



SA-SFP-LXDH

1.25 Gb/s RoHS Compliant Long-Wavelength Pluggable SFP Transceiver

DESCRIPTION

Small Form Factor Pluggable (SFP) transceivers are compatible with the Small Form Factor Pluggable Multi-Sourcing Agreement (MSA). They simultaneously comply with Gigabit Ethernet as specified in IEEE STD 802.3 and 1x Fibre Channel as defined in FC-PI-2 Rev. 10.0. They are RoHS compliant and lead-free.

APPLICATIONS

- 1.25Gb/s 1000Base-LX Ethernet
- 1.06 Gb/s Fibre Channel

PRODUCT SELECTION

| Part | Operating Case temperature | DDMI |
|-------------|----------------------------|------|
| SA-SFP-LXD | Commercial (0~70°C) | Yes |
| SA-SFP-LXDH | Industrial (-40~85°C) | Yes |

FEATURES

- Up to 1.25Gb/s dual data links
- Hot-pluggable SFP footprint
- 1310nm FP laser transmitter
- Duplex LC connector
- Up to 20km on 9/125µm SMF
- Metal enclosure for lower EMI
- Single +3.3V power supply
- Low power dissipation <700mW
- Case operating temperature
Commercial: 0°C to +70°C
Industrial: -40°C to +85°C

ABSOLUTE MAXIMUM RATINGS

| Parameter | Symbol | Min | Typ | Max | Unit | Ref. |
|----------------------------|--------|------|-----|------|------|------|
| Maximum Supply Voltage | Vcc | -0.5 | | +4.0 | V | |
| Storage Temperature | TS | -40 | | +100 | °C | |
| Case Operating Temperature | TOP | 0 | | +70 | °C | |
| Relative Humidity | RH | 0 | | 85 | % | 1 |

ELECTRICAL CHARACTERISTICS (TOP=25°C, VCC=3.3VOLTS)

| Parameter | Symbol | Min | Typ | Max | Unit | Ref. |
|-----------------------------------|------------|-----------|-----|----------|------|------|
| Supply Voltage | Vcc | 3.00 | | 3.60 | V | |
| Supply Current | Icc | | 180 | 300 | mA | |
| Transmitter | | | | | | |
| Input differential impedance | Rin | | 100 | | Ω | 2 |
| Single ended data input swing | Vin, pp | 250 | | 1200 | mV | |
| Transmit Disable Voltage | VD | Vcc – 1.3 | | Vcc | V | |
| Transmit Enable Voltage | VEN | Vee | | Vee+ 0.8 | V | |
| Transmit Disable Assert Time | | | | 10 | us | |
| Receiver | | | | | | |
| Single ended data output swing | Vout, pp | 300 | 400 | 800 | mV | 3 |
| Data output rise time | tr | | | 300 | ps | 4 |
| Data output fall time | tf | | | 300 | ps | 4 |
| LOS Fault | VLOS fault | Vcc – 0.5 | | VccHOST | V | 5 |
| LOS Normal | VLOS norm | Vee | | Vee+0.5 | V | 5 |
| Deterministic Jitter Contribution | RXΔDJ | | | 80 | ps | 6 |
| Total Jitter Contribution | RXΔTJ | | | 122.4 | ps | |

Notes:

1. Non condensing.
2. AC coupled.
3. Into 100 ohm differential termination.
4. 20 - 80 %
5. LOS is LVTTTL. Logic 0 indicates normal operation; logic 1 indicates no signal detected.
6. Measured with DJ-free data input signal. In actual application, output DJ will be the sum of input DJ and ΔDJ.

OPTICAL CHARACTERISTICS (TOP=25°C, VCC=3.3 VOLTS)

| Parameter | Symbol | Min | Typ | Max | Unit | Ref. |
|-----------------------------------|--------|------|------|-------|------|------|
| Transmitter | | | | | | |
| Output Opt. Power | PO | -9 | - | -3 | dBm | 1 |
| Optical Wavelength | λ | 1275 | 1310 | 1350 | nm | |
| Spectral Width | σ | - | - | 3 | nm | |
| Optical Rise/Fall Time | tr/tf | - | 170 | 260 | ps | 2 |
| Deterministic Jitter Contribution | TXΔDJ | - | - | 0.07 | UI | 3 |
| Total Jitter Contribution | TXΔTJ | - | - | 0.007 | UI | |
| Optical Extinction Ratio | ER | 9 | - | - | dB | |
| Receiver | | | | | | |
| Average Rx Sensitivity | RSSENS | - | - | -24 | dBm | 4 |
| Maximum Received Power | RXMAX | 0 | - | - | dBm | |
| Optical Center Wavelength | λC | 1270 | - | 1600 | nm | |
| LOS De-Assert | LOSD | - | - | -25 | dBm | |
| LOS Assert | LOSA | -36 | - | - | dBm | |
| LOS Hysteresis | | 0.5 | - | - | dB | |

OPTICAL CHARACTERISTICS (TOP=25°C, VCC=3.3 VOLTS) (CONT.)

Notes:

1. Class 1 Laser Safety.
2. Unfiltered, 20-80%.
3. Measured with DJ-free data input signal .In actual application, output DJ will be the sum of input DJ and Δ DJ.
4. Measured with PRBS 27-1 at 10-12 BER.

GENERAL SPECIFICATIONS

| Parameter | Symbol | Min | Typ | Max | Units | Ref. |
|--|--------|-----|-----|------------|--------|------|
| Data Rate | BR | - | - | 1250 | Mb/sec | 1 |
| Bit Error Rate | BER | - | - | 10^{-12} | | 2 |
| Max. Supported Link Length on 9/125 μ m SMF @ Gigabit Ethernet | LMAX | - | - | 20 | km | 3,4 |

Notes:

1. Gigabit Ethernet and 1x Fibre Channel compliant.
2. Tested with a PRBS 27-1 data pattern.
3. Dispersion limited per FC-PI-2 Rev. 10.
4. Attenuation of 0.55 dB/km is used for the link length calculations. Please refer to the Optical Specifications in Table IV to calculate a more accurate link budget based on specific conditions in your application.

ENVIRONMENTAL SPECIFICATIONS

1310nm Commercial Temperature SFP transceivers have an operating temperature range from 0°C to +70°C case temperature.

| Parameter | Symbol | Min | Typ | Max | Units | Ref. |
|----------------------------|--------|-----|-----|------|-------|------|
| Case Operating Temperature | Top | 0 | | +70 | °C | |
| Storage Temperature | Tsto | -40 | | +100 | °C | |

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Performance specifications are typical. Due to constant research, specifications are subject to change without notice. For the most up-to-date specifications, please contact an authorized Starview representative.

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