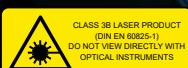


DFB Interband Cascade Lasers (ICL) 4000 nm - 4600 nm

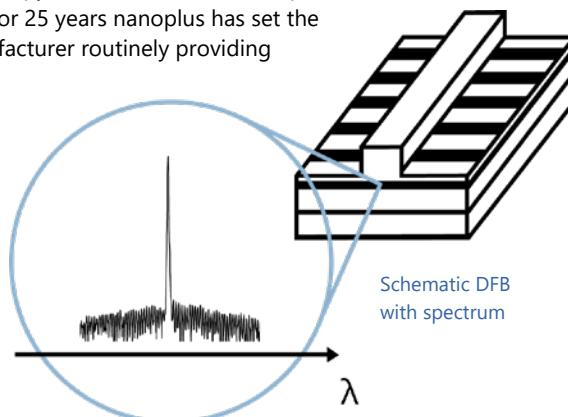
WAVELENGTH

- 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

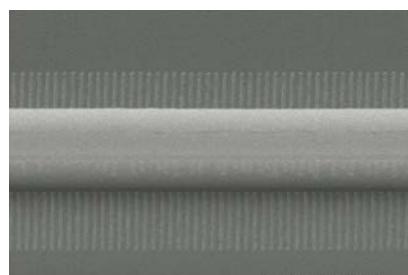


nanoplus Distributed Feedback Lasers (**DFB**) are specifically designed for high-precision gas detection using tunable diode laser absorption spectroscopy (**TDLAS**). Our devices operate **reliably** in more than 100,000 installations worldwide. For 25 years nanoplus has set the standard for DFB laser 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 μ m**.

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:

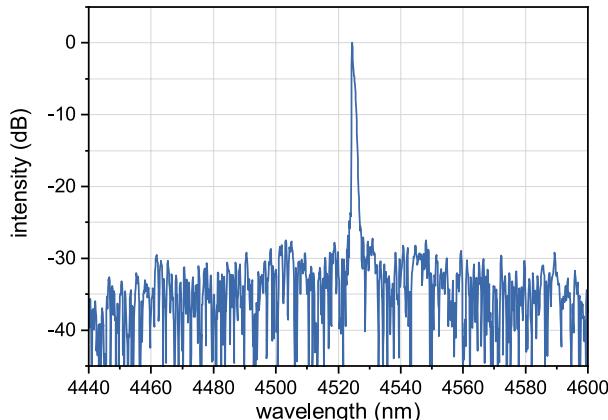
We make market leaders!



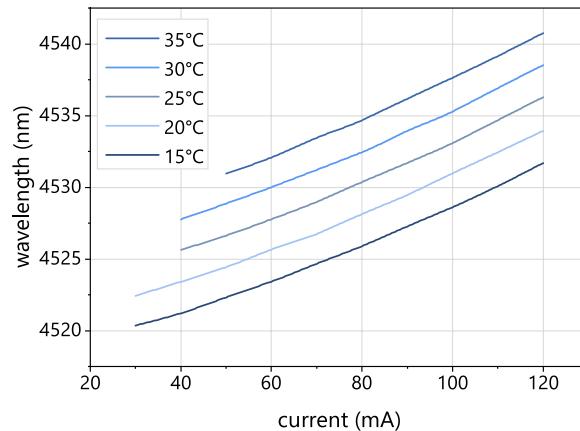
nanoplus DFB lasers on TO66, TO5, TO5.6, c-mount and SM-BTF

Typical Specifications: 4000 nm - 4600 nm

This data sheet reports performance data of a **sample DFB ICL at 4524 nm**, which is representative for the entire wavelength range. We offer enhanced specifications for 4524 nm and 4534 nm. Please refer to our [TOP Wavelengths](#) for further details: <https://nanoplus-usa.com/products/dfb-laser>.



Typical room temperature cw spectrum of a nanoplus DFB laser at 4524 nm



Typical mode hop free tuning of a nanoplus DFB laser at 4524 nm by current and temperature

electro-optical characteristics	symbol	unit	min.	typ	max.
operating wavelength (at T_{op} , I_{op})	λ_{op}	nm		Please specify to 0.1 nm.	
optical output power (at λ_{op})	P_{op}	mW		5	
operating current	I_{op}	mA			120
operating voltage	V_{op}	V		5	
threshold current	I_{th}	mA	20	40	60
side mode suppression ratio	SMSR	dB		> 35	
current tuning coefficient	C_i	nm / mA		0.12	
temperature tuning coefficient	C_T	nm / K		0.45	
beam divergency slow/fast-axis	FWHM	°		45/65	
operating chip temperature	T_{op}	°C	+10	+20	+50
operating case temperature*	T_c	°C	-20	+25	+50
storage temperature*	T_s	°C	-30	+20	+70

* non-condensing

laser packaging options

TO66 with TEC and NTC, black cap, AR coated window

Other packaging options may be discussed on request.

Technical drawings & accessories are available at: <https://www.nanoplus-usa.com/products/packaging>