ML1210 series

1310 nm DFB laser in a 5.6 mm TO-can

Overview

Modulight's 1310 nm DFB TO-can series are high-performance Distributed Feedback (DFB) laser diodes in 5.6 mm TO-cans. The lasers emit at 1310 nm wavelength. Laser diode emission wavelength is controlled by an internal grating. The can package includes high-quality InGaAs monitor photodiode for feedback loop.

1310 nm DFB TO-can series have been designed for digital optical communication networks with up to 4 Gb/s modulation speeds. Product is available with 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 communications

Electro-optical Characteristics

Parameter	Symbol	Min.	Typical	Max.	Unit	Conditions
Rated optical power[2]	P_R	7	-	-	mW	0-85°C
Threshold current[3]	I_{TH}	-	15	25	mA	25°C
	I_{TH}	-	25	45	mA	85°C
Operating current	I_{OP}	-	32	45	mA	25°C, P_{op} = 5 mW
	I_{OP}	-	42	70	mA	85°C, P_{op} = 5 mW
Operating voltage	V_{OP}	-	1.15	1.4	V	0-85°C, P_{op} = 5 mW
Serial resistance[4]	R_S	-	6	-	Ω	25°C, P_{op} = 5 mW
Slope efficiency[4]	η	0.20	0.33	-	W/A	25°C, P_{op} = 5 mW
	$\eta_{\|}$	-	0.28	-	W/A	85°C, P_{op} = 5 mW
Central wavelength	λc	1287	1310	1327	nm	25°C, P_{op} = 5 mW
	λc	1280	-	1335	nm	0-85°C, P_{op} = 5 mW
Spectral width[5]	$\Delta\lambda$	-	0.07	0.2	nm	25°C, P_{op} = 5 mW
Side Mode Suppression Ratio[6]	SMSR	30	43	-	dB	0-85°C, P_{op} = 5 mW
Temperature shift of wavelength	$\partial\lambda/\partial T$	-	0.09	-	nm/K	0-85°C, P_{op} = 5 mW
Perpendicular beam divergence angle (FWHM)[7]	$\theta_{\perp}$	-	35	-	deg	25°C, P_{op} = 5 mW
Parallel beam divergence angle (FWHM)[7]	$\theta_{\|}$	-	27	-	deg	25°C, P_{op} = 5 mW

Parameter	Symbol	Min.	Typical	Max.	Unit	Conditions
Modulation bandwidth	f_{-3dB}	6	-	-	GHz	25°C, $I_{op} = I_{th} + 16$ mA
	f_{-3dB}	4	-	-	GHz	85°C, $I_{op} = I_{th} + 16$ mA
Monitor current	I_m	50	200	1000	µA	25°C, P_{op} = 5 mW
Monitor dark current	I_d	-	0.1	1.0	µA	25°C, V_{RPD} = 5 V
Monitor capacitance	C_m	-	5	10	pF	f = 1 MHz, V_{RPD} = 5 V
Focal length[8]	D_f	3.85	9.95	4.05	mm	25°C, P_{op} = 5 mW
Fiber coupling efficiency[9]		-	40	-	%	25°C, P_{op} = 5 mW

[1] All temperatures refer to case temperature, T_c
[2] Kink-free, demonstrated reliability
[3] 2nd derivative method
[4] P_{LO} = 1 mW, P_{HI} = 7 mW
[5] RMS, -20 dB
[6] -20 dB
[7] Full Width at Half Maximum, applicable to flat window cap type only
[8] Distance from reference plane (see mechanical specification) to focal point. Applicable to aspheric lens cap type only.
[9] Operation in excess of any one of these parameters may result in permanent damage.

