



10GBPS SR/SW QUAD PORT FIBER BYPASS MODULE

Product Description

The SR/SW Quad port fiber bypass modules is design expressly for Intrusion Prevention System (IPS) provides complete visibility to network traffic, It also introduces a point of failure should the IPS lose power, cable fail or application freeze.

The module design for PCI Express X8 interface, which means it can support 10.3Gbit/s in full duplex mode per port of data transfer rate and Multi-mode fiber operations. SR/SW Quad port fiber bypass modules designed to be compliant digital diagnostic monitoring function: Temperature, VCC , TX optical power, TX laser bias current, and RX received optical power. The post-amplifier of the SR/SW Quad port fiber bypass modules also includes a Loss of Signal (LOS) circuit that provides a TTL logic-high output when the received optical level is below a preset LOS Assert threshold.



Features

- Compliant with 10GBASE-SR
- Compliant with 10GBASE-SW
- Link Distances at 10.3Gbps 300m links with OM-3 MMF Cable
- EEPROM with Series ID Function
- Quad LC Connector interface with optical Bypass Function
- Laser Class 1 Product with comply with Requirements of IEC 60825-1 and IEC 60825-2
- LED indicate operation function

Applications

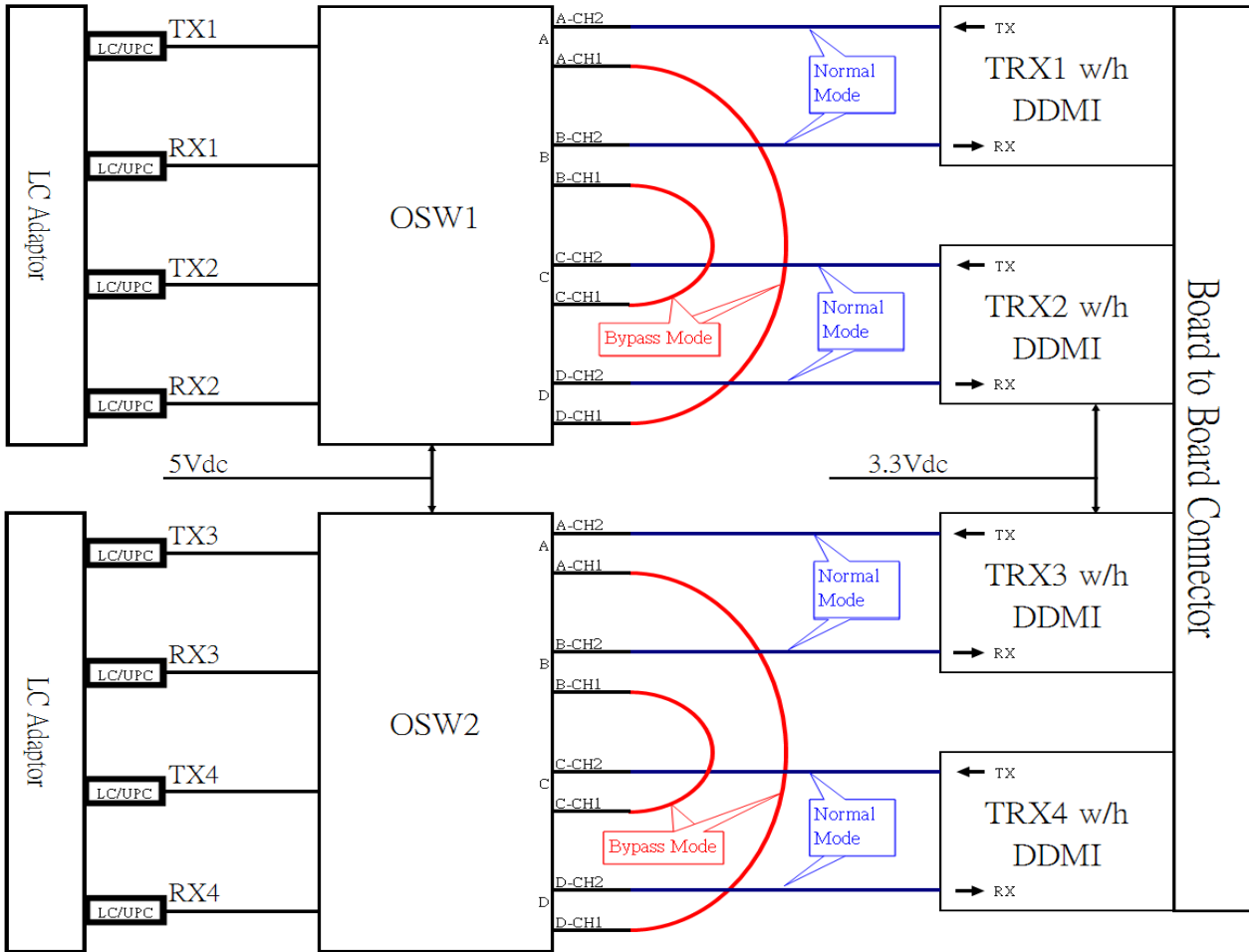
- In-Line traffic Monitoring, Analyzing and Optimization
- Intrusion Prevention System
- Quality of Service
- In-Line Security
- Load balance
- Web Acceleration Appliances

