

# Distributed Feedback Lasers

## 1100 nm - 1300 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

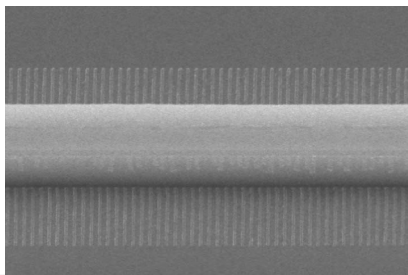
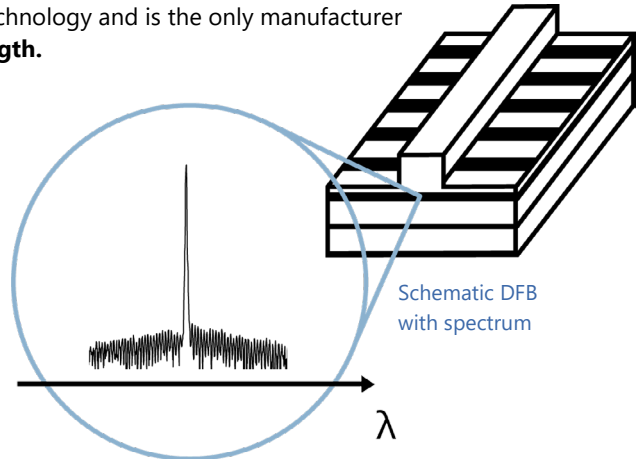
5800–6500 nm

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 30,000 installations worldwide. For more than 20 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  $\mu$ 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.

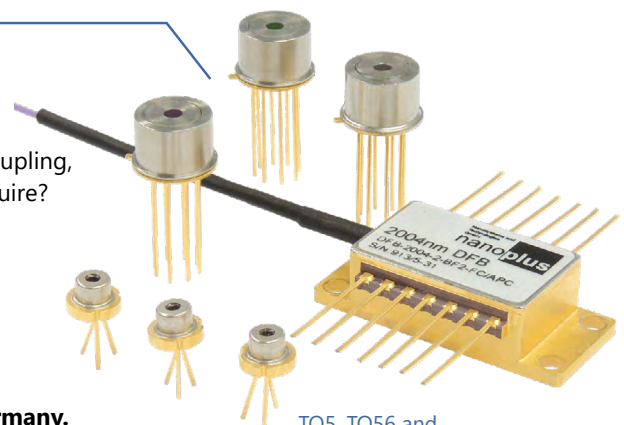
A **narrow linewidth below 3 MHz** guarantees ultra-precise scanning of the absorption line feature. The **high output power** of **several mW** yields a stronger signal and increases your measurement precision.

**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 a laser that fits your application.”**

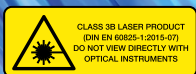
We offer **various packaging options**, e.g. several free space housings including TEC and NTC, fiber coupling, **collimation** and **custom designs**. What do you require?

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.



