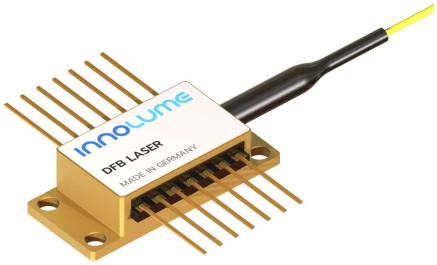
Innolume GmbH
Konrad-Adenauer-Allee 11
44263 Dortmund, Germany

Specification

DFB10XX000YY0D3PNXXX Preliminary

Fiber Coupled Pulsed Distributed Feedback Laser Diode



Features:

- 300 mW peak power
- Pulse Width: 500 ns typ. (1–1000 ns on request)
- Individual burn-in and thermal cycling screening
- Proprietary mirror coating technology enabling high reliability
- 7-pin BTF package with RF connector (optional)

Applications:

- Fiber laser seeding
- Equipment calibration
- LIDAR in automotive

Recommended Operating Conditions

the case is mounted on room temperature heatsink

Parameter	Min.	Typ.	Max.	Unit
Chip Temperature	20	25*	30	°C
Peak Forward Current @ Pulsed mode		1	2	A
Output Peak Power @ Pulsed mode		300		mW
Pulse Width of Drive Signal (FWHM) @ Pulsed mode**	1	500	1000	ns
Duty cycle		0.2	2	%
Forward Current @ CW mode	20		220	mA
Output Power @ CW mode	5		50	mW

* in some cases may vary depending on the selected wavelength
** DFB modules are specified at Typical Pulse Width (or by customer request)

Pulsed characteristics

@ 25°C*, Peak Forward Current = 2A, Pulse Width of Drive Signal** (FWHM) = 500ns, Duty cycle = 0.2%

Parameter	Min.	Typ.	Max.	Unit
Output Peak Power	250	300		mW
Pulse Width of Optical Signal** (FWHM)		500		ns
Peak Wavelength*** (chosen by customer)	1015		1125	nm
Peak Wavelength Tolerance		±1		nm

* in some cases may vary in 20-30°C range depending on the selected wavelength
** DFB modules are specified at Typical Pulse Width (or by customer request)
*** reachable within wavelength tolerance at pulsed power > 250mW

CW characteristics

@ 25°C*, 220mA

Parameter	Min.	Typ.	Max.	Unit
Output Power		50		mW
Forward Voltage		1.7		V
Threshold Current		40		mA
Peak Wavelength	1020		1080	nm
Peak Wavelength Tolerance		±1		nm
Wavelength Temperature Tunability		100		pm/°C
Wavelength Current Tunability		2		pm/mA
Side-Mode Suppression Ratio (SMSR)		50		dB
Polarization Extinction Ratio (PER)		18		dB
Polarization		TE		

* in some cases may vary in 20-30°C range depending on the selected wavelength

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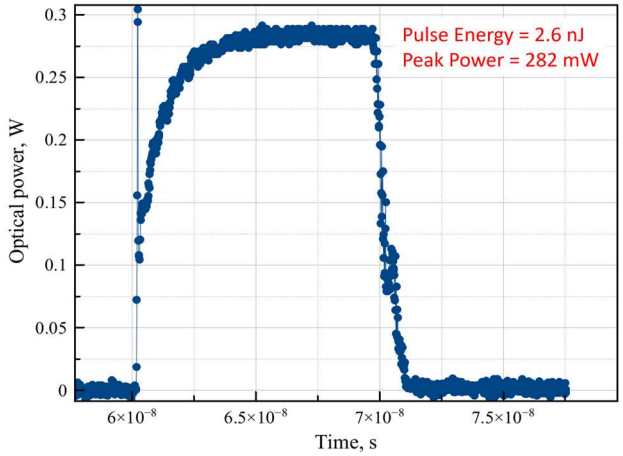
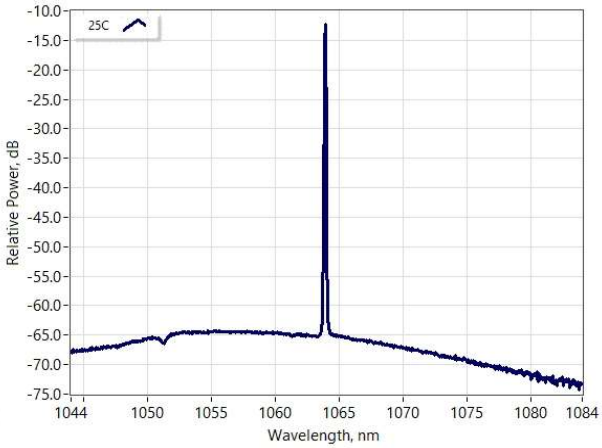
Typical Pulse Performance (for reference only)

the case is mounted on room temperature heatsink; Peak Forward Current=1A; Pulse Width of Drive Signal (FWHM)=10ns, F=200kHz

Pulse shape*



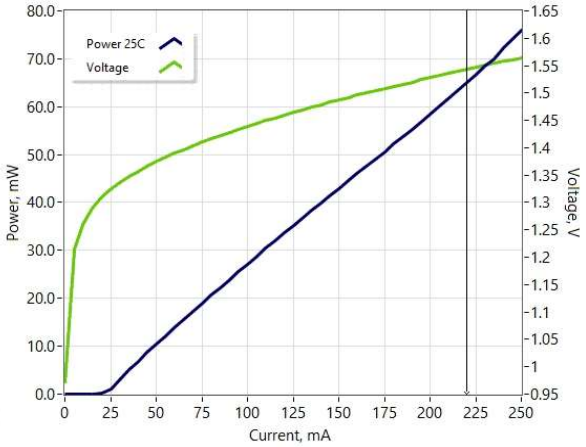
Optical Spectra (res. 20pm)



