

ML1212

1310 nm FP Laser Diode in 5.6 mm TO-can

Overview

Modulight's ML1212 series are high-performance Fabry-Pérot (FP) laser diodes in 5.6 mm TO-cans. The lasers emit single transverse mode at 1310 nm wavelength. The TO-can package includes an InGaAs monitor photodiode for feedback loop.

ML1212 series is designed for digital optical communication networks with up to 2.5 Gb/s modulation speeds. Products are available with flat window cap, ball lens cap or low-profile aspheric lens cap for highest single-mode fiber coupling efficiency.



Applications

Communications

Digital optical communication networks

Electro-optical Characteristics ¹

| Parameter | Symbol | Min | Typical | Max | Unit |
|---------------------------------------------------------------------|--------------------------|------------|---------------|---------|----------|
| Peak Wavelength (25°C, P _{OP} = 5mW) | λ | 1290 | 1310 | 1330 | nm |
| Peak Wavelength (-40..85°C, P _{OP} = 5mW) | λ | 1260 | - | 1355 | nm |
| Rated Optical Power (kink-free) | P _R | 5 | - | - | mW |
| Operating Current (25°C, P _{OP} = 5mW) | I _{OP} | - | 21 [23] | 32 [35] | mA |
| Operating Current (85°C, P _{OP} = 5mW) | I _{OP,85} | - | 37 [39] | - | mA |
| Operating Voltage (P _{OP} = 5mW) | V _{OP} | - | 1.1 | 1.6 | V |
| Slope Efficiency (25°C, P _{OP} = 5mW) | η | 0.30 [0.2] | 0.40 [0.34] | - | W/A |
| Slope Efficiency ² (85°C, P _{OP} = 5mW) | η | - | 0.29 [0.25] | - | W/A |
| Serial resistance (25°C, P _{OP} = 5mW) | R _s | - | 6 | - | Ω |
| Threshold Current ² | I _{TH} | - | 9 | 18 | mA |
| Threshold Current ² (85°C) | I _{TH,85} | - | 20 | - | mA |
| Spectral Width ³ | $\delta\lambda$ | - | 0.85 | 2.0 | nm |
| Wavelength - Temp. Coefficient | $\Delta\lambda/\Delta T$ | - | 0.46 | - | nm/K |
| Parallel Beam Divergence (FWHM) | $\theta_{ }$ | - | 21 [6] (-) | - | ° |
| Perpendicular Beam Divergence (FWHM) | θ_{\perp} | - | 38 [13] (-) | - | ° |
| Modulation Bandwidth (kink-free, 25°C) | f _{-3dB} | - | 2 | - | GHz |
| Monitor current | I _m | 100 | - | 1000 | μ A |
| Monitor dark current | I _d | - | 0.1 | 1.0 | μ A |
| Monitor capacitance | C _m | - | 5 | 10 | pF |
| Tracking error (I _m =constant, P _o =3mW@25°C) | γ | -1 | - | 1 | db |
| Focal length ⁴ | D _f | - | [6.25] (7.46) | - | mm |
| Fiber coupling efficiency (SM fiber) | | - | [15] (45) | - | % |

Unless otherwise noted, the above values represent operation @ 25°C. All temperatures refer to case temperature, T_c.

¹ Where indicated, values in brackets [] apply for ball lens cap type, values in parenthesis () apply for aspheric lens cap type

² 2nd derivative method

³ RMS, -20 dB

⁴ Distance from the lens or reference plane (see mechanical specification) to focal point. Applicable to ball and aspheric lens cap types only.

