



GZ25G28M85L-01

25Gbps SFP28 850nm 100m Optical Transceiver

Features:

- LC Duplex optical interface
- Operating data rate up to 25.78Gbps
- 850nm VCSEL Transmitter and PIN receiver
- Distance up to 100m @OM4
- Distance up to 70m @OM3
- Single 3.3V Power supply
- Hot-Pluggable SFP28 footprint
- Built-in dual CDR
- Electrical interface compliant to SFF-8431
- Power Dissipation < 1.0W
- Case Operating temperature ranges:
 - Commercial: 0 to 70°C
- RoHS compliance



Applications:

- 25G BASE-SR Ethernet

Standards:

- SFF-8472
- SFF-8431
- SFF-8432

Description

The transceiver is intended for 100m reach service up to 25.78Gb/s 850nm multi-mode high-speed communications equipment where low-cost, extraordinary performance and reliability are essential. It utilizes internal clock and data recovery (CDR) units on transmitter and

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the receiver chains for low jitter compliance. The differential AC coupled Tx and Rx data interfaces are CML compatible. The device is Class I laser safety compliant.

Absolute Maximum Ratings

| Parameter | Symbol | Min | Max | Units |
|--|--------|-----|-----|-------|
| Storage Temperature | Tstg | -40 | +85 | °C |
| Case Operating Temperature (Commercial) | TO | 0 | 70 | °C |
| Relative Humidity - Storage | RHS | 0 | 95 | % |
| Relative Humidity - Operating | RHO | 0 | 85 | % |
| DC Supply Voltage | VCC | 0 | 3.6 | V |

Recommended Operating Conditions

| Parameter | Symbol | Min | Typ | Max | Units | Notes |
|--|--------|-------|-----|-------|-------|-------|
| Case Operating Temperature (Commercial) | TCASE | 0 | | 70 | °C | |
| DC Supply Voltage | VCC | 3.135 | 3.3 | 3.465 | V | |
| Module Supply Current | ICC | | | 300 | mA | |

Transmitter Electrical Characteristics

| Parameter | Symbol | Min | Typ | Max | Units | Notes |
|------------------------------------|-----------------|-----|-----|----------------------|-------|-------|
| Differential Data input Swing | V _{IN} | 200 | | 800 | mV | |
| Tx Differential Input Impedence | Z _{IN} | | 100 | | Ω | |
| Transmitter Disable Voltage | V _D | 2.0 | | V _{CC} +0.3 | V | |
| Transmitter Enable Voltage | V _{EN} | 0 | | 0.8 | V | |

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Receiver Electrical Characteristics

| Parameter | Symbol | Min | Typ | Max | Units | Notes |
|----------------------------------|-------------------|-----------------|-----|----------------------|-------|-------|
| Differential Data Output Swing | V _{OUT} | 200 | | 800 | mV | |
| Rx Differential Output Impedance | Z _{OUT} | | 100 | | Ω | |
| LOS Assert Voltage | V _{LOSA} | 2.4 | | V _{cc} | V | |
| LOS De-assert Voltage | V _{LOSD} | V _{ee} | | V _{ee} +0.4 | V | |

Transmitter Optical Characteristics

| Parameter | Symbol | Min | Typ | Max | Units | Notes |
|------------------------------------|------------------|------------------------------------|-----|-----|-------|-------|
| Transmitter Laser Type | | 850nm VCSEL | | | | |
| Average Output Power | P _{out} | -8.4 | | 2.4 | dBm | |
| Optical Modulation Amplitude (OMA) | P _{OMA} | -6.4 | | 3 | dBm | |
| Extinction ratio | ER | 2 | | | dB | |
| Wavelength | λ | 840 | | 860 | nm | |
| RMS SpectralWidth @ -20dB | Δλ | | | 0.6 | nm | |
| Average Output Power (Laser Off) | P _{OFF} | | | -30 | dBm | |
| Output Eye Diagram | | {0.3, 0.38, 0.45, 0.35, 0.41, 0.5} | | | | 1 |

Receiver Optical Characteristics

| Parameter | Symbol | Min | Typ | Max | Units | Notes |
|----------------------------|----------------------|---------|-----|-------|-------|-------|
| Receiver Type | | PIN/TIA | | | | |
| Wavelength | λ | 840 | 850 | 860 | nm | |
| Received Sensitivity | P _{IN} | | | -10.3 | dBm | 2 |
| Optical Power Overload | P _{IN(SAT)} | 2.4 | | | dBm | 2 |
| Rx_LOS of Signal Assert | LOSA | -30 | | | dBm | |
| Rx_LOS of Signal De-assert | LOSD | | | -13 | dBm | |

