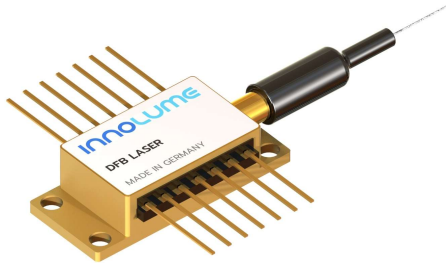


DFB13XX000YY180MFVXX Preliminary

Fiber Coupled Distributed-Feedback Laser Diode with Integrated Isolator



Features:

- High output power > 180mW ex-fiber in 1270-1330nm range
- InAs/GaAs Quantum Dot based diode laser
- Integrated free-space optical isolator (double stage)
- Mode-hop free continuous tuning
- Individual burn-in and thermal cycling screening
- Proprietary mirror coating technology enabling high reliability
- Built-in monitor photodiode
- 900um loose tube on fiber (optional)

Applications:

- Datacom
- Coherent sensing and LiDAR
- Quantum and nonlinear optics
- Spectroscopy and gas excitation
- Testing and instrumentation

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		800	1100	mA
Output Power**	20		180	mW

* in some cases may vary depending on the selected wavelength

** kink-free and mode-hop-free over the specified power range (min - max)

Characteristics

@ CW, 25°C*, 800mA

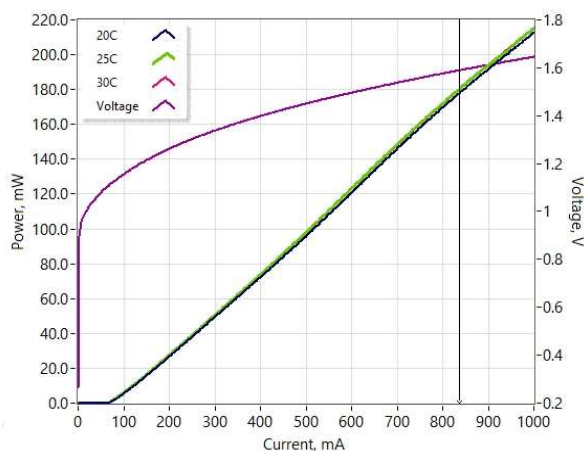
Parameter	Min.	Typ.	Max.	Unit
Forward Current @ 180mW			1100	mA
Forward Voltage @ 180mW		1.6	2.5	V
Threshold Current		80	150	mA
Monitor Photodiode Current		600		μA
Monitor Photodiode Responsivity		3		μA/mW
Peak Wavelength** (chosen by customer)	1270		1330	nm
Peak Wavelength Tolerance			±1	nm
Wavelength Temperature Tunability		100		pm/°C
Wavelength Current Tunability		1		pm/mA
Side-Mode Suppression Ratio (SMSR)	40	50		dB
Instantaneous (Lorentzian) Linewidth		2		kHz
Effective Linewidth (observation time 100 ms)		100	300	kHz
Relative Intensity Noise (1MHz-18GHz)		-155	-145	dB/Hz
Polarisation Extinction Ratio (PER)	12	15		dB
Polarisation		TE		

* in some cases may vary in 20-40°C range depending on the selected wavelength

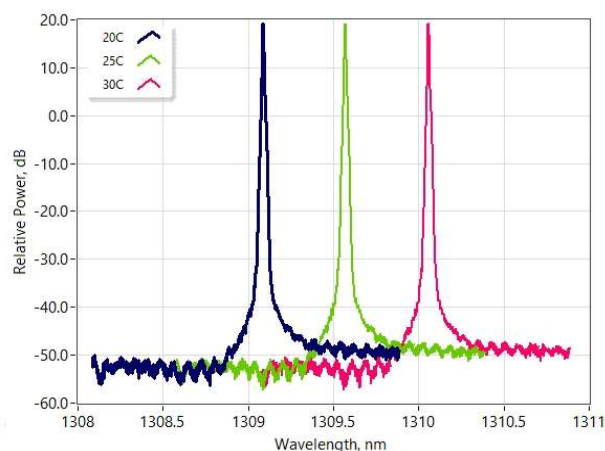
** reachable within wavelength tolerance at power 180mW; performance at wavelength range edges may require minor specification adjustments

Typical Performance (for reference only)

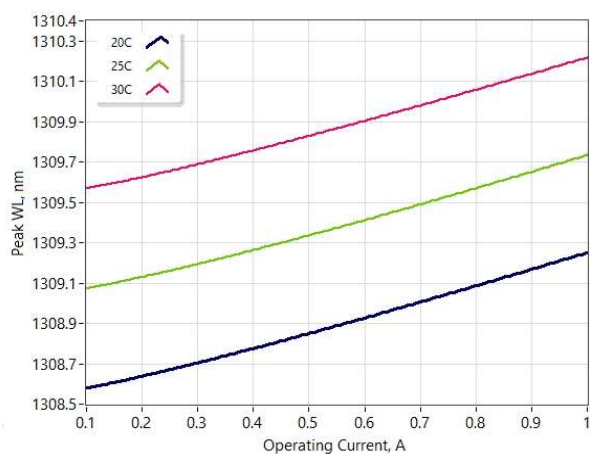
Light Current Voltage Characteristics



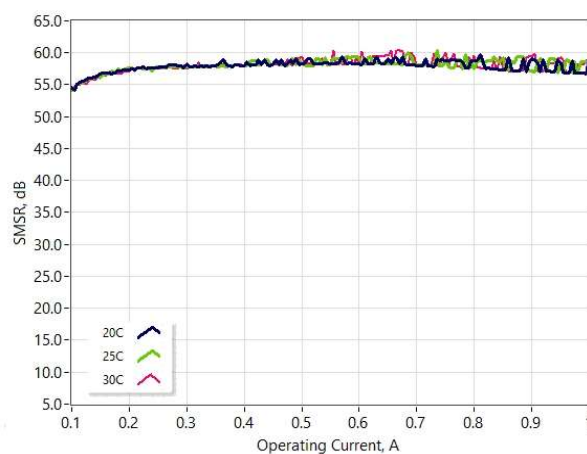
Optical Spectra vs Temperature (res. 5pm)



