ML1217

1490 nm DFB Laser Diode in 5.6 mm TO-can

Overview

Modulight's ML1217 series are high-performance Distributed Feedback (DFB) laser diodes in 5.6 mm TO-cans. The lasers emit single transverse mode at 1490 nm wavelength. Laser diode emission wavelength is controlled by an internal grating. The package includes high-quality InGaAs monitor photodiode for feedback loop. 1490 nm DFB TO-can series is designed for digital optical communication networks with up to 3.125 Gb/s modulation speeds. Products are available in two power variants, with either a flat window cap or a specially designed low-profile aspheric lens cap for higher fiber coupling efficiency with only 4.05 mm height.

Applications

Communications

Digital optical communication networks

Electro-optical Characteristics [1]

Parameter	Symbol	Min	Typical	Max	Unit
Central Wavelength (25°C, P_{OP} = 5mW)	λ	1487	1490	1493	nm
Central Wavelength (0…70°C, P_{OP} = 5mW)	$\lambda_{0...70}$	1482	-	1498	nm
Rated Optical Power (kink-free)	P_R	6/10	-	-	mW
Operating Current (25°C, P_{OP} = 5mW)	I_{OP}	-	38	50	mA
Operating Current (70°C, P_{OP} = 5mW)	$I_{OP,70}$	-	65		mA
Operating Voltage (P_{OP} = 5mW)	V_{OP}	-	1.2	1.6	V
Slope Efficiency [2] (25°C, P_{OP} = 5mW)	η	0.17	0.26	-	W/A
Slope Efficiency [2] (70°C, P_{OP} = 5mW)	η_{70}	-	0.16	-	W/A
Serial resistance [2] (25°C, P_{OP} = 5mW)	R_s	-	6	-	Ω
Threshold Current [3]	I_{TH}	-	18	30	mA
Threshold Current [3] (70°C)	$I_{TH,70}$	-	35	-	mA
Spectral Width [4]	$\delta\lambda$	-	0.11	0.2	nm
Spectral Width [3] (70°C)	$\delta\lambda_{70}$	-	0.07	0.2	nm
Wavelength - Temp. Coefficient	$\Delta\lambda/\Delta T$	-	0.11	-	nm/K
Parallel Beam Divergence (FWHM) [5]	$\theta \parallel$	-	26	-	°
Perpendicular Beam Divergence (FWHM) [5]	$\theta\perp$	-	45	-	°
Modulation Bandwidth	f_{-3dB}	6	-	-	GHz
Modulation Bandwidth (60°C)	$f_{-3dB,60}$	4	-	-	GHz
Monitor current	I_m	40	100	700	µA
Monitor dark current	I_d	-	0.1	1.0	µA
Monitor capacitance	C_m	-	5	10	pF
Tracking error (Im=constant, P_o=5mW@25°C)	γ	-1	-	1	db
Focal length[6]	D_f	(3.77)	(3.87)	(3.97)	mm
Fiber coupling efficiency		-	(35)	-	%

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

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

[2] P_{HI} = 1 mW, P_{LO} = 3 mW

[3] 2nd derivative method

[4] RMS, -20 dB

[5] Full Width at Half Maximum

[6] Distance from the lens (see mechanical specification) to focal point. Applicable to aspheric lens type only.

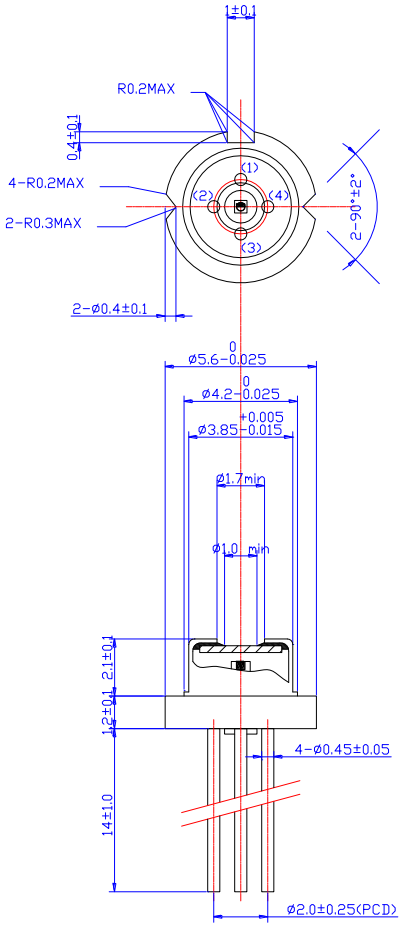
Absolute Maximum Ratings

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	0-70°C	°C
Storage temperature	T_{STG}	-40-85°C	°C

