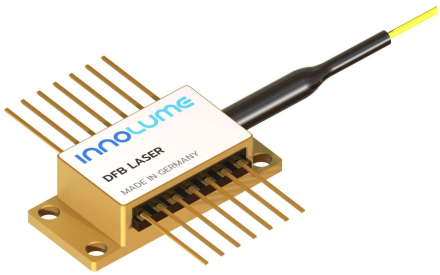
Innolume GmbH
Konrad-Adenauer-Allee 11
44263 Dortmund, Germany

Specification

DFB07XX000YY010MFXXX Preliminary

Fiber Coupled Distributed-Feedback Laser Diode



Features:

- Output power > 10mW ex-fiber in 780-795nm range
- Mode-hop free continious tuning
- Individual burn-in and thermal cycling screening
- Built-in monitor photodiode
- Fiber-spliced optical isolator (optional)
- 900um loose tube on fiber (optional)

Applications:

- Atomic clocks
- Rubidium systems
- Raman spectroscopy
- Medical devices
- Fiber sensors

Recommended Operating Conditions

@ CW, the case is mounted on room temperature heatsink

Parameter	Min.	Typ.	Max.	Unit
Chip Temperature	20	25*	40	°C
Forward Current		100	150	mA
Output Power**	2		10	mW

* in some cases may vary depending on the selected wavelength
** kink-free over the entire range

Characteristics

@ CW, 25°C*, 100mA

Parameter	Min.	Typ.	Max.	Unit
Forward Current @ 10mW			150	mA
Forward Voltage @ 10mW		1.7	2.2	V
Threshold Current		70	90	mA
Monitor Photodiode Current		75		µA
Monitor Photodiode Responsivity		8		µA/mW
Peak Wavelength** (chosen by customer)	780		795	nm
Peak Wavelength Tolerance			±1	nm
Wavelength Temperature Tunability		70		pm/°C
Wavelength Current Tunability		1		pm/mA
Side-Mode Suppression Ratio (SMSR)	30	45		dB
Polarisation Extinction Ratio (PER)	10	15		dB
Polarisation		TE		

* in some cases may vary in 20-40°C range depending on the selected wavelength
** reachable within wavelength tolerance at power > 10mW

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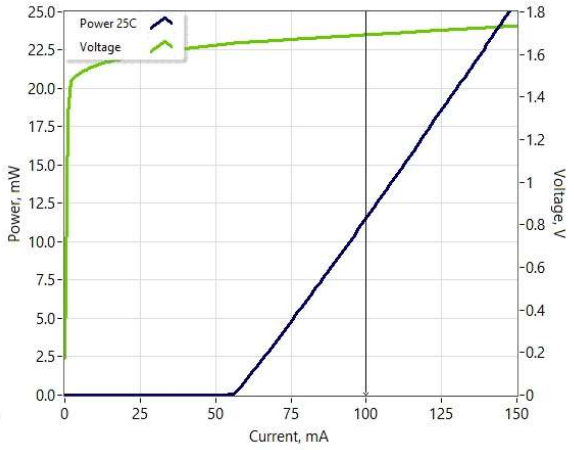
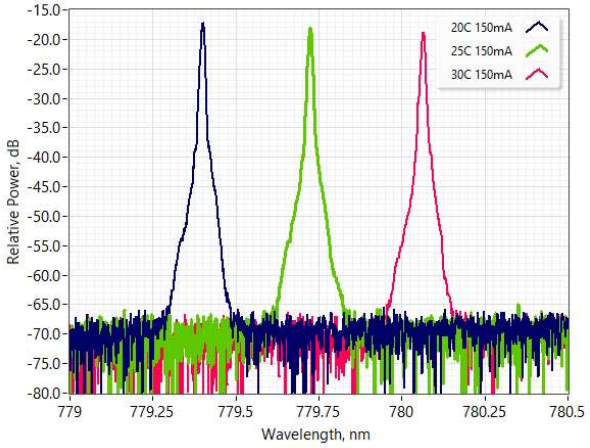
Typical Performance (for reference only)

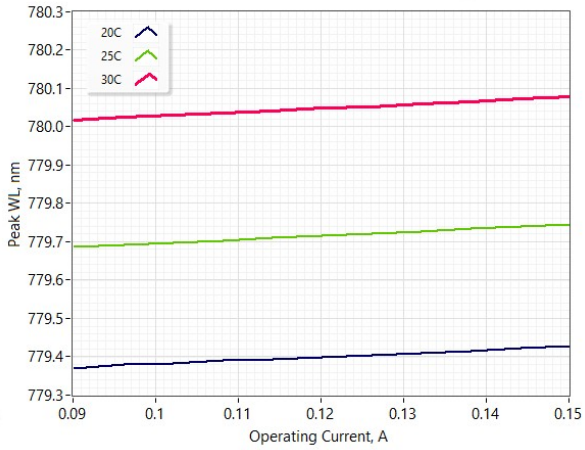
Light Current Voltage Characteristics



Optical Spectra vs Temperature (res. 10pm)



