Innolume GmbH
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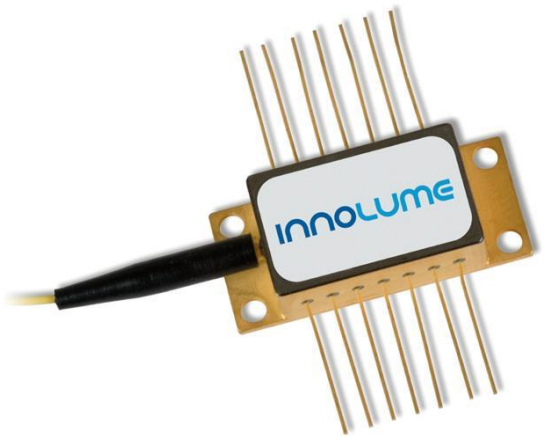
COMB-1310-80-PM-8

Fiber coupled Comb Laser Diode @ 1310 nm



Features:

- Single chip InAs/GaAs Quantum Dot based diode laser
- Standard communication wavelength: O-band
- Minimum 8 low RIN individual Fabry-Perot modes
- Equidistant temperature insensitive channel spacing
- Built-in optical isolator
- Polarization Maintaining fiber

Applications:

- Multi-channel source for DWDM communications

Description:

Quantum Dot based diode laser operating as an optical frequency comb generator. Device provides several low noise 80GHz spaced optical modes at about 1310nm. Packaged in convenient 14-pin butterfly housing the device is dedicated for the development and evaluation of novel optical interconnects based on WDM technology.

Specification DATE: 13th April 2022

SPECIFICATIONS

Test conditions: CW operation at 25°C

Parameters	Symb.	Min.	Typ.	Max.	Unit
Total Output power	P_{out}	25	30		mW
Central wavelength[1]	λ_c	1300	1310	1320	nm
Optical Power per channel			2		mW
Number of channels (<-3dB difference)		8	12		
Channel spacing[2]		78	80	82	GHz
Individual FP mode (channel) RIN (averaged in 0.1-8GHz range)				-125	dB/Hz
Laser Diode power conversion efficiency (P_{out}/ I_{op} / V_f)	WPE	9			%
LD Threshold current	I_{th}		20	30	mA
LD Operating current	I_{op}		160	180	mA
LD Forward voltage	V_f		2.1	2.3	V
Bias Voltage[3]	V_a		4		V
Polarization extinction ratio	PER	15	18		dB

[1] 1150 to 1330nm upon request
[2] 25-100GHz mode-spacing upon request
[3] 0V Bias Voltage upon request

ABSOLUTE MAXIMUM RATINGS

Parameters	Min.	Max.	Unit
Laser Diode reverse voltage		2	V
Operating current		250	mA
Thermo Electric Cooler current		3	A
Thermo Electric Cooler voltage		4	V
Storage temperature range (in original sealed pack)	-30	85	°C
Case operating temperature range	5	80	°C
Lead soldering temperature (max 5 sec.)		250	°C

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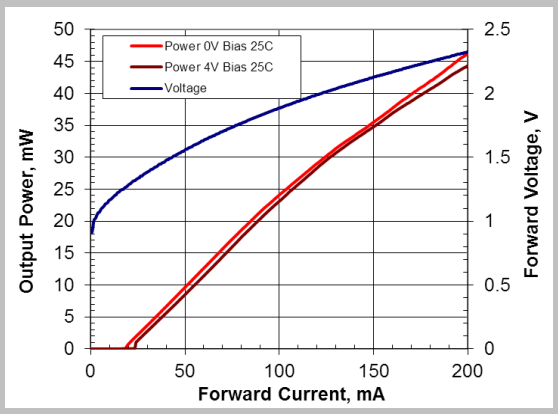
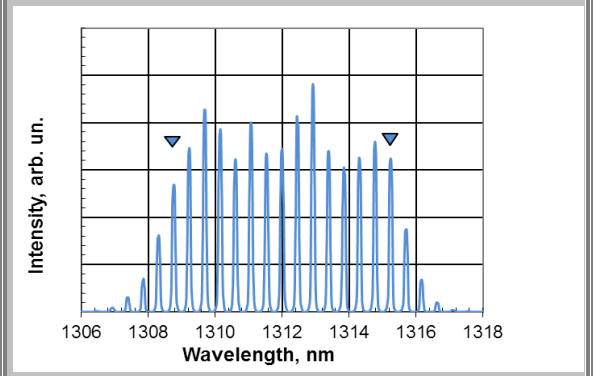
L-I-V curve, CW operation