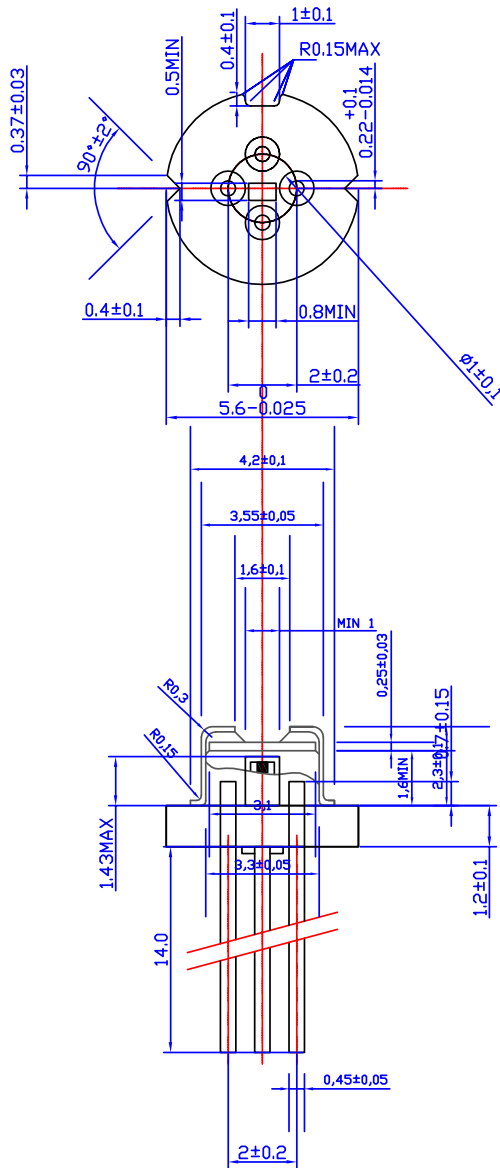
Absolute Maximum Ratings

| Parameter | Symbol | Rating | Unit |
|------------------------------------|-----------|----------|------|
| Optical Output Power | P_{OP} | 20 | mW |
| LD Reverse Voltage | V_{RLD} | 2 | V |
| LD Forward Current | I_{FLD} | 200 | mA |
| PD reverse voltage | V_{RPD} | 20 | V |
| PD forward current | I_{FPD} | 10 | mA |
| Lead soldering temperature (<10 s) | T_{SLD} | 260 | °C |
| Operating case temperature | T_c | -40-85°C | °C |
| Storage temperature | T_{STG} | -40-85°C | °C |

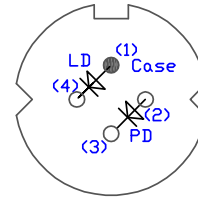
Ordering information

| Product | Cap type | Pin layout |
|---------|-----------------|------------|
| ML1212 | Aspherical lens | 3 |
| ML1213 | Ball lens | 3 |
| ML1214 | Flat lens | 2 |
| ML1215 | Flat lens | 3 |
| ML1247 | Aspherical lens | 1 |
| ML1248 | Aspherical lens | 2 |
| ML1249 | Ball lens | 1 |
| ML1250 | Ball lens | 2 |
| ML1251 | Flat lens | 1 |

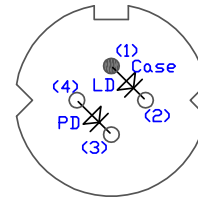
Mechanical Specification ML1214, ML1215, ML1251



