Innolume GmbH
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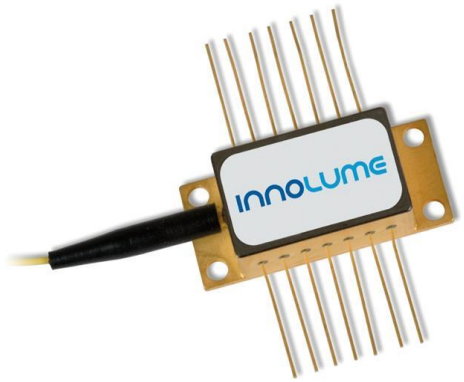
LD-10XX-YY-p1000

Fiber Coupled Laser Diode for pulse or CW operation



Features:

- High power (1000mW) low noise optical pulse
- 400mW CW output power
- Broadened spectrum to exclude Brillouin scattering
- Any wavelength from 1010-1130nm range available
- Proprietary mirror coating technology enabling long life-time
- HI1060 fiber or polarization maintaining PM980 fiber
- RoHS compliant

Applications:

- Seeding of fiber lasers
- Instrumentation / measurement equipment

Specification	DATE: 11th January 2017

SPECIFICATIONS

Test conditions: module is mounted on room temperature heatsink, thermistor temperature 25°C

Parameters	Symb.	Min.	Typ.	Max.	Unit
Pulsed output peak power	P_{pulse}	1000			mW
Pulsed operating peak current (500ns, 1% duty cycle)	I_{pulse}		1700	2000	mA
Range of available wavelength at P_{pulse} (500ns, 1% duty cycle)	λ_{pulse}	1010		1130	nm
Mean wavelength tolerance at P_{pulse} (500ns, 1% duty cycle)				5	nm
Spectral width @ -3dB level at P_{pulse}	$\Delta\lambda_{pulse}$	1.5	3.0	6.0	nm
Rise / Fall times		See typical pulse performance below			
CW output power	P_{out}	400			mW
CW operating current	I_{op}		700	800	mA
Range of available wavelength at P_{out}	λ_{CW}		λ_{pulse}		nm
Mean wavelength tolerance at P_{out}				5	nm
Spectral width @ -3dB level at P_{out}	$\Delta\lambda_{CW}$	0.5	1.0	4.0	nm
Wavelength temperature tunability	$\Delta\lambda/\Delta T$	0.3	0.35	0.4	nm/°C
CW threshold current	I_{th}		90	150	mA
CW polarization extinction ratio (for PM980 fiber only)	PER	12	17		dB
CW forward voltage	V_f		1.7	1.8	V

ABSOLUTE MAXIMUM RATINGS

Parameters	Min.	Max.	Unit
Laser Diode reverse voltage		2	V
Laser Diode CW forward current		1500	mA
Laser Diode pulse forward current (<1µs pulse with <10% duty cycle)		3000	mA
Thermo Electric Cooler current		3	A
Thermo Electric Cooler voltage		4	V
Fiber bend radius	3		cm
Chip operating temperature range	5	40	°C
Case operating temperature range	0	70	°C
Storage temperature range	-40	85	°C