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| | | | | | | |
|-----------------------------|------|-----|--|---|----|--|
| Rx_LOS of Signal Hysteresis | LOSH | 0.5 | | 5 | dB | |
|-----------------------------|------|-----|--|---|----|--|

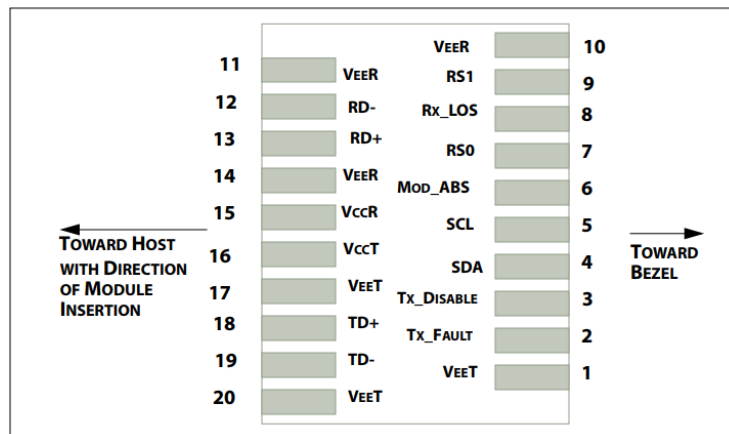
Notes 1: Test at 25.78Gb/s, PRBS 2³¹-1, Hit ratio 1.5 E-3

Notes 2: Test at 25.78Gb/s, PRBS 2³¹-1, BER of 5E-5, NRZ and including back to back

Monitoring Interface

| Parameter | Symbol | Spec | Units | Conditions / Notes |
|-------------|--------|--------|-------|--------------------|
| Temperature | | +/-3°C | °C | |
| Voltage | | +/-3% | V | |
| IBias | | +/-10% | mA | |
| Rx power | | +/-3 | dBm | @25°C |
| Tx power | | +/-3 | dBm | @25°C |

Pin Assignment



SFP28 pad assignment top view

Pin Description

| Pin | Name | Function/Description | Notes |
|-----|--------|---|-------|
| 1 | VEEt | Transmitter Ground | |
| 2 | TFault | Transmitter Fault Indication | 1 |
| 3 | TDis | Transmitter Disable-Module disables on high or open | |
| 4 | SDA | 2-wire Serial Interface Data Line (MOD-DEF2) | |
| 5 | SCL | 2-wire Serial Interface Clock (MOD-DEF1) | |

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| | | | |
|----|------------------|--|---|
| 6 | MOD_ABS | Module Absent, connected to VEET | |
| 7 | RS0 | Rx Rate Select | 2 |
| 8 | Rx_LOS | Loss of Signal indication. Logic 0 indicates normal operation. | 1 |
| 9 | RS1 | Tx Rate Select | 2 |
| 10 | V _{EER} | Receiver Ground | |
| 11 | V _{EER} | Receiver Ground | |
| 12 | RD- | Receiver Inverted DATA out | 3 |
| 13 | RD+ | Receiver Non-inverted DATA out | 3 |
| 14 | V _{EER} | Receiver Ground | |
| 15 | V _{CCR} | Receiver Power Supply | |
| 16 | V _{CCT} | Transmitter Power Supply | |
| 17 | V _{EET} | Transmitter Ground | |
| 18 | TD+ | Transmitter Non-Inverted DATA in | 4 |
| 19 | TD- | Transmitter Inverted DATA in | 4 |
| 20 | V _{EET} | Transmitter Ground | |

Notes:

1. Shall be pulled up with 4.7k-10k ohms to a voltage between 3.15V and 3.6V on the host board.
2. The pins are pulled low to VEET with a >30k resistor in the module.
3. The 100Ohms differential Rx Data output is internally AC coupled and terminated.
4. The 100Ohms differential Tx Data input is internally AC coupled and terminated

