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]	δλ	-	0.85	2.0	nm
Wavelength - Temp. Coefficient	Δλ/ΔT	-	0.46	-	nm/K
Parallel Beam Divergence (FWHM)	θ∥	-	21 [6] (-)	-	°
Perpendicular Beam Divergence (FWHM)	θ⊥	-	38 [13] (-)	-	°
Modulation Bandwidth (kink-free, 25°C)	f_{-3dB}	-	2	-	GHz
Monitor current	I_m	100	-	1000	µA
Monitor dark current	I_d	-	0.1	1.0	µA
Monitor capacitance	C_m	-	5	10	pF
Tracking error (Im=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.

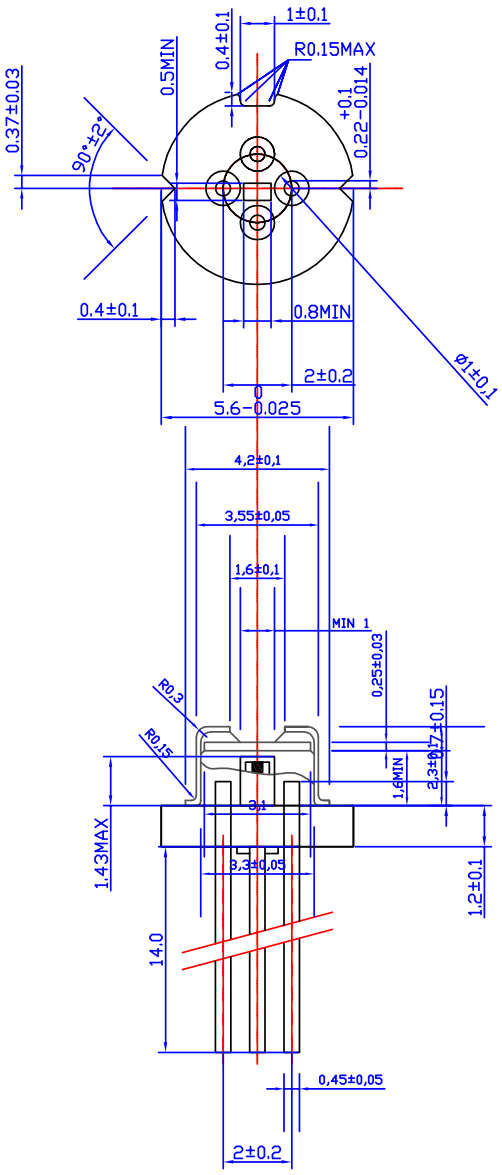
Absolute Maximum Ratings

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

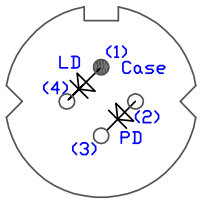
Ordering information

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

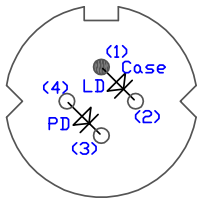
Mechanical Specification ML1214, ML1215, ML1251