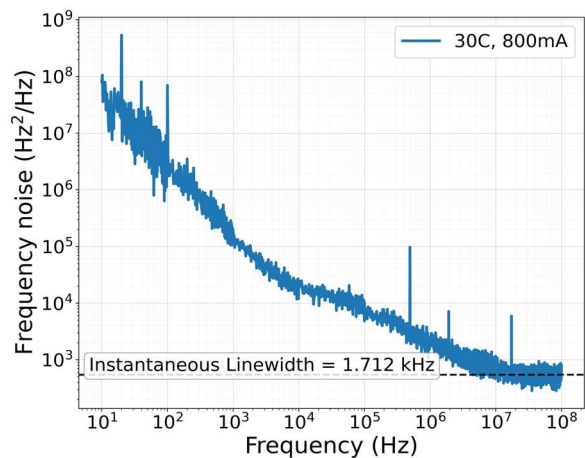
Peak Wavelength Tuning by Current



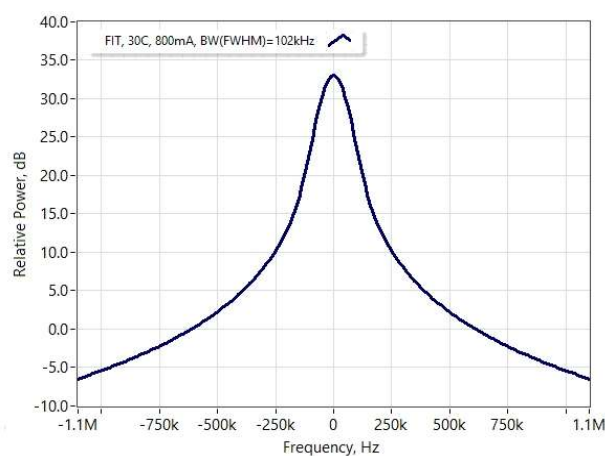
SMSR vs Current



Frequency Noise PSD



RF-line Spectrum

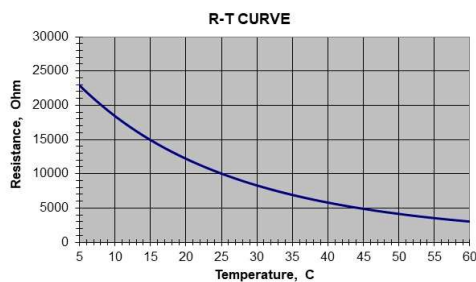


Absolute Maximum Ratings

Parameter	Min	Max	Unit
Forward Current		1200	mA
Reverse Voltage		2	V
TEC Current		3	A
TEC Voltage		4	V
Chip Operating Temperature	5	50	°C
Case Operating Temperature	0	70	°C
Monitor Photodiode Bias Voltage		5	V
Pin Soldering Temperature (max 10 sec, max case temperature 85°C)		300	°C
Storage Temperature	-40	85	°C
Fiber Band Radius	3		cm

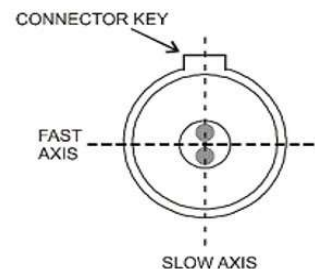
Thermistor specification

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



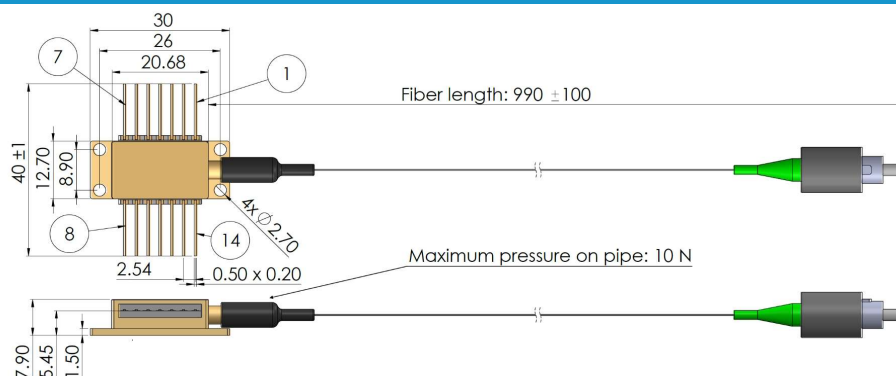
Fiber specification

Parameters	Value	Value	Unit
Fiber Type	HI1060	PM1310	
Numerical Aperture (Typical)	0.14	0.12	
Cut-off Wavelength	920±50	1200±70	nm
Mode-Field (core) Diameter	6.2±0.3 @1060nm	9.3±0.5 @1300nm	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
4	Monitor PD Cathode
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) and 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

DFB1270D53HI180MFVXX -> 180mW output power at 1270.53nm peak wavelength, HI-1060 fiber, with built-in monitor photodiode and integrated isolator

DFB1330000PM180MFVXX -> 180mW output power at 1330nm peak wavelength, PM1310 fiber, with built-in monitor photodiode and integrated isolator

DFB1330000PM180MLVX -> 180mW output power at 1330nm peak wavelength, PM1310 fiber, with fiber loose tube and built-in monitor photodiode and integrated isolator