

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

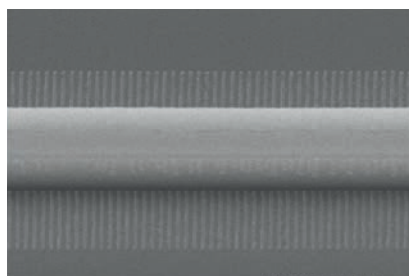
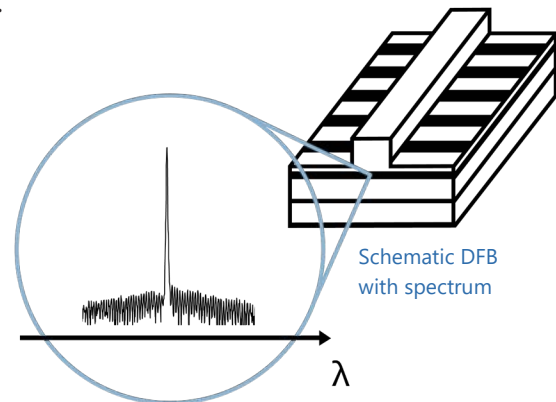
5800–6500 nm

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



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-specific. As nanoplus is a **fully vertically integrated company**, we control the entire process chain from design to packaging.

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 levels.

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!**

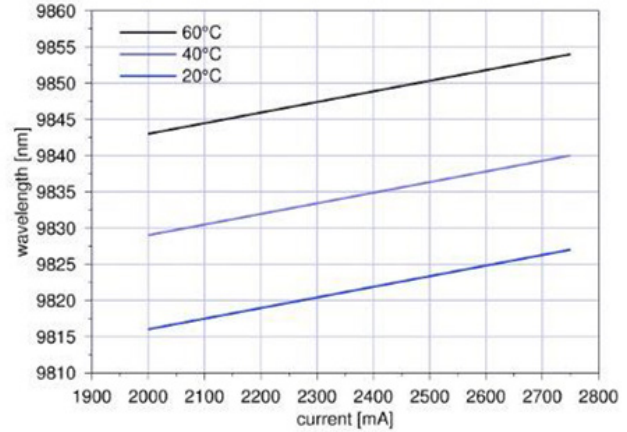
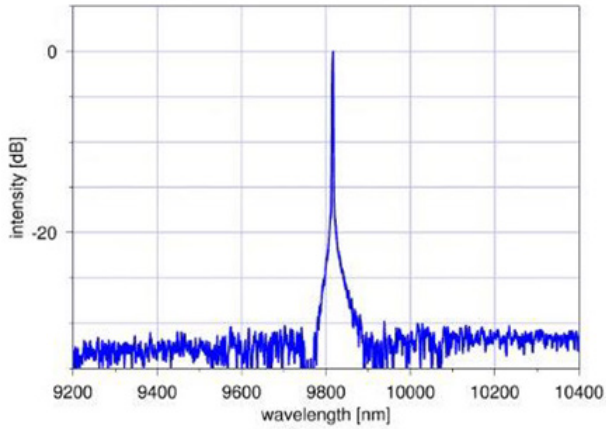


High-Heatload (HHL) mount¹ incl. collimation



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

packaging

¹ TM-polarized ² non-condensing

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Other packaging options may be discussed on request.

Technical drawings & accessories are available at: nanoplus.com/packaging

Please contact sales@nanoplus.com for customized specifications, quotes and further questions.

Visit our website for technical notes, application samples or literature referrals.

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