DFB Quantum Cascade Lasers
(pulsed QCL): 6000 nm - 14000 nm

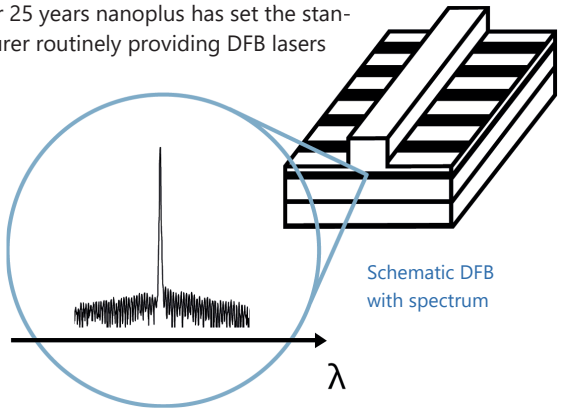
WAVELENGTH

- 760–830 nm
- 830–920 nm
- 920–1100 nm
- 1100–1300 nm
- 1300–1650 nm
- 1650–1850 nm
- 1850–2200 nm
- 2200–2600 nm
- 2600–2900 nm
- 2800–4000 nm
- 4000–4600 nm
- 4600–5300 nm
- 5300–5800 nm
- **5800–6500 nm**
- **6000–14000 nm**

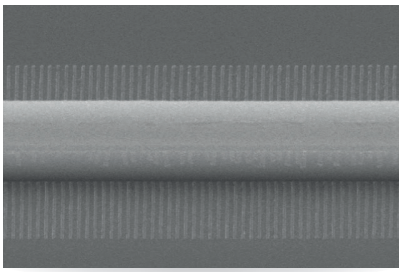
nanoplus Distributed Feedback Lasers **(DFB)** are specifically designed for high-precision gas detection using tunable diode laser absorption spectroscopy **(TDLAS)**. Our devices operate **reliably** in more than 50,000 installations worldwide. For 25 years nanoplus has set the standard for DFB laser technology and is the only manufacturer routinely providing DFB lasers at **any wavelength.**

Key features:

- MONOMODE
- PULSED
- ROOM TEMPERATURE
- MODE HOP FREE TUNING



Schematic DFB with spectrum



Overgrowth-free DFB device processing

Any **custom wavelength** is possible: You tell us what you need and we deliver it. With our patented DFB technology we design any wavelength **between 760 nm and 14 µm.**

Our excellent **spectral purity** is characterized by a large side mode suppression ratio **(SMSR)** of **> 35 dB,** giving your system a low signal to noise ratio against crossinterference.

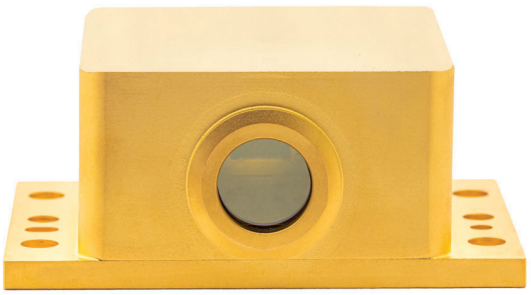
A **narrow linewidth** **below 3 MHz** guarantees ultra-precise scanning of the absorption line feature. The **high output power** of **several mW** yields a stronger signal and increases your measurement precision.

Fast and wide wavelength tuning is required for in situ systems. Most customers use a scan rate of 10 kHz and benefit from our very **large tuning coefficient.**

"Do not change your ideas, let us deliver a laser that fits your application."

We offer **various** **packaging options,** e.g. several free space housings including TEC and NTC, fiber coupling **collimation** and **custom designs.** What do you require?