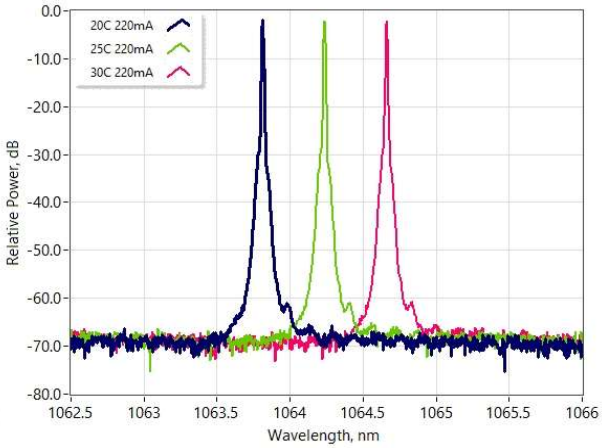
Typical CW Performance (for reference only)

the case is mounted on room temperature heatsink

Light Current Voltage Characteristics



Optical Spectra vs Temperature (res. 10pm)



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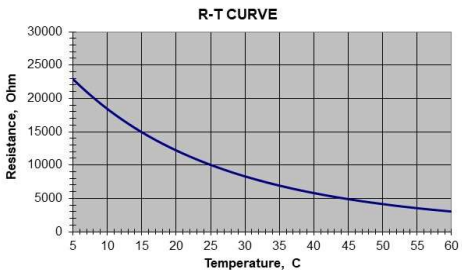
Absolute Maximum Ratings

Parameter	Min	Max	Unit
Output Peak Power @ Pulsed mode (<1ns pulse width, <10% duty cycle)		400	mW
Peak Forward Current @ Pulsed mode (<1ns pulse width, <10% duty cycle)		2000	mA
Forward Current @ CW mode		250	mA
Output Power @ CW mode		150	mW
Reverse Voltage		2	V
TEC Current		3	A
TEC Voltage		4	V
Chip Operating Temperature	5	40	°C
Case Operating Temperature	0	70	°C
Storage Temperature	-40	85	°C
Pin Soldering Temperature (max 10 sec, max case temperature 120°C)		300	°C
Fiber Band Radius	3		cm

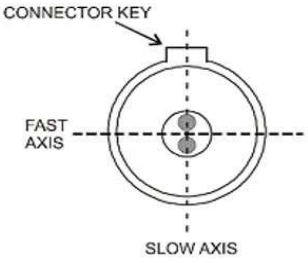
Thermistor specification

Parameters	Value	Unit
Type	NTC	
Resistance @ 25°C	10±0.1	kOhm
Beta 25-85°C	3435±1%	K



Fiber specification

Parameters	Value	Value	Unit
Fiber Type	HI1060	PM980	
Numerical Aperture (Typical)	0.14	0.12	
Cut-off Wavelength	920±50	900±70	nm
Mode-Field (core) Diameter	6.2±0.3 @1060nm	6.6±0.3 @1060nm	μm
Cladding Diameter	125±1	125±1	μm
Coating (buffer) Diameter	245±15	245±15	μm
Loose Tube Diameter (optional)	900	900	μm
Connector	FC/APC	FC/APC	
Key	narrow	narrow	



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

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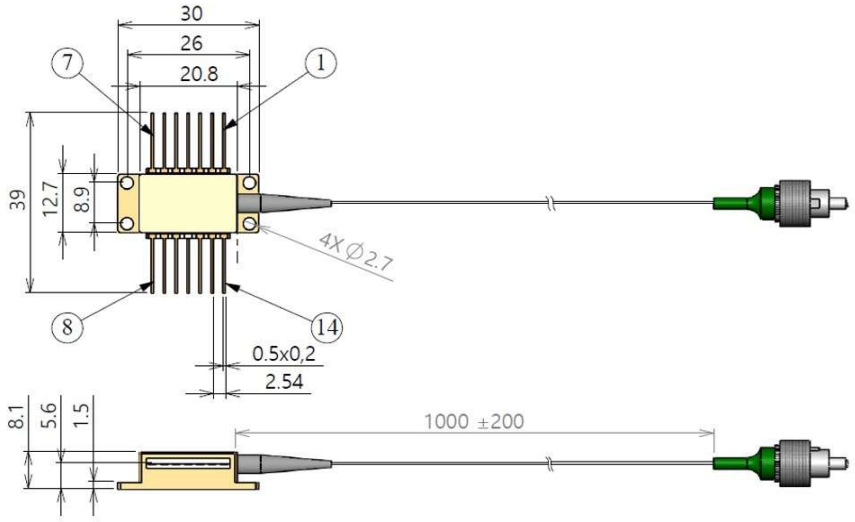
Dimensions (in mm)



Pin identification:
1. TEC "+"
2. Thermistor
3. Monitor PD anode (Bias "-")
4. Monitor PD cathode (Bias "+")
5. Thermistor
6. -
7. -
8. -
9. -
10. LD anode ("+")
11. LD 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.

Part-number Identification

DFB1040000HI0D3PNXXX -> 300mW peak output power at 1040nm peak wavelength, HI-1060 fiber
DFB1040000PM0D3PNXXX -> 300mW peak output power at 1040nm peak wavelength, PM980 fiber

NOTE: Innolume product specifications are subject to change without notice