5 | | | dBm | |
| Sensitivity in OMA | OMA ₀ | | | -12.6 | dBm | |
| Stressed Sensitivity in OMA | OMA _{st} | | | -10.3 | dBm | |
| Sensitivity MINI | P _{min} | | | -14.4 | dBm | 1 |

Note :

1. Measured at 10.3125Gb/s, Non-framed PRBS2³¹-1, NRZ

XAUI I/O Characteristics



| Parameter | Symbol | Min. | Typ. | Max. | Unit | Note |
|-----------------------------------|--------|------|-------|------|-------|---------------------------|
| XAUI Data Rate | DR | | 3.125 | | Gb/s | |
| XAUI Baud Rate Tolerance | | -100 | | +100 | ppm | Relative Tolerance |
| Differential Input Voltage Swing | | 220 | | 1600 | mv | 8B/10B Coded Input Signal |
| Differential Output Voltage Swing | | 800 | | 1600 | mVp-p | RLOAD = 100Ω ± 5% |
| Differential Input Impedance | | 80 | 100 | 120 | Ω | |
| Total Output Jitter | TJXAUI | | | 0.35 | UI | no pre-equalization |
| Total Deterministic Output Jitter | DJXAUI | | | 0.17 | UI | no pre-equalization |

Signal Specifications – Electrical

| Parameter | Symbol | Min | Typ | Max | Units |
|-----------------------------|----------|------|-----|------|-------|
| 1.2 V 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 Definitions

| 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 | 3 |
| 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 | 3 |
| 11 | VEND SPECIFIC | | Vendor Specific Pin. Leave unconnected when not in use. | 6 |
| 12 | TX ON/OFF | I | Open Drain compatible. 10-22K pull-up on transceiver Logic high = Transmitter On (capable) Logic low = Transmitter Off (always) | 3 |
| 13 | RESERVED | | Reserved | 3 |
| 14 | MOD DETECT | O | Pulled low inside module through 1k | |
| 15 | VEND SPECIFIC | | Vendor Specific Pin. Leave unconnected when not in use. | 6 |
| 16 | VEND SPECIFIC | | Vendor Specific Pin. Leave unconnected when not in use. | 6 |
| 17 | MDIO | I/O | Management Data IO | 3, 4 |
| 18 | MDC | I | Management Data Clock | 3, 4 |
| 19 | PRTAD4 | I | Port Address Bit 4 (Low = 0) | 3 |
| 20 | PRTAD3 | I | Port Address Bit 3 (Low = 0) | 3 |
| 21 | PRTAD2 | I | Port Address Bit 2 (Low = 0) | 3 |
| 22 | PRTAD1 | I | Port Address Bit 1 (Low = 0) | 3 |
| 23 | PRTAD0 | I | Port Address Bit 0 (Low = 0) | 3 |
| 24 | VEND SPECIFIC | | Vendor Specific Pin. Leave unconnected when not in use. | 6 |
| 25 | APS SET | | Feedback input for APS | |
| 26 | RESERVED | | Reserved for Avalanche Photodiode use. | 6 |
| 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+ | 5 |
| 42 | RX LANE0- | O | Module XAUI Output Lane 0- | 5 |
| 43 | GND | | Electrical Ground | 1 |
| 44 | RX LANE1+ | O | Module XAUI Output Lane 1+ | 5 |
| 45 | RX LANE1- | O | Module XAUI Output Lane 1- | 5 |
| 46 | GND | | Electrical Ground | 1 |
| 47 | RX LANE2+ | O | Module XAUI Output Lane 2+ | 5 |
| 48 | RX LANE2- | O | Module XAUI Output Lane 2- | 5 |
| 49 | GND | | Electrical Ground | 1 |
| 50 | RX LANE3+ | O | Module XAUI Output Lane 3+ | 5 |
| 51 | RX LANE3- | O | Module XAUI Output Lane 3- | 5 |
| 52 | GND | | Electrical Ground | 1 |
| 53 | GND | | Electrical Ground | 1 |
| 54 | GND | | Electrical Ground | 1 |
| 55 | TX LANE0+ | I | Module XAUI Input Lane 0+ | 5 |
| 56 | TX LANE0- | I | Module XAUI Input Lane 0- | 5 |
| 57 | GND | | Electrical Ground | 1 |
| 58 | TX LANE1+ | I | Module XAUI Input Lane 1+ | 5 |
| 59 | TX LANE1- | I | Module XAUI Input Lane 1- | 5 |
| 60 | GND | | Electrical Ground | 1 |
| 61 | TX LANE2+ | I | Module XAUI Input Lane 2+ | 5 |
| 62 | TX LANE2- | I | Module XAUI Input Lane 2- | 5 |
| 63 | GND | | Electrical Ground | 1 |
| 64 | TX LANE3+ | I | Module XAUI Input Lane 3+ | 5 |
| 65 | TX LANE3- | I | Module XAUI Input Lane 3- | 5 |
| 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.
- 3) 1.2V CMOS compatible.
- 4) MDIO and MDC timing must comply with IEEE802.3ae, Clause 45.3
- 5) XAUI output characteristics should comply with IEEE802.3ae Clause 47.
- 6) Transceivers will be MSA compliant when no signals are present on the vendor specific pins.

