Innolume GmbH
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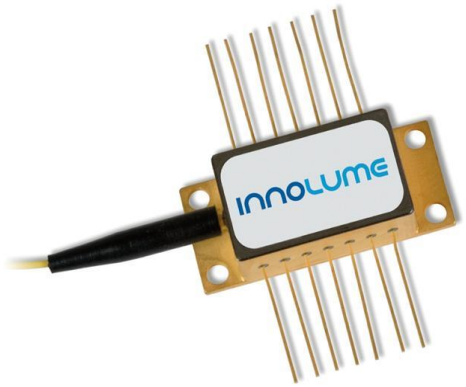
LD-12XX-FBG-350

Fiber Bragg Grating wavelength locked High Power Laser Diode



Features:

- InAs/GaAs Quantum Dot based diode laser
- 350mW output power ex-single mode fiber
- Available wavelength range 1168-1280nm
- Polarization maintaining PM980 fiber
- Fiber Bragg grating stabilized external cavity laser
- Proprietary mirror coating technology enabling high reliability
- High reliable Au/Sn-technology
- Optional: monitor photodiode for power control

Specification | DATE: 22th May 2012

SPECIFICATIONS

Test conditions: CW operation, chip temperature 25°C, the module is mounted on room temperature heatsink.

Parameters	Symb.	Min.	Typ.	Max.	Unit
Output power	P_{out}	350			mW
Range of available wavelengths	λ_P	1168		1280	nm
Peak wavelength at P_{out}	λ_P	λ_P-2	λ_P	λ_P+2	nm
Spectral Bandwidth @ -3dB level at P_{out} [1]	$\Delta\lambda$	0.15		1.5	nm
Wavelength shift with FBG temperature	$\Delta\lambda/\Delta T_{FBG}$		9	12	pm/°C
Threshold current	I_{th}		120	200	mA
Operating current at P_{out}	I_{op}		1350	1600	mA
Forward voltage at P_{out}	V_f		1.6	1.8	V
Total power consumption (case temperature: 30°C)	$P_{30°C}$		2.7	4.0	W
Total power consumption (case temperature: 50°C)	$P_{50°C}$		5.0	6.5	W
Polarization Extinction Ratio	PER	15	17		dB
Monitor photodiode responsivity [2]			0.1		μA/mW
Recommended operating chip temperature (on thermistor)	T_{op}	20	25	30	°C

[1] Any bandwidth in indicated range is available.
[2] Valid for monitor photodiode option

ABSOLUTE MAXIMUM RATINGS

Parameters	Min.	Max.	Unit
Laser Diode reverse voltage		2	V
Laser Diode CW forward current		I_{op}+300	mA
Thermo Electric Cooler current		3	A
Thermo Electric Cooler voltage		4	V
Fiber bend radius		3	cm
Storage temperature range	5	80	°C
Lead soldering temperature (max. 5 sec.)		250	°C
Case operating temperature range	10	50	°C
FBG temperature		120	°C

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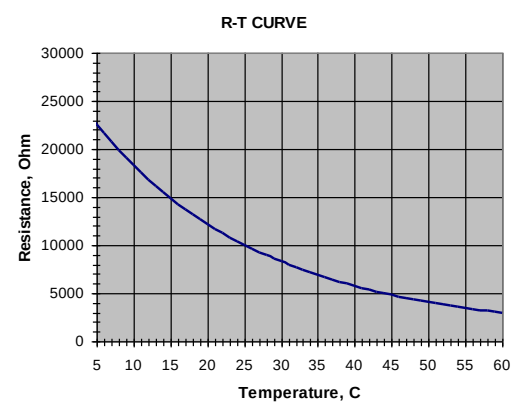
THERMISTOR SPECIFICATION

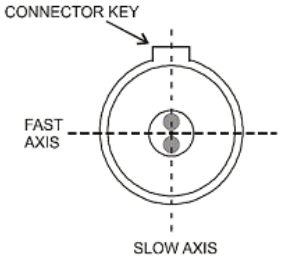
Parameters	Value	Unit
Thermistor type	NTC	
Resistance @25°C	10 ± 0.5	kOhm
Beta 0-50°C	3477	K



FIBER SPECIFICATION

Parameters	PANDA PM980	Unit
Numerical aperture (Typical)	0.14	
Cutoff wavelength	920±50	nm
Mode-field diameter (@1060nm)	6.2±0.3	μm
Cladding diameter	125±1	μm
Coating diameter	245±15	μm
Core-to-cladding offset	≤0.5	μm
Length	1.3 ± 0.2	μm
Distance from FBG to laser chip	1.0 ± 0.2	m
Connector	FC/APC connector or bare cleaved end	