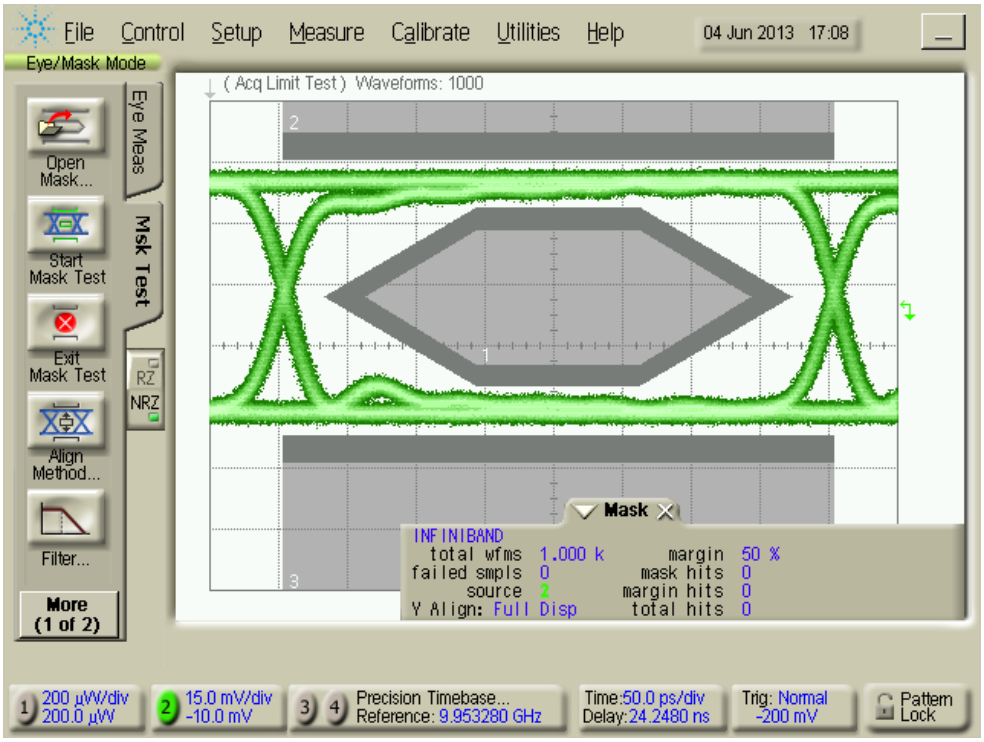


Optical Spectrum



An exemplary Eye Diagram of one F-P mode

Externally modulated at 2.5GHz filtered-out single channel



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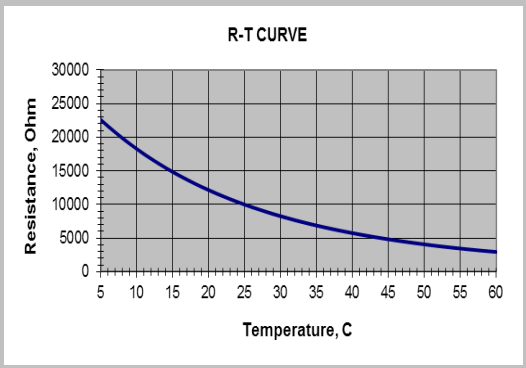
THERMISTOR SPECIFICATION

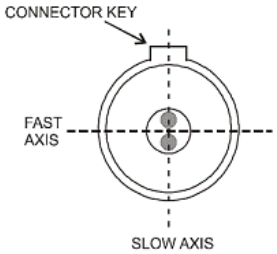
Parameters	Value	Unit
Thermistor type	NTC	
Resistance @25°C	10 ± 0.05	kOhm
Beta 0-50°C	3477	K



