

# DFB Quantum Cascade Lasers (QCL): 6000 nm - 11000 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

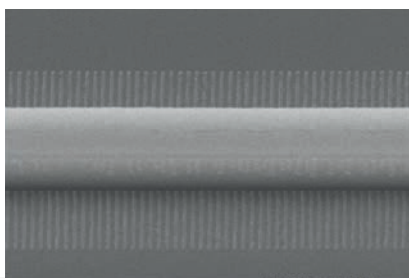
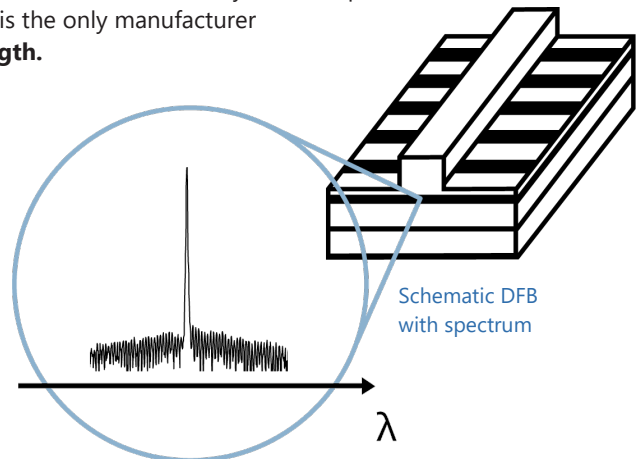
5800–6500 nm

**6000–11000 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
- CONTINUOUS WAVE
- 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!**

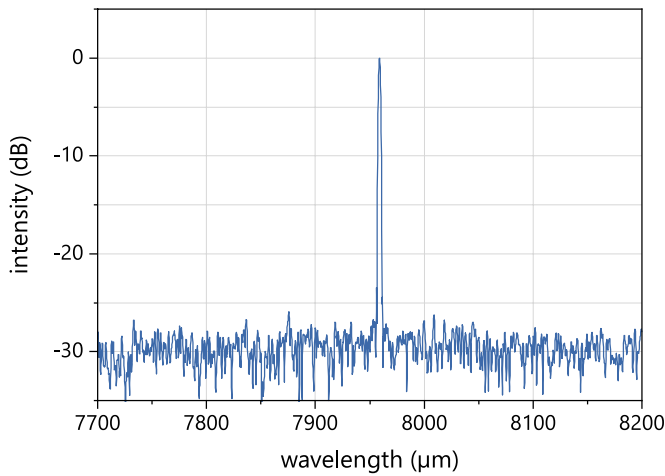


High-Heatload (HHL) mount

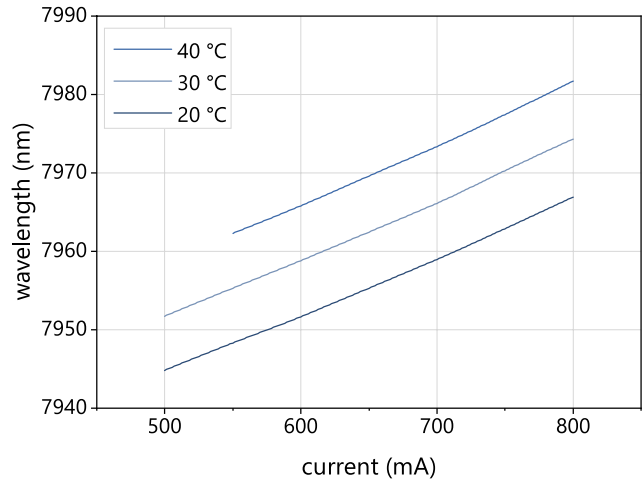


# Typical Specifications: 6000 nm - 11000 nm

This data sheet reports performance data of a **sample DFB QCL at 7970 nm**, which is representative for the entire wavelength range.



Typical room temperature cw spectrum  
of a nanoplus DFB QCL at 7970 nm



Typical mode hop free tuning of a nanoplus DFB  
QCL at 7970 nm by current and temperature

electro-optical characteristics	symbol	unit	min.	typ	max.
operating wavelength (at $T_{op}$ , $I_{op}$ )	$\lambda_{op}$	nm	Please specify to 0.1 nm.		
optical output power (at $\lambda_{op}$ )	$P_{op}$	mW	10	20	
operating current	$I_{op}$	mA		500	1500
operating voltage	$V_{op}$	V		9	15
threshold current	$I_{th}$	mA		400	
side mode suppression ratio	SMSR	dB		> 35	
current tuning coefficient	$C_I$	nm / mA	0.05	0.1	0.15
temperature tuning coefficient	$C_T$	nm / K		0.7	
operating chip temperature	$T_{op}$	°C	-10	20	45
operating case temperature*	$T_c$	°C	10	20	30
storage temperature*	$T_s$	°C	0	20	50

\* non-condensing

## laser packaging options

### High-Heatload Mount (HHL)

Other packaging options may be discussed on request.

Technical drawings & accessories will be soon available at: <https://nanoplus.com/products/packaging-options>

Please contact [sales@nanoplus.com](mailto:sales@nanoplus.com) for customized specifications, quotes and further questions.  
Visit our website for technical notes, application samples or literature referrals.