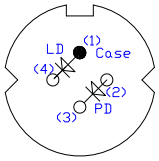
Ordering information

Product code	Rated optical power	Cap type	Pin layout
ML1217	6 mW	Aspherical lens	3
ML1218	6 mW	Flat lens	2
ML1219	6 mW	Flat lens	3
ML1253	10 mW	Aspherical lens	1
ML1254	10 mW	Aspherical lens	2
ML1255	10 mW	Aspherical lens	3
ML1256	10 mW	Flat lens	1
ML1257	10 mW	Flat lens	2
ML1258	10 mW	Flat lens	3
ML1259	6 mW	Aspherical lens	1
ML1260	6 mW	Aspherical lens	2
ML1261	6 mW	Flat lens	1

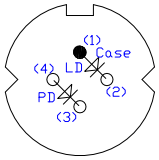
Mechanical Specification ML1218, ML1219, ML1256, ML1257, ML1258, ML1261



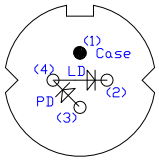
Bottom view
pin layout



Pin layout 1

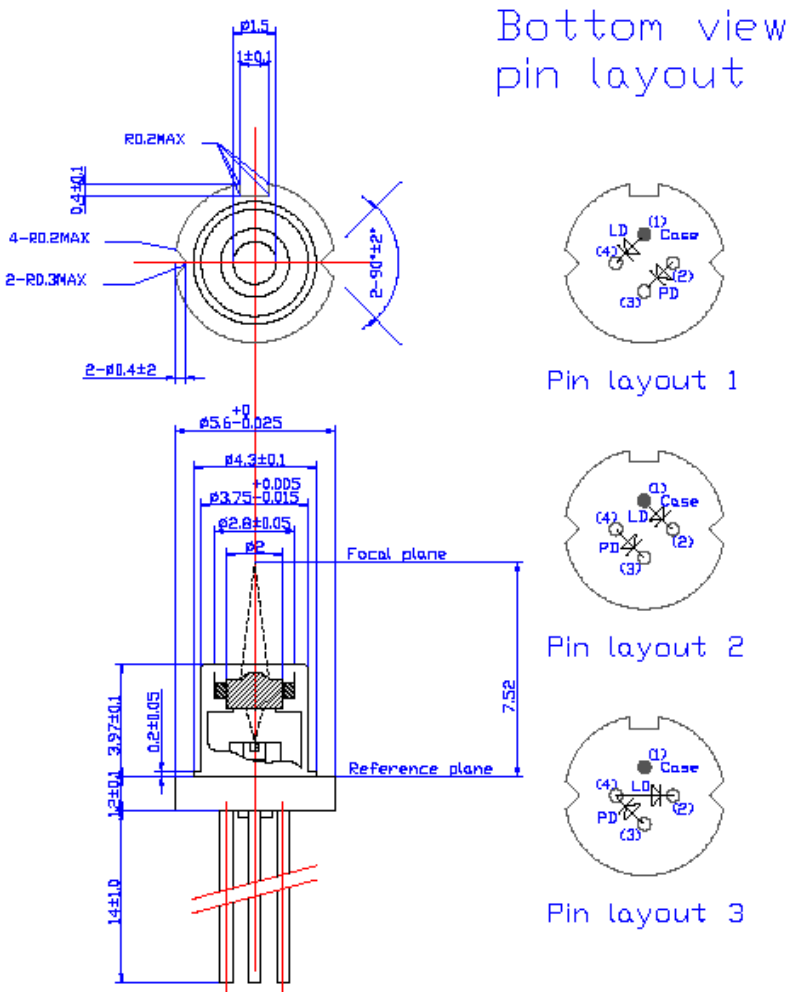


Pin layout 2



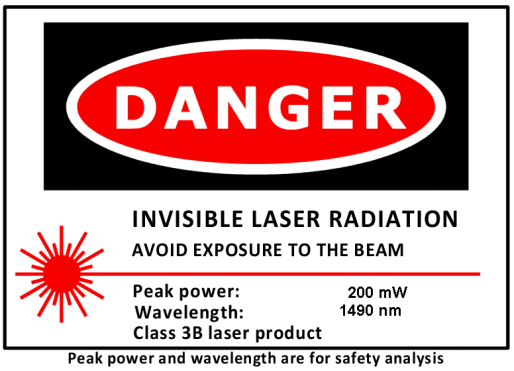
Pin layout 3

Mechanical Specification ML1217, ML1253, ML1454, ML1255, ML1259, ML1260



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