If you require **custom specifications,** please contact us. Nearly 80 % of our devices are more or less customer-spec As nanoplus is a **fully vertically integrated company,** we control the entire process chain from design to packag Both nanoplus production facilities are based in **Germany.** To guarantee consistent product quality we apply a strict and **ISO certified quality management system** at all leve



High-Heatload (HHL) mount[1] incl. collimation

Our sales and R&D teams have long-standing experience in developing lasers. They will advise you in your design and realization phase as well as after-sales: **We make market leaders!**

REGISTERED COMPANY ISO 9001 14001

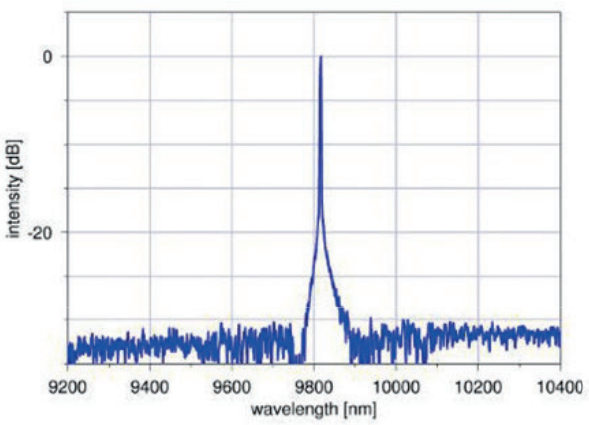
CLASS 3B LASER PRODUCT (DIN EN 60825-1) DO NOT VIEW DIRECTLY WITH OPTICAL INSTRUMENTS

ATTENTION OBSERVE PRECAUTION FOR HANDLING ELECTROSTATIC SENSITIVE DEVICES

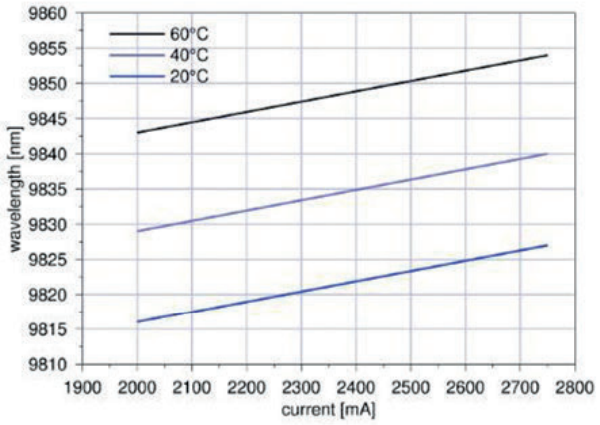
DANGER LASER RADIATION AVOID DIRECT EXPOSURE TO BEAM CLASS 3B LASER PRODUCT

Typical Specifications: 6000 nm - 14000 nm (pulsed)

This data sheet reports performance data of a **sample DFB QCL at 9800 nm in pulsed operation,** which is representative for the entire wavelength range.



Typical room temperature spectrum of a pulsed nanoplus DFB QCL at 9800 nm



Typical mode hop free tuning of a pulsed nanoplus DFB QCL at 9800 nm by current and temperature

electro-optical characteristics[1] (pulsed operation)	symbol	unit	min.	typ	max.
operating wavelength (at T_{op}, I_{op})	λ_{op}	nm		Please specify to 0.1 nm.	
optical average output power (at λ_{op})	P_{avg}	mW		10	
optical peak output power (at λ_{op})	P_{peak}	mW		200	
operating current	I_{op}	mA		2000	5000
operating voltage	V_{op}	V		15	20
threshold current	I_{th}	mA		1500	
repetition frequency	f	kHz		500	
pulse length	τ	ns		100	
duty cycle	d.c.	%		5	
side mode suppression ratio	SMSR	dB		> 30	
current tuning coefficient	C_I	nm / mA	0		0.15
temperature tuning coefficient	C_T	nm / K		0.7	
operating chip temperature	T_{op}	°C	-10	20	45
operating case temperature[2]	T_c	°C	10	20	30
storage temperature	T_S	°C	0	20	50

[1] TM-polarized [2] non-condensing

laser packaging options

High-Heatload Mount (HHL) incl. collimation

Technical drawings & accessories are available at: https://nanoplus.com/products/packaging-options

Please contact victor.perez@nanoplus.com for customized specifications, quotes and further questions.
Visit the nanoplus website for technical notes, application samples or literature referrals.

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