

# Distributed Feedback Lasers

## 1650 nm - 1850 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

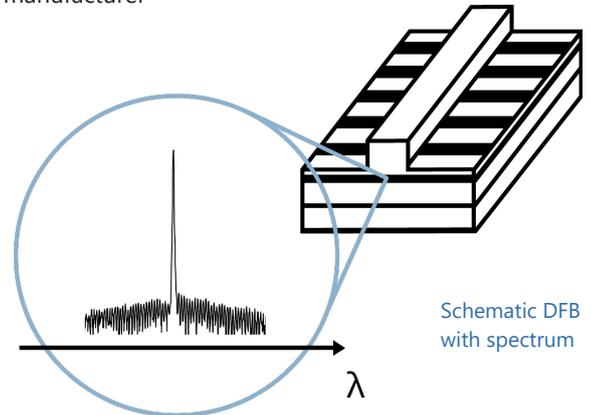
5800–6500 nm

6000–14000 nm

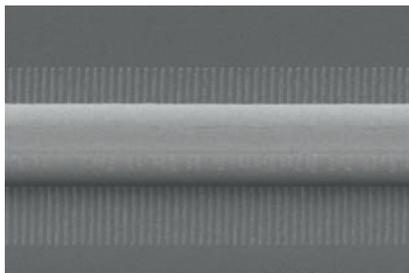
nanoplus Distributed Feedback Lasers (**DFB**) are specifically designed for high-precision gas detection using tunable diode laser absorption spectroscopy (**TDLAS**). Our devices operate **reliably** in more than 50,000 installations worldwide. For 25 years nanoplus has set the standard for DFB laser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

### Key features:

- MONOMODE
- CONTINUOUS WAVE
- 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  $\mu$ 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.

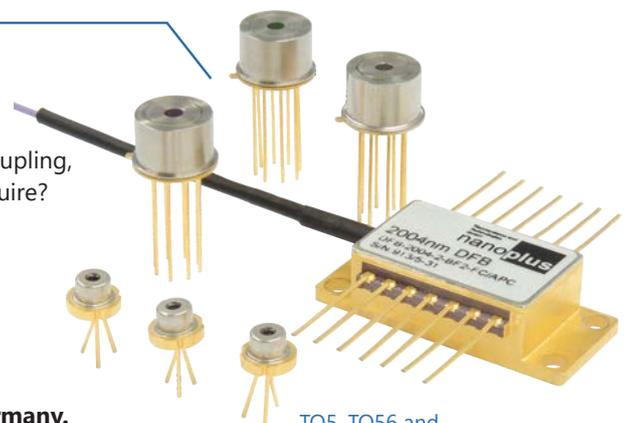
A **narrow linewidth below 3 MHz** guarantees ultra-precise scanning of the absorption line feature. The **high output power** of **several mW** yields a stronger signal and increases your measurement precision.

**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 the 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.



TO5, TO56 and fiber coupled butterfly package

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!**



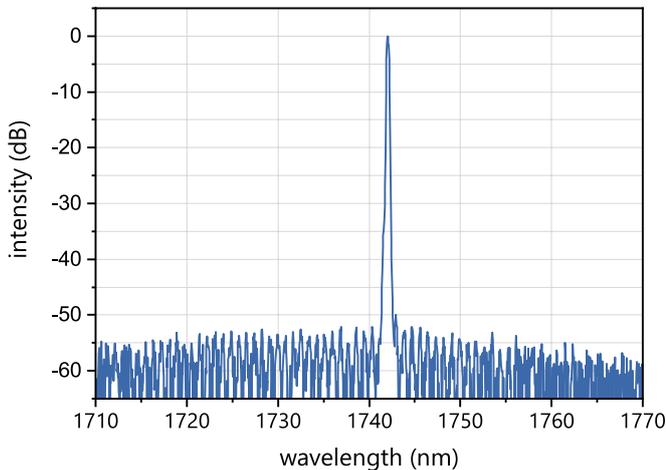
# Typical Specifications: 1650 nm - 1850 nm

This data sheet reports performance data of a **sample nanoplus DFB laser at 1742 nm**, which is representative for the entire wavelength range. We offer enhanced specifications for 1651 nm, 1654 nm and 1742 nm.

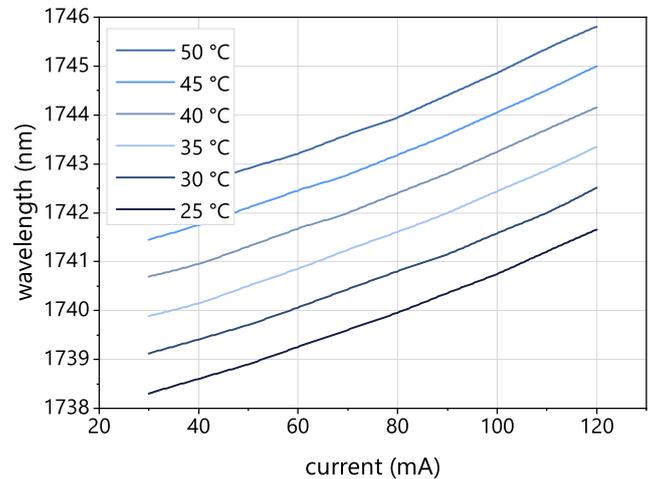
Please refer to our **TOP Wavelengths** for further details:

[nanoplus.com/DFB/1651nm1654nm](https://nanoplus.com/DFB/1651nm1654nm)

[nanoplus.com/DFB/1742nm](https://nanoplus.com/DFB/1742nm).



Typical room temperature cw spectrum  
of a nanoplus DFB laser at 1742 nm



Typical mode hop free tuning of a nanoplus  
DFB laser at 1742 nm by current and temperature

electro-optical characteristics	symbol	unit	min.	typical	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		5	
operating current	$I_{op}$	mA		70	
operating voltage	$V_{op}$	V		2	
threshold current	$I_{th}$	mA	10	35	65
side mode suppression ratio	SMSR	dB		> 35	
current tuning coefficient	$C_I$	nm / mA	0.008	0.02	0.03
temperature tuning coefficient	$C_T$	nm / K	0.07	0.10	0.14
operating chip temperature	$T_{op}$	°C	+20	+25	+50
operating case temperature*	$T_c$	°C	-20	+25	+50
storage temperature*	$T_s$	°C	-40	+20	+80

\* non-condensing

## packaging

**TO5 with TEC and NTC, black cap, AR coated window**

**TO56 without TEC or NTC, sealed, window**

**c-mount without TEC or NTC**

**butterfly package with TEC and NTC, SM or PM fiber, FC/APC connector**

**chip on carrier without TEC, with NTC**

Technical drawings & accessories are available at: [nanoplus.com/packaging](https://nanoplus.com/packaging)

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.

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