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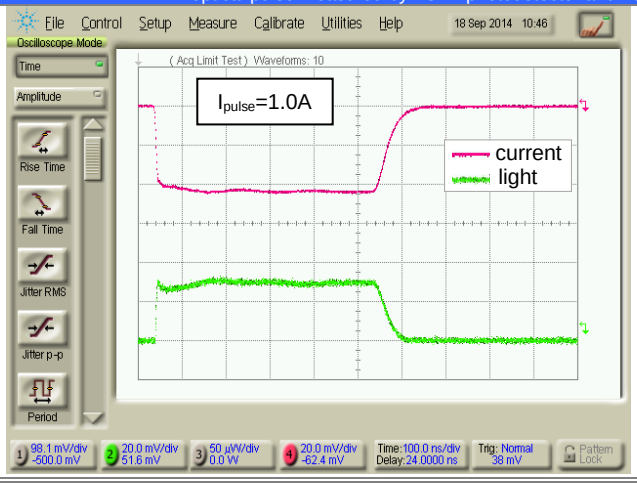
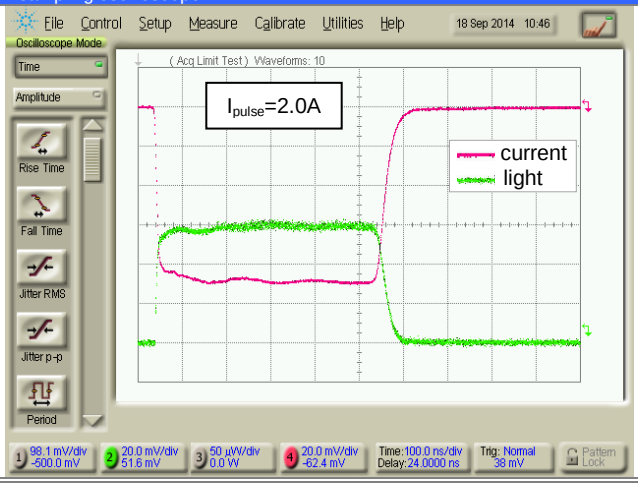
TYPICAL PULSE PERFORMANCE for reference only

Test conditions: electrical pulse: 500ns, rise/fall time about 30/50ns, 1% duty cycle
optical pulse measured by 1GHz photodetector and 40GHz sampling oscilloscope

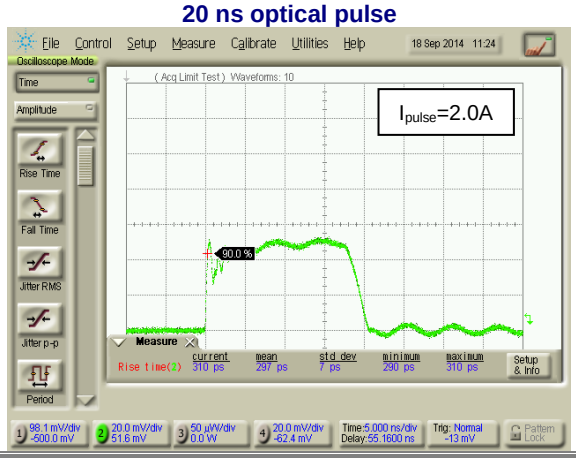




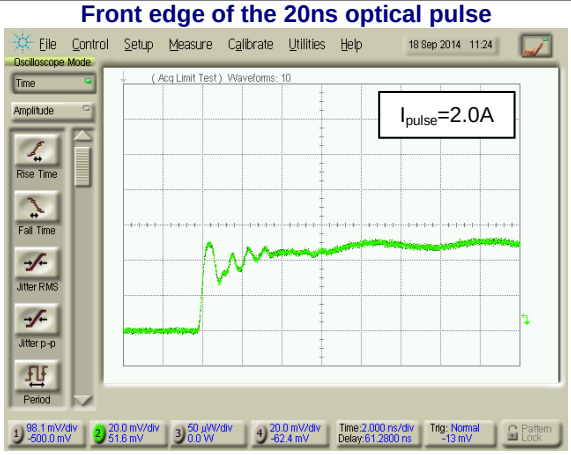
TYPICAL PULSE PERFORMANCE for reference only

Test conditions: electrical pulse: 20ns, rise/fall time about 5/2ns, 1% duty cycle
optical pulse measured by 1GHz photodetector and 40GHz sampling oscilloscope

20 ns optical pulse

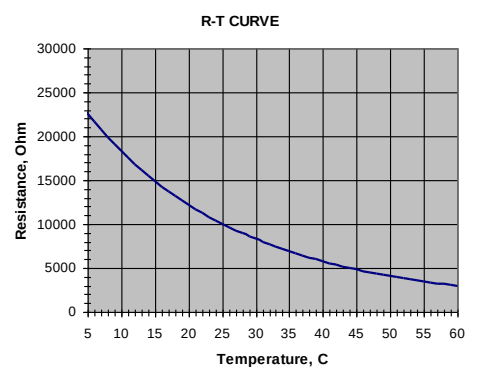


Front edge of the 20ns optical pulse



THERMISTOR SPECIFICATION

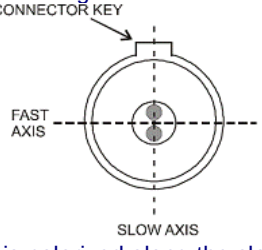
Parameters	Value	Unit
Thermistor type	NTC	
Resistance @25°C	10 ± 0.1	kOhm
Beta 25-50°C	3375 ± 1%	K