Connector alignment to the PANDA fiber

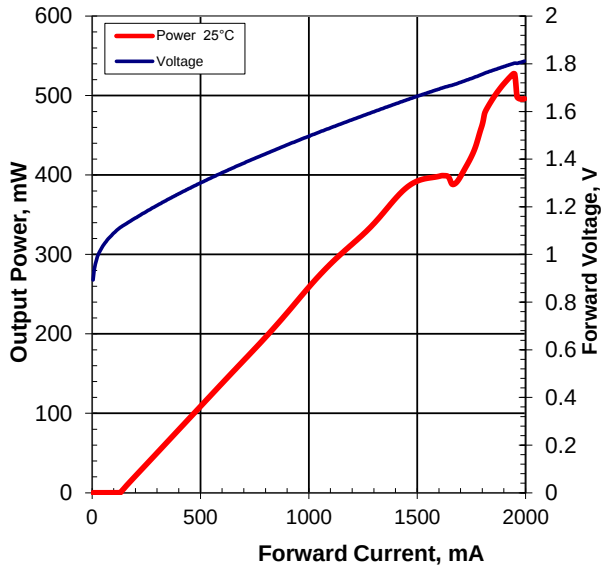


The output light is polarized along the slow axis of PM fiber.

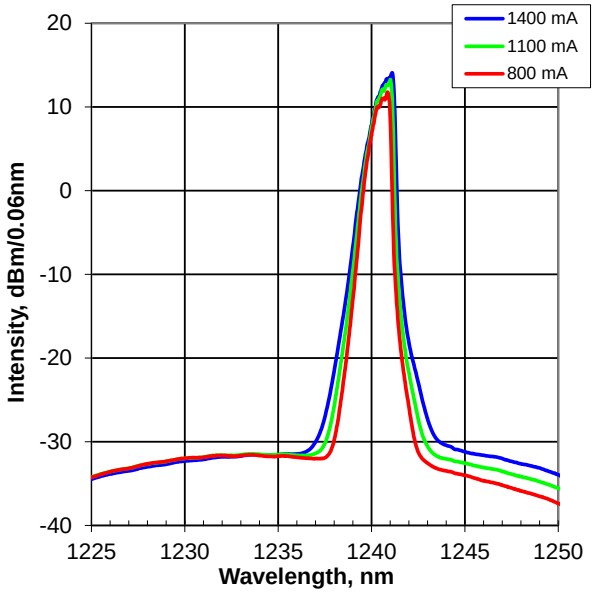
TYPICAL PERFORMANCE for reference only[1].

Test conditions: CW operation, chip temperature 25°C, the module is mounted on room temperature heatsink.

Light-Current-Voltage Characteristics



Spectra Characteristics



[1] Performance is given for the device with wavelength 1240nm. Similar performance is expected for the other wavelengths in the 1168-1280nm range .

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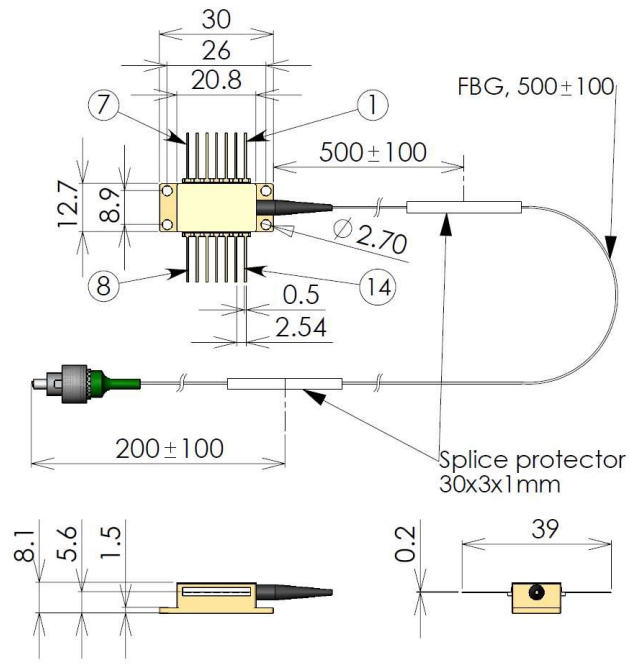
DIMENSIONS (All sizes in mm)



Pin identification:

1. TEC "+"
2. Thermistor
3. Monitor PD anode (optional)
4. Monitor PD cathode (optional)
5. Thermistor
6.
7.
8.
9.
10. Laser Diode anode "+"
11. Laser Diode cathode "-"
12.
13. Case
14. TEC "-"

SAFETY AND OPERATING INSTRUCTIONS

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

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 forward current cannot be exceeded. A proper heatsink for the laser diode module on thermal radiator is required. The module must be mounted on radiator with screws (bolt down in X-style fashion with initial torque set to 0.075Nm and final X-style bolt down at 0.15Nm) or clamps. The deviation from flatness of radiator surface must be less than 0.05mm. It's recommended using of In-foil or similar between bottom of the module and heatsink for thermal interface.

Carefully handle the fragile fiber, do not apply any stress, do not pull the fiber, do not bend fiber with a radius smaller than 3cm. Operate the laser module with clean fiber connector only. Periodically check and clean the connector if necessary. To clean the connector use suitable fiber cleaning tools (e.g. special cleaning tissue for optics). Perform cleaning only while the laser is switched off. Protect the fiber connector with protection cap while it's unplugged.

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.

Part Number Identification:
LD-1240-FBG-350 -> 350mW output power at peak wavelength 1240nm

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