LASER SAFETY

This Multi-mode Quad Port Fiber Bypass Module is a Class 1 laser product. It complies with IEC 68025 and FDA 21 CFR 1040.10 and 1040.11. The module must be operated within the specified temperature and voltage limits. The optical port of the module shell be terminated with an optical connector or with a dust plug.



SR/SW Quad Port Bypass Module – Optical Path Portion



Absolute Maximum Ratings

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Note |
|---------------------|--------|------|------|------|------|------|
| Storage Temperature | Ts | -40 | | 85 | °C | |
| Supply Voltage | Vcc | 0 | | 5 | V | |

Recommended Operating Conditions

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Note |
|----------------------------|--------|-------|------|-------|------|------------|
| Case Operation Temperature | Ts | -5 | | 70 | °C | 1 |
| +5V Supply Voltage | Vcc5 | 4.75 | | 5.25 | V | Vcc5,6 |
| +3.3V Supply Voltage | Vcc3 | 3.135 | | 3.465 | V | Vcc1,2,3,4 |
| +5V Supply Current | Icc5 | | 150 | 300 | mA | Icc5,6 |
| +3.3V Supply Current | Icc3 | | | 1200 | mA | Icc1,2,3,4 |
| Relative Humidity | — | 5 | | 85 | % | 2 |

Note :

1. Consuming Temperature
2. Non Condensation



Electrical Characteristics

| Parameter | Symbol | Min. | Typ. | Max. | Unit | Note |
|--|---------------------|------|------|--------------|------------|---------------|
| Transmitter | | | | | | |
| Differential Input Impedance | Z_d | | 100 | | Ω | 1 |
| Differential Input Voltage Swing | V_{DIFF} | 180 | | 700 | mV | 1 |
| Differential Input Voltage | V_{DT} | 0.5 | | 2.4 | V | 1 |
| Disable Input-High | V_{DISH} | 2.4 | | $V_{cc}+0.3$ | V | |
| Disable Input-Low | V_{DISL} | 0 | | 0.8 | V | |
| Fault Pull Up Resistor | R_{TX_FAULT} | 4.7 | | 10 | K Ω | 2 |
| Fault Output-High | V_{TXFH} | 2.4 | | V_{cc} | V | 2 |
| Fault Output-Low | V_{TXFL} | 0 | | 0.5 | V | 2 |
| TX_DISABLE Asserted Time | t_{OFF} | | | 10 | μ sec | |
| TX_DISABLE Deasserted Time | t_{ON} | | | 1 | msec | |
| Time to initialize, include reset of TX_FAULT | t_{init} | | | 300 | msec | |
| TX_FAULT from fault to assertion | t_{fault} | | | 100 | μ sec | |
| TX_DISABLE time to reset | t_{reset} | 10 | | | μ sec | |
| Receiver | | | | | | |
| Differential Output Impedance | Z_d | | 100 | | Ω | 1 |
| Differential Output Voltage | V_{DR} | 0.35 | | 0.85 | V | 3 |
| LOS Load Resistor | R_{RX_LOS} | 4.7 | | 10 | K Ω | 2 |
| LOS Output Voltage-High | V_{LOSH} | 2.4 | | V_{cc} | V | 2 |
| LOS Output Voltage-Low | V_{LOSL} | 0 | | 0.5 | V | 2 |
| LOS Asserted Time (Transmitter off to on) | $t_{A.RX_LOS}$ | | | 100 | μ sec | 4 |
| LOS Deasserted Time (Transmitter on to off) | $t_{D.RX_LOS}$ | | | 100 | μ sec | 4 |
| Optical Bypass Switch | | | | | | |
| Operation Voltage | V_{SW} | 4.5 | 5.0 | 5.5 | V | |
| Operation Current | I_{SW} | | 80 | 100 | mA | |
| Latching Voltage-High | V_{LATH} | 4.5 | 5.0 | 5.5 | V | |
| Latching Voltage-Low | V_{LATL} | 0 | | 0.8 | V | |
| Latching Resistance | R_{LAT} | | 125 | | Ω | $\pm 10\%$ |
| Switching Time (Input Pulse ≥ 20 ms) | t_{ST} | | | 5.0 | msec | |
| Timing | | | | | | |
| Series ID Clock Rate | F_{serial_clock} | | | 100 | KHz | DDMI function |