FIBER SPECIFICATION

Parameters	HI1060	PANDA PM980	Unit
Numerical aperture (Typical)	0.14	0.12	
Cutoff wavelength	920±50	920±50	nm
Mode-field diameter (@1060nm)	6.2±0.3	6.6±0.3	μm
Cladding diameter	125±1	125±1	μm
Coating diameter	245±15	245±15	μm
Length	100 ± 20		cm
Connector	FC/APC		

Connector alignment to the PANDA fiber



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

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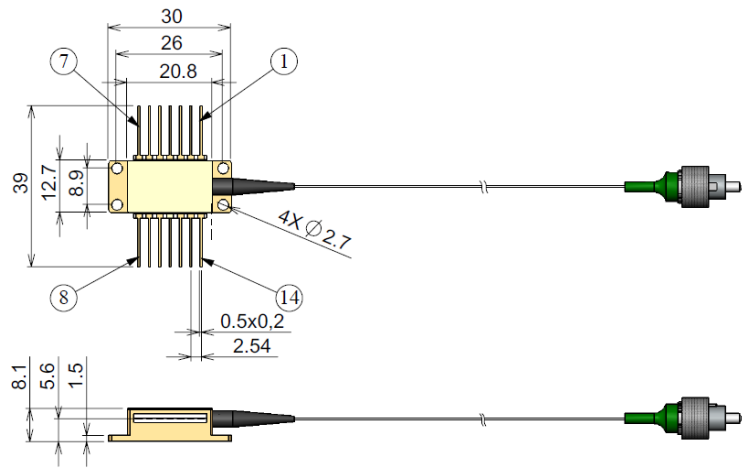
DIMENSIONS (All sizes in mm)



Pin identification:

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

SAFETY AND OPERATING INSTRUCTIONS

The light emitted from this device is invisible and can be harmful to the human eye. Avoid looking directly into the fiber connector when the device is in operation. Proper laser safety eyewear must be worn during operation with open connector.

Absolute Maximum Ratings may be applied to the device for short period of time only. Exposure to maximum ratings for extended period of time or exposure to more than one maximum rating may cause damage or affect the reliability of the device. Operating the device 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 device on thermal radiator is required. The device must be mounted on radiator with 4 screws (bolt down in X-style fashion with initial torque set to 0.075Nm and final X-style bolt down at 0.15Nm) or with clamps. The deviation from flatness of radiator surface must be less than 0.05mm. It's recommended using of Indium foil or thermal conductive and soft material between bottom of the case and heatsink for thermal interface. It's undesirable to use thermal grease for this.

Avoid back reflection to the device. It may give impact on the device performance in aspects of spectrum and power stability. It also may cause fatal facet damage. Using of optical isolators is highly recommended to block back reflection.

Do not pull the fiber. Do not bend a fiber with a radius smaller than 3 cm. Fiber tip should always be protected from any contamination or damage during the process of installation. After removing the dust-preventing cap covered at fiber tip, carefully clean fiber tip by wiping through one direction using optical lens cleaning paper or cotton swab dabbed with Iso-Propanol or Ethyl alcohol. Operate the device with clean fiber connector only.

Electrostatic discharge is the primary cause of unexpected product failure. Take extreme precaution to prevent ESD. During device installation, ESD protection has to be maintained - use wrist straps, grounded work surfaces and rigorous antistatic techniques when handling the product.

When ordering please specify mean wavelength and fiber type.

Example of Part Number identification:

LD-1020-HI-p1000 -> 1000mW pulse optical power at 1020nm, HI-1060 fiber
LD-1122-PM-p1000 -> 1000mW pulse optical power at 1122nm, PM-980 fiber

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