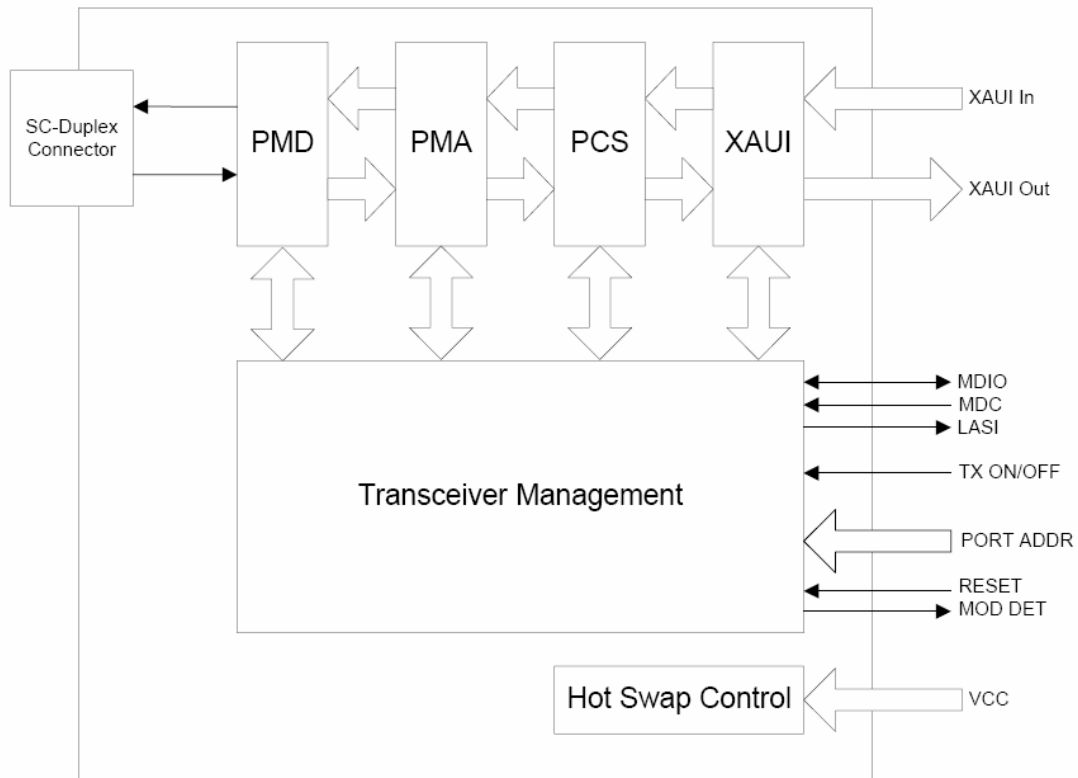


Figure1. Functional Diagram of Typical XENPAK Style Transceiver