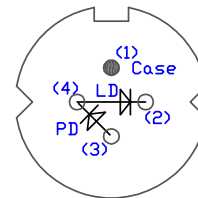
Bottom view
pin layout



Pin layout 1

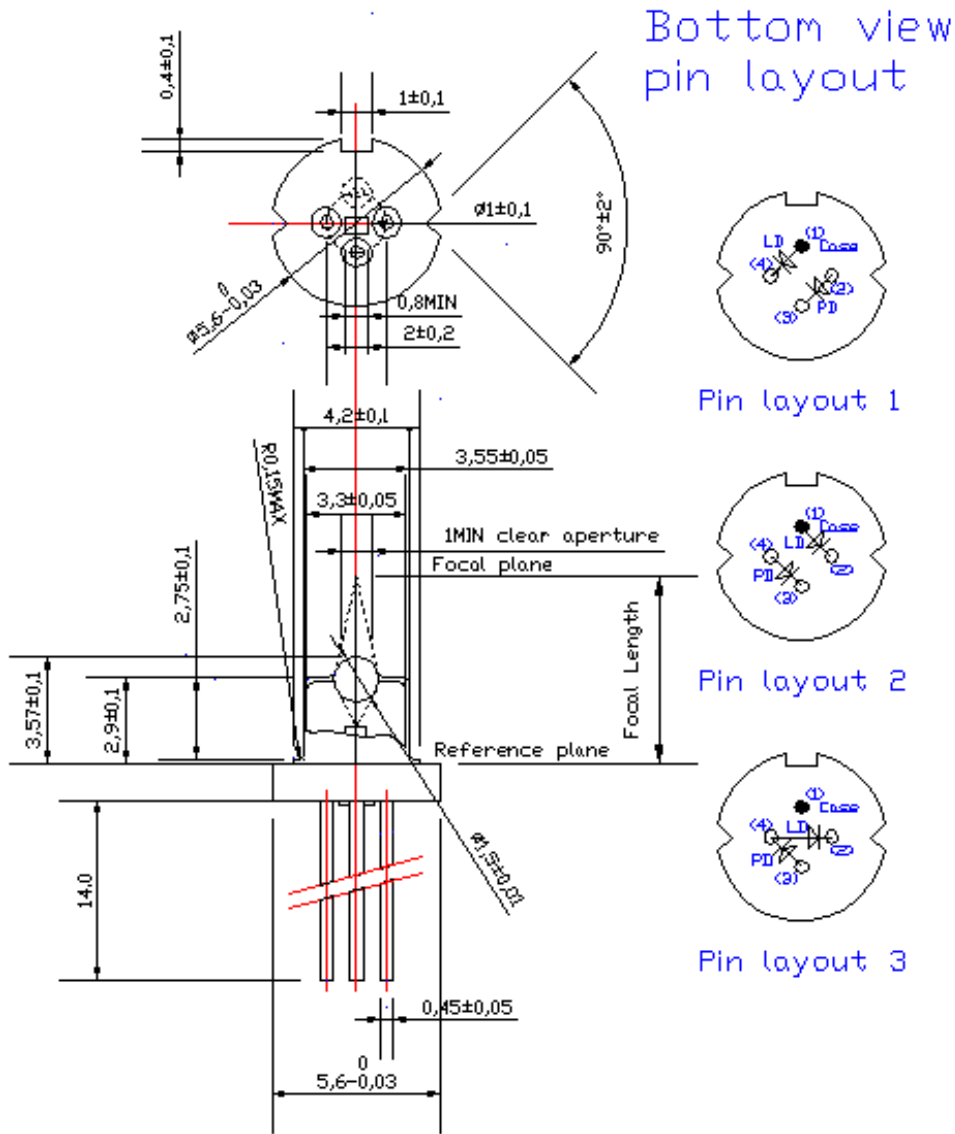


Pin layout 2



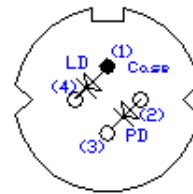
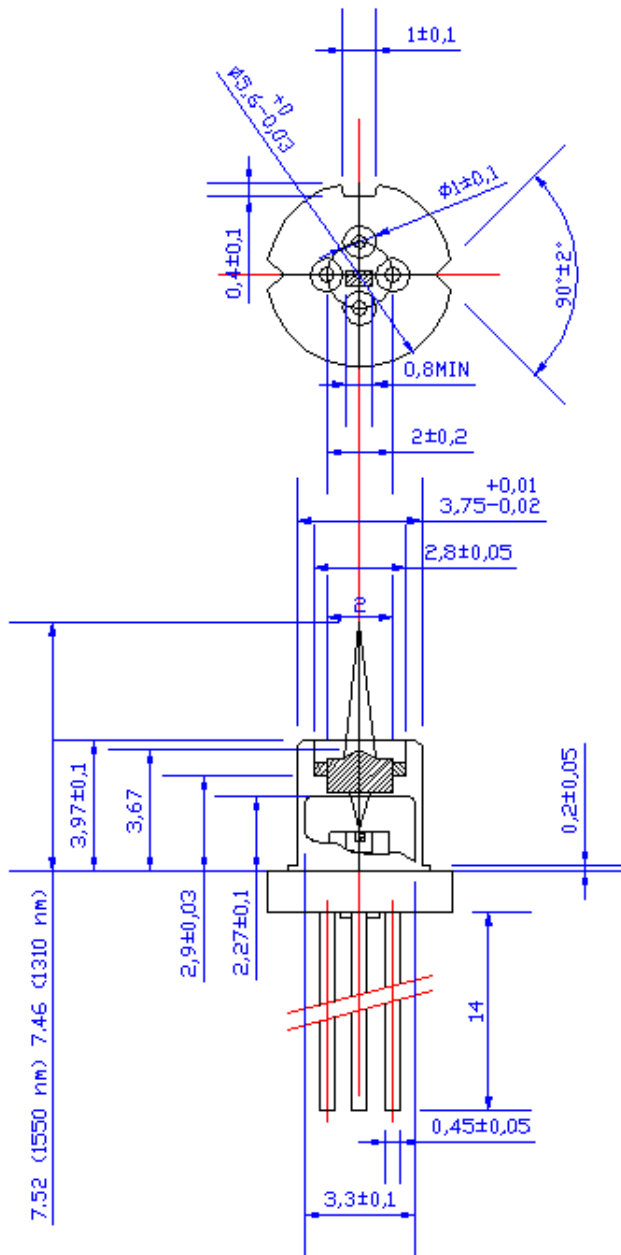
Pin layout 3

Mechanical Specification ML1213, ML1249, ML1250

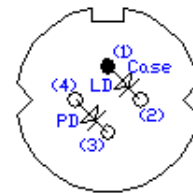


Mechanical Specification ML1212, ML1247, ML1248

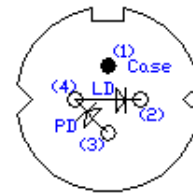
Bottom view
pin layout



Pin layout 1



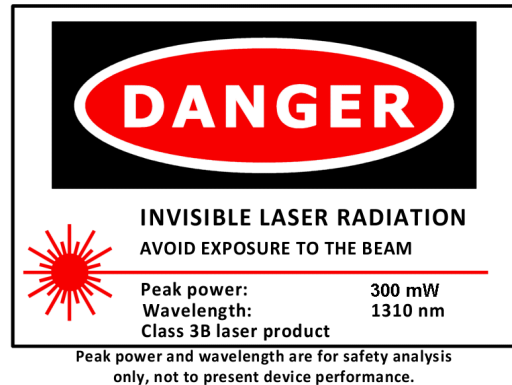
Pin layout 2



Pin layout 3

Safety Information

- The laser light emitted from this laser device is invisible and potentially harmful to the human eye. Avoid eye and skin exposure to the beam, both direct and reflected.
- Products are subject to the risks normally associated with sensitive electronic devices including static discharge, transients, and overload. Please ensure ESD protection prior to handling the products.
- These Modulight products are not intended for use in systems where product malfunction can reasonably be expected to result in personal injury.



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