Peak Wavelength Tuning by Current



Absolute Maximum Ratings

Parameter	Min	Max	Unit
Forward Current		160	mA
Reverse Voltage		2	V
TEC Current		3	A
TEC Voltage		4	V
Chip Operating Temperature	5	45	°C
Case Operating Temperature	0	70	°C
Monitor Photodiode Bias Voltage		5	V
Pin Soldering Temperature (max 10 sec, max case temperature 120°C)		300	°C
Storage Temperature	-40	85	°C
Fiber Band Radius	3		cm

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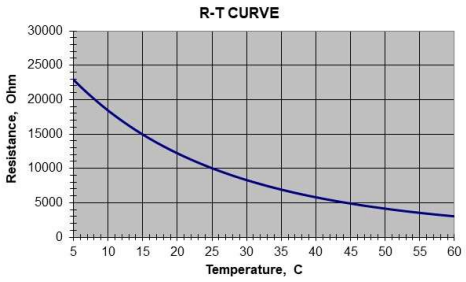
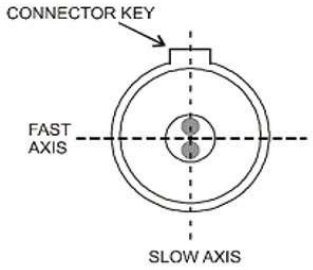
Thermistor specification

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



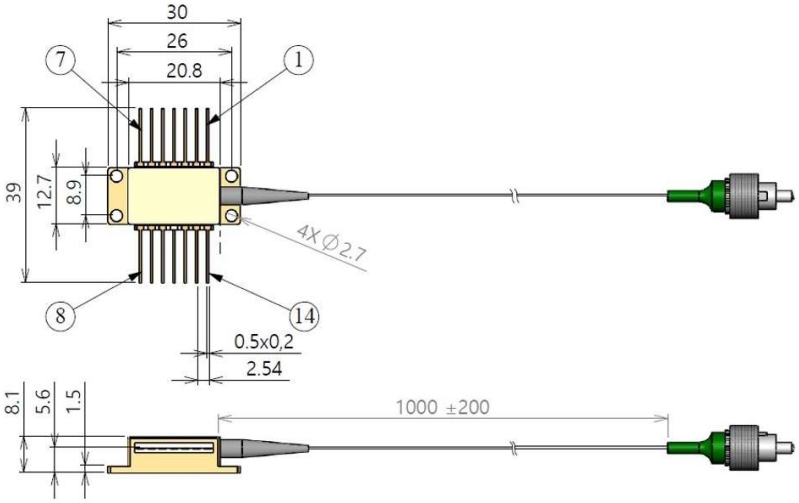
Fiber specification

Parameters	Value	Value	Unit
Fiber Type	HI780	PM780	
Numerical Aperture (Typical)	0.14	0.12	
Cut-off Wavelength	720±50	710±60	nm
Mode-Field (core) Diameter	4.6±0.5 @ 780nm	4.6±0.5 @780nm	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.

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 "-"

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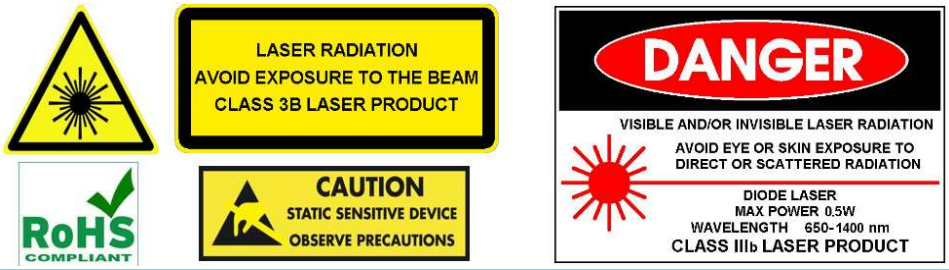
Safety and Operating Instructions

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

DFB0780D53HI010MFXXX -> 10mW output power at 780.53nm peak wavelength, HI780 fiber, with built-in monitor photodiode
DFB0780000PM010MFXXX -> 10mW output power at 780nm peak wavelength, PM780 fiber, with built-in monitor photodiode
DFB0795000PM010MFLXX -> 10mW output power at 795nm peak wavelength, PM780 fiber, with built-in monitor photodiode and fiber loose tube

NOTE: Innolume product specifications are subject to change without notice