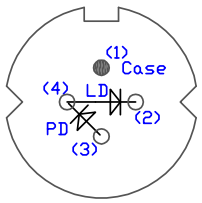
Bottom view
pin layout



Pin layout 1

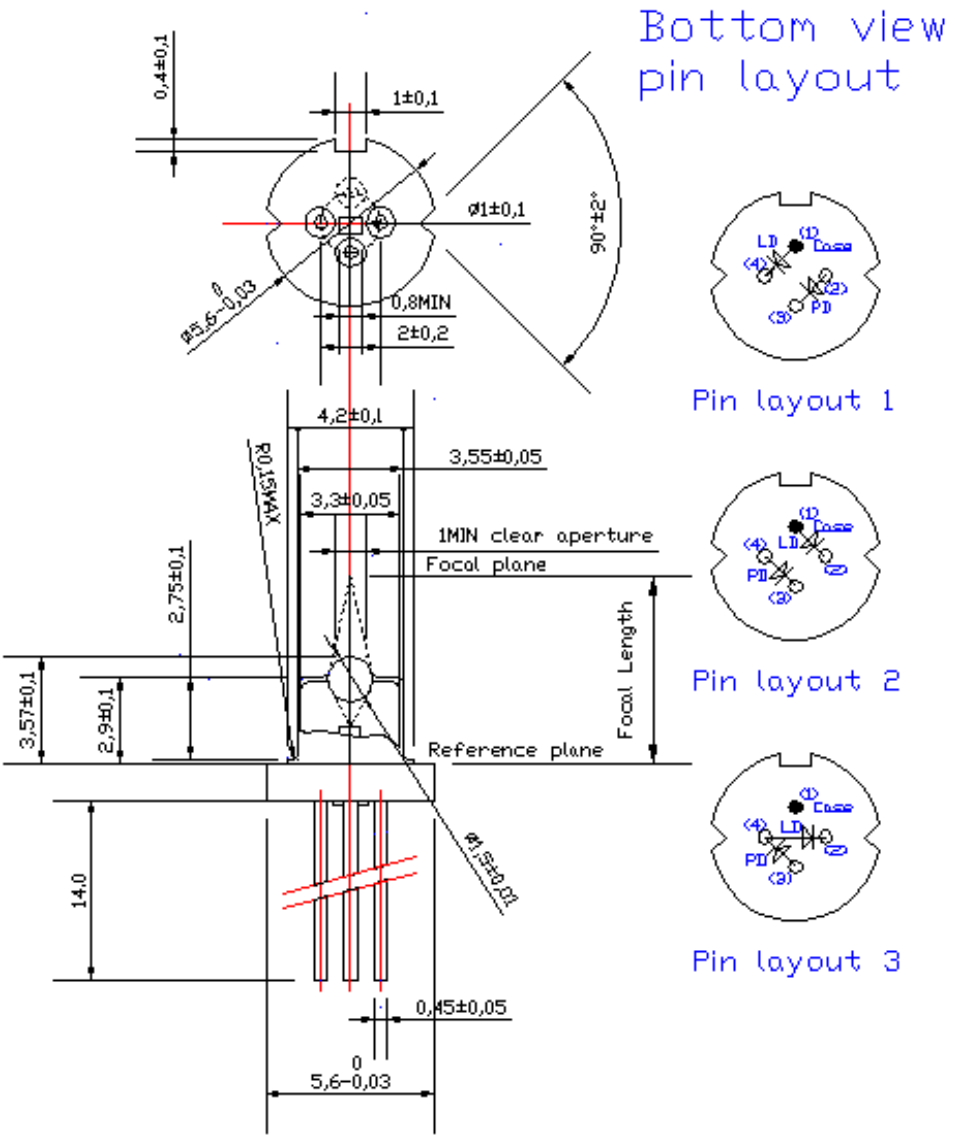


Pin layout 2

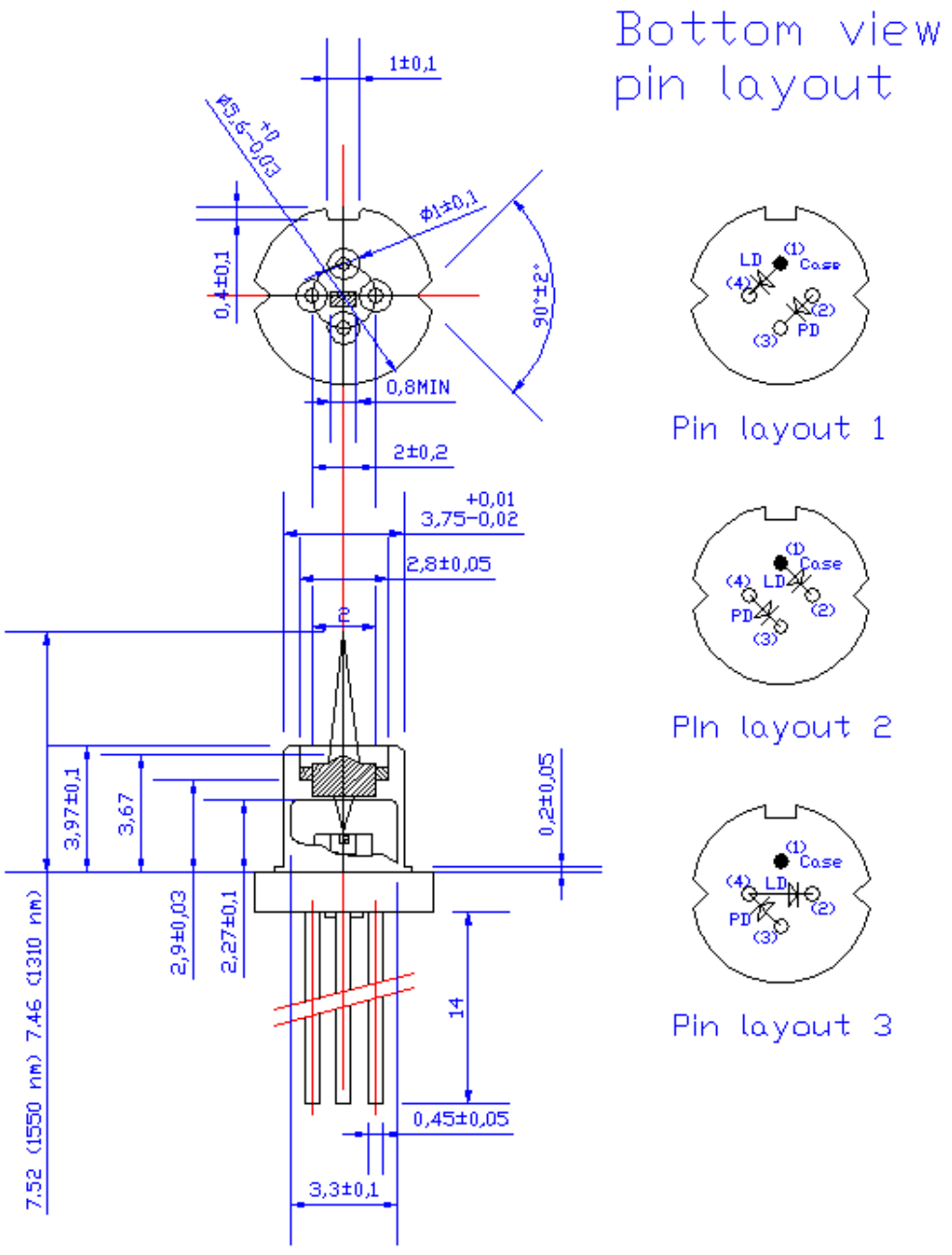


Pin layout 3

Mechanical Specification ML1213, ML1249, ML1250

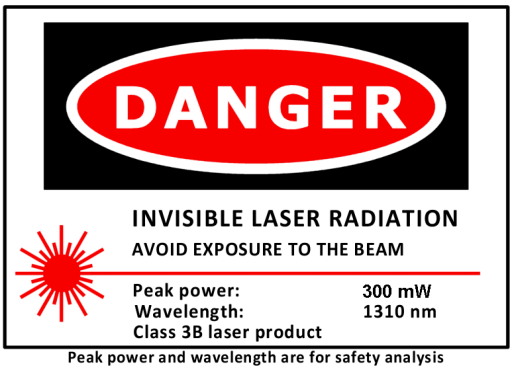


Mechanical Specification ML1212, ML1247, ML1248



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.



Peak power and wavelength are for safety analysis only, not to present device performance.

Liability note