Note :

1. Internally AC couples and terminated to 100-Ohms differential load.
2. Pull up to V_{cc} on Host-Board.
3. Internally AC coupled, but requires a 100-Ohms differential termination at or internal to Serializer/Deserialer.
4. These are 20%~80% values.



Optical Characteristics

| Parameter | Multimode Fiber Type | Min. Modal Bandwidth (MHz-Km) | Operating Distance Range (m) | | | Max. Channel Insertion Loss (dB) |
|--|--------------------------------|-------------------------------|------------------------------|-------|------|----------------------------------|
| Operating Range 10.3Gbps | 50um MMF OM3 | 2000 | 300 | | | 6.0 |
| Parameter | Symbol | Min. | Typ. | Max. | Unit | Note |
| Transmitter | | | | | | |
| Output Optical Power (AVG.) | P _{OUT} | -7.1 | | -1.0 | dBm | 50/125um |
| Optical Modulation Amplitude | OMA | -4.3 | | | dBm | |
| Center Wavelength | λ _c | 840 | 850 | 860 | nm | |
| Spectral Width (RMS) | Δλ | | | 0.45 | nm | |
| Transmitter and Dispersion Penalty | TDP | | | 3.9 | dB | |
| Relative Intensity Noise | RIN | | | -128 | dB | |
| Output Eye | Compliant with IEEE802.3ae | | | | | |
| Max. Pout TX-DISABLE Asserted | P _{OFF} | | | -35 | dB | |
| Receiver | | | | | | |
| Optical Input Power (Over Load) | P _{IN1} | -1.0 | | | dBm | 1, 50/125um |
| Receiver Sensitivity (AVG.) (BER<10E-12 and PRBS=231-1) | P _{IN2} | | | -9.9 | dBm | 1, 50/125um |
| Receiver Sensitivity (OMA) (BER<10E-12 and PRBS=231-1) | P _{IN3} | | | -11.1 | dBm | 1, 0/125um |
| Stressed Receiver Sensitivity (OMA) (BER<10E-12 and PRBS=231-1) | P _{IN4} | | | -7.5 | dBm | 1, 50/125um ISI=3.5dB |
| Center Wavelength | λ _c | 840 | 850 | 860 | nm | |
| Optical Return Loss | ORL | 12 | | | dB | |
| LOS Asserted (AVG.) | P _A | | | -14 | dBm | |
| LOS Deasserted (AVG.) | P _D | -30 | | | dBm | |
| LOS Hysteresis | P _A -P _D | 0.5 | | 3.0 | dB | |
| Optical Bypass Switch | | | | | | |
| Center Wavelength | λ _c | 670 | 850 | 980 | nm | |
| Insertion Loss (Normal Mode) | IRL | 2.0 | | 4.0 | dB | 1 (50/125um) |
| Insertion Loss (Bypass Mode) | IRL | 2.0 | | 4.0 | dB | 2 (50/125um) |
| Return Loss | ORL | 30 | | | dB | 1 (50/125um) |

Note :

1. Normal Mode (Bypass Mode Off).
2. Bypass Mode (Normal Mode Off).