FIBER SPECIFICATION

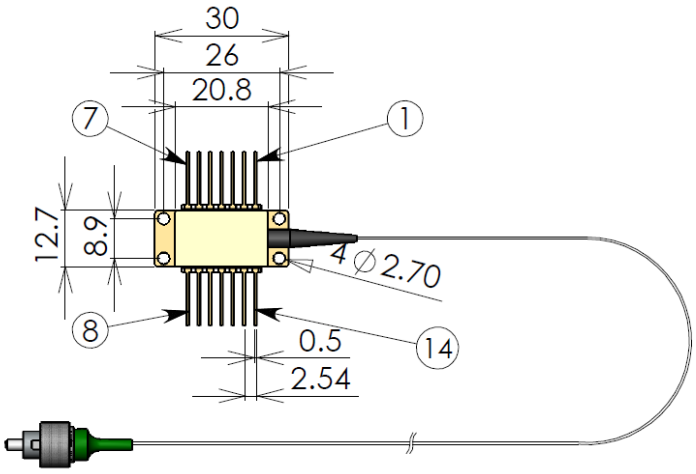
Parameters	PM 1300	Unit
Type	Panda PM1300	
Cladding diameter	125±1	µm
Coating diameter	245±5	µm
Mode-field diameter (at 1310nm)	9.5±1	µm
Length	1 ± 0.2	m
Connector	FC/APC	

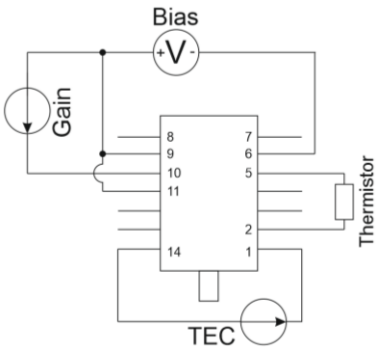
Connector alignment to the PANDA fiber

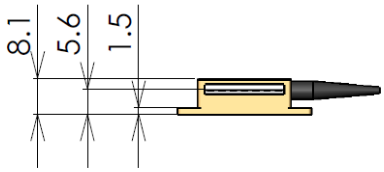


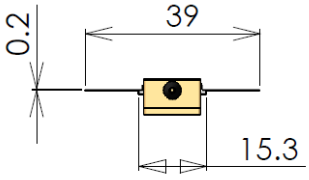
The output light is polarized along the slow axis of PM fiber.

DIMENSIONS (All sizes in mm)









Pin identification:

1. TEC “+”
2. Thermistor
3.
4.
5. Thermistor
6. Bias “-”
7.
8.
9. LD Cathode “-”, Bias “+”
10. LD Anode “+”
11. LD Cathode “-”, Bias “+”
12.
13. Case
14. TEC “-“

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SAFETY AND OPERATING INSTRUCTIONS

The laser light emitted from this module is invisible and will harmful to the human eye. Avoid looking directly into the fiber output or into the collimated beam along its optical axis when the device is in operation. Proper laser safety eyewear must be worn during operation.

Absolute Maximum Ratings may be applied to the Laser Diode for short period of time only. Exposure to maximum ratings for extended period of time or exposure above one or more max ratings may cause damage or affect the reliability of the device.
Operating the laser diode outside of its maximum ratings may cause device failure or a safety hazard. Power supplies used with the component must be employed such that the maximum peak optical power cannot be exceeded. A proper heatsink for the laser diode module on thermal radiator is required.

Current through Bias should not exceed 20mA. Do not apply pressure on BTF pipe.

Do not pull the fiber. Do not bend a fiber with a radius smaller than 3 cm. Operate the laser module with clean fiber connector only. Periodically check and clean the connector if necessary. To clean the connector, use a clean-room compatible tissue only, put some Isopropyl alcohol onto it and carefully clean the facet of the connector, or use special fiber cleaning tools. Perform cleaning only with the laser current switched off.

ESD PROTECTION – Electrostatic discharge is the primary cause of unexpected laser diode failure. Take extreme precaution to prevent ESD. Use wrist straps, grounded work surfaces and rigorous antistatic techniques when handling laser diodes.

NOTE: Innolume product specifications are subject to change without notice.