Absolute Maximum Ratings

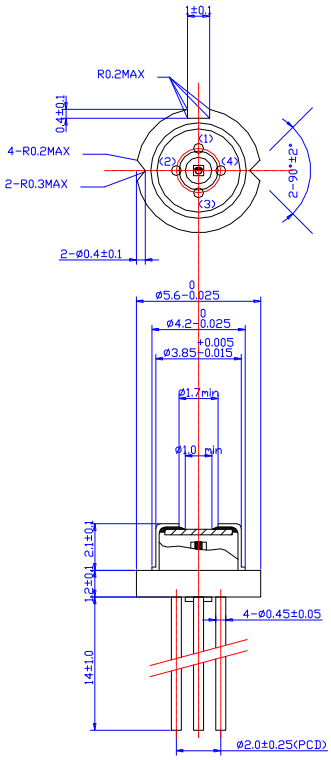
Parameter	Symbol	Rating	Unit
Optical output power	P_{op}	20	mW
LD reverse voltage	V_{RLD}	2	V
LD forward current	I_{FLD}	200	mA
PD reverse voltage	V_{RPD}	20	V
PD forward current	I_{FPD}	10	mA
Lead soldering temperature (<10 s)	T_{SLD}	260	°C
Operating case temperature	T_c	0-85°C	°C
Storage temperature	T_{STG}	-40-85°C	°C

Ordering Information

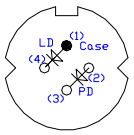
When ordering ML1210 series lasers, please specify a configuration from following selection:

Product code	Cap type	Pin layout [1) 2)]
ML1210	Aspherical lens	3
ML1211	Flat lens	3
ML1243	Aspherical lens	2
ML1244	Flat lens	1
ML1245	Flat lens	2
ML1246	Aspherical lens	1

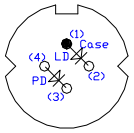
Mechanical Specification - ML1211, ML1244, ML1245



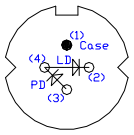
Bottom view
pin layout



Pin layout 1

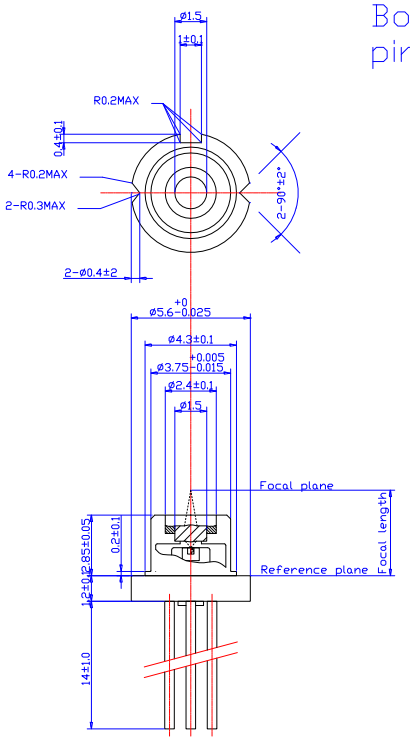


Pin layout 2

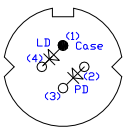


Pin layout 3

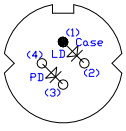
Mechanical Specification - ML1210, ML1243, ML1246



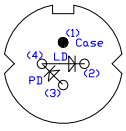
Bottom view
pin layout



Pin layout 1



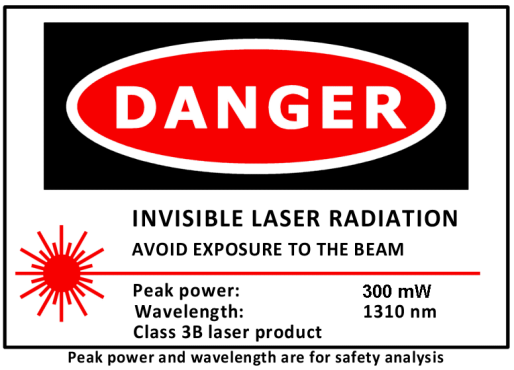
Pin layout 2



Pin layout 3

Safety Information

- The laser light emitted from this laser diode 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