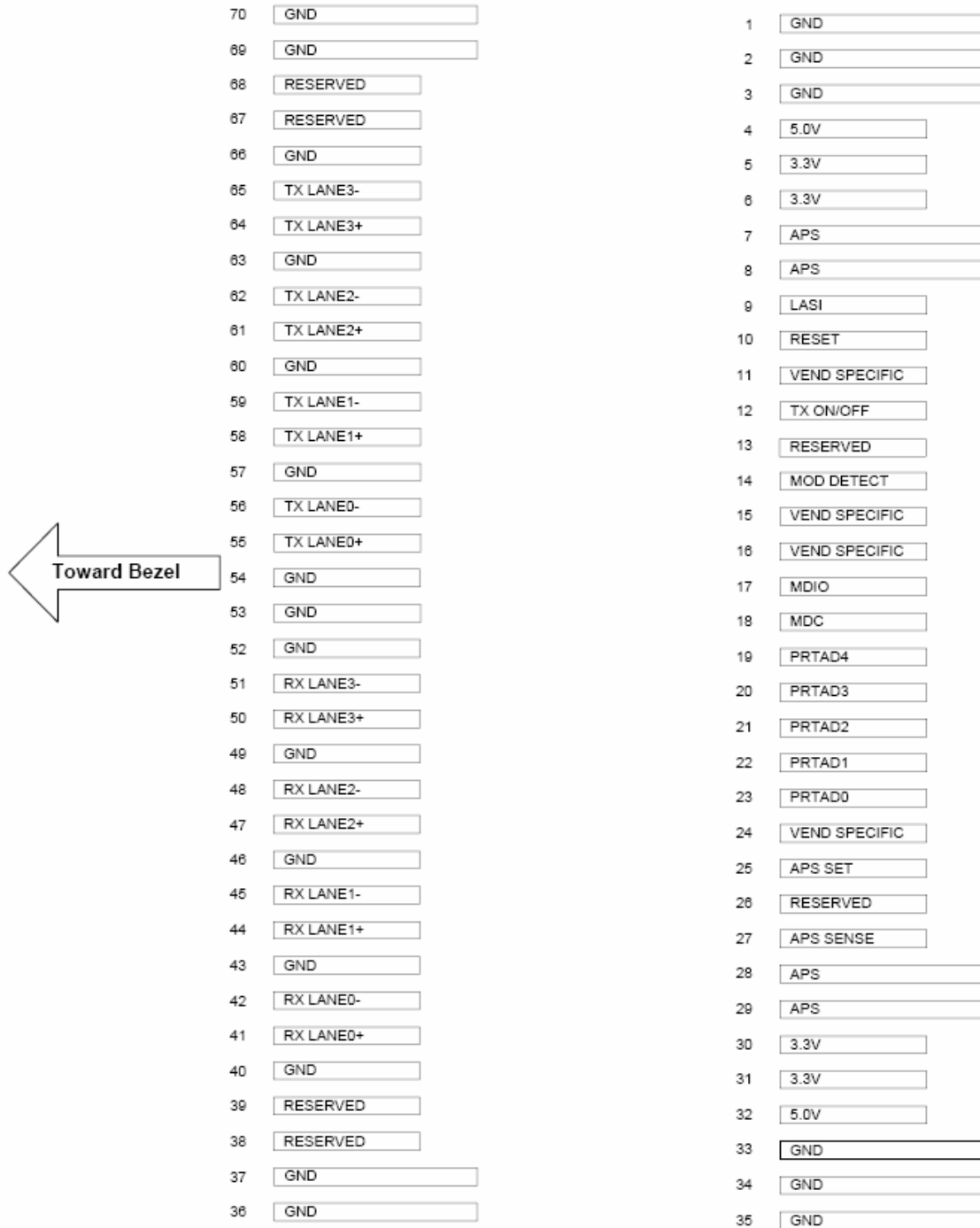
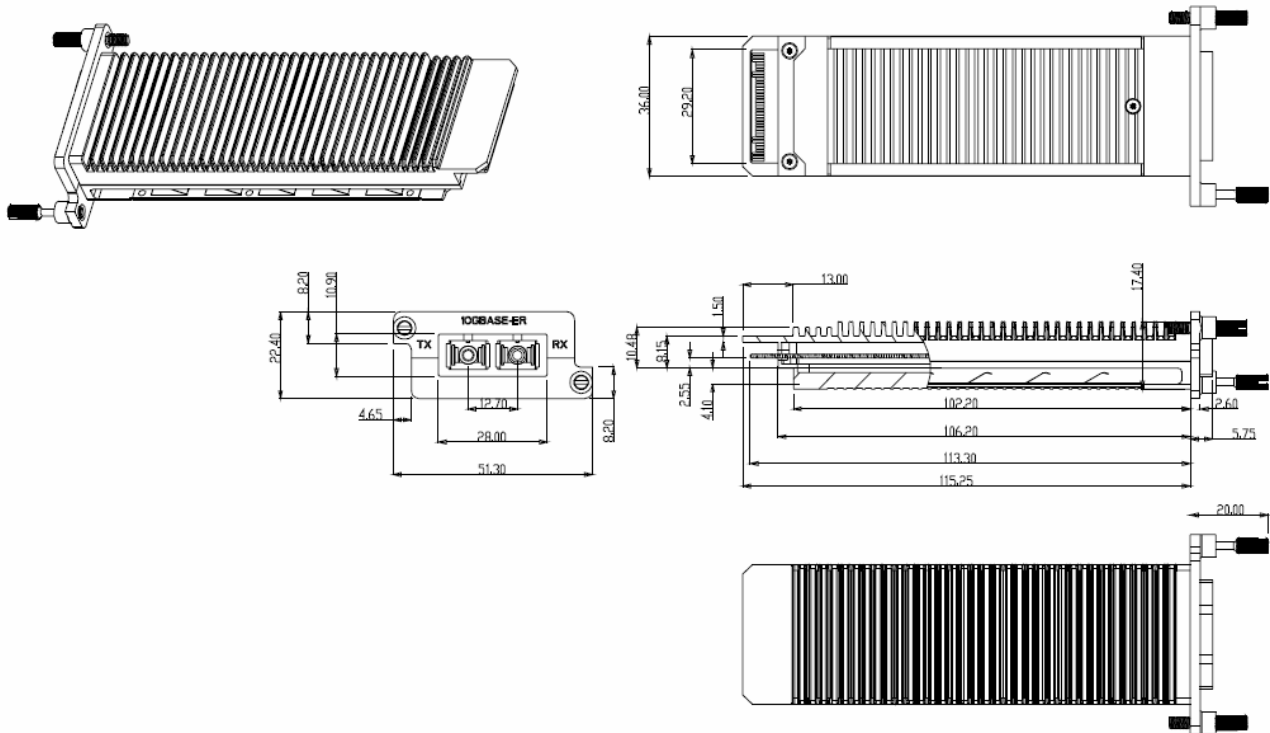