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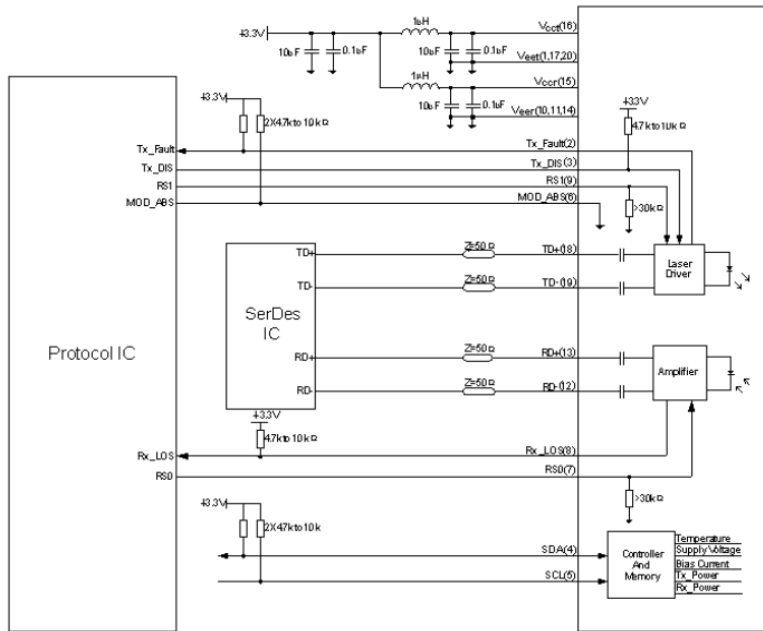
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Typical Application Circuit



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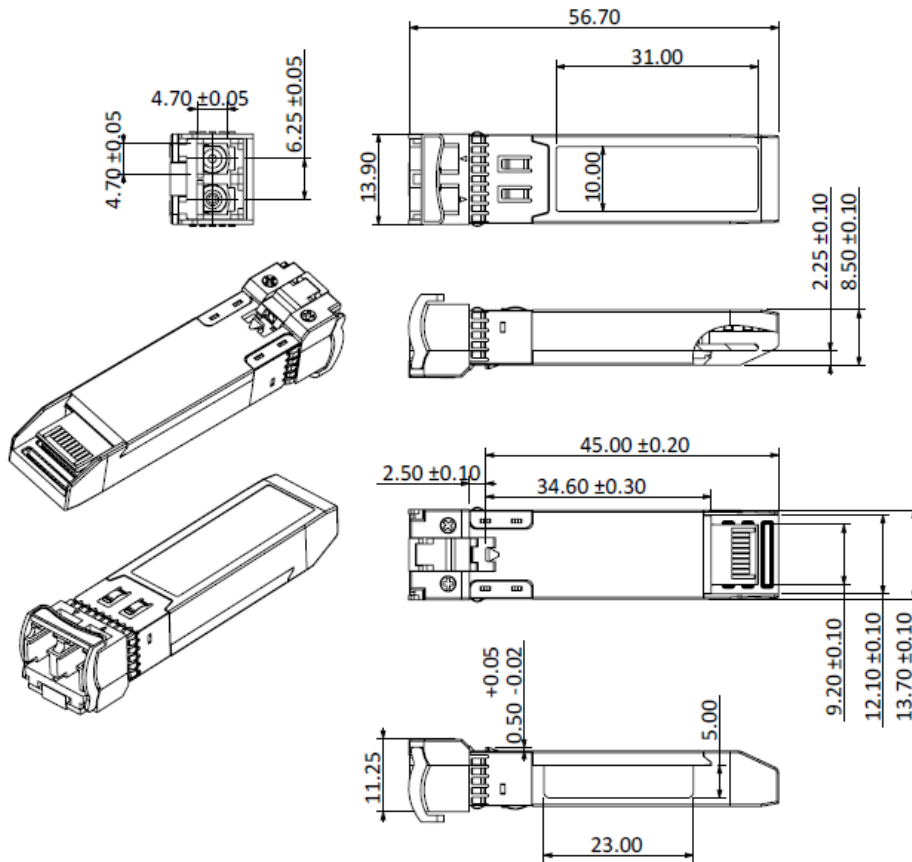
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Mechanical Dimensions



Notes:

1. Tolerance: +/-0.1mm.
2. Light port according with fiber connector SPEC.

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Ordering Information

| Part. No | Specifications | | | | | | | | |
|----------------|----------------|-------|-------------|-----------|---------|-------------|------------|-------------|-------|
| | Rate Gb/s | Tx | Tx WL nm | Po dBm | Rx | Sen. dBm | Temp °C | Reach km | Other |
| GZ25G28M85L-01 | 25.78 | VCSEL | 850 | -8.4~+2.4 | PIN/TIA | <-10.3 | 0~70 | 100 | RoHS |

Warnings

Handing Precautions:

This device is susceptible to damage as a result of electrostatic discharge (ESD). A static free environment is highly recommended. Please follow guidelines according to proper ESD procedures.

Laser Safety:

Radiation emitted by laser devices can be dangerous to human eyes. Avoid eye exposure to direct or indirect radiation.

Notice:

The information provided on this page contains the product target specifications which are subject to change without notice.

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