Figure2.Electrical Pin-out Details



Dimensions in mm

Figure3. Mechanical Dimensions

Regulatory Compliance

FIBERER XENPAK Transponder is designed to be Class I Laser safety compliant and is certified per the following standards:

| Feature | Agency | Standard | Certificate / Comments |
|--------------------------|--------|---|------------------------|
| Laser Safety | FDA | CDRH 21 CFR 1040 and Laser Notice No. 50 | 1120291-000 |
| Product Safety | UL | UL and CUL EN60950-2:2007 | WT10093765-D-E-E |
| Environmental protection | SGS | RoHS Directive 2002/95/EC | GZ1001008706/CHEM |
| EMC | WALTEK | EN 55022:2006+A1:2007 EN 55024:1998+A1+A2:2003 - | WT10093768-D-E-E |

Ordering information

| Part Number | Product Description |
|---------------|---|
| FXK-31192-LRC | 1310nm, 10.3125Gbps, XENPAK 10Km, 0°C ~ +70°C |

Important Notice



Fiberer Global Tech Ltd
sales@fiberer.com

NO. 1 Service NO.1 Quality
www.transceivermodule.com

Performance figures, data and any illustrative material provided in this data sheet are typical and must be specifically confirmed in writing by FIBERER before they become applicable to any particular order or contract. In accordance with the FIBERER policy of continuous improvement specifications may change without notice.

The publication of information in this data sheet does not imply freedom from patent or other protective rights of FIBERER or others. Further details are available from any FIBERER sales representative.

Company name: **Fiberer Global Tech Ltd.**

Address: C-1703, JiaNanMeiDi, Shennan Road 12031 with Nanxin Road
Converged,Nantou,Nanshan District, Shenzhen 518052, China

Telephone: +86-755-3320-1588

Fax: +86-755-3320-1568

Email: sales@fiberer.com ; TransceiverModule@163.com

Website: <http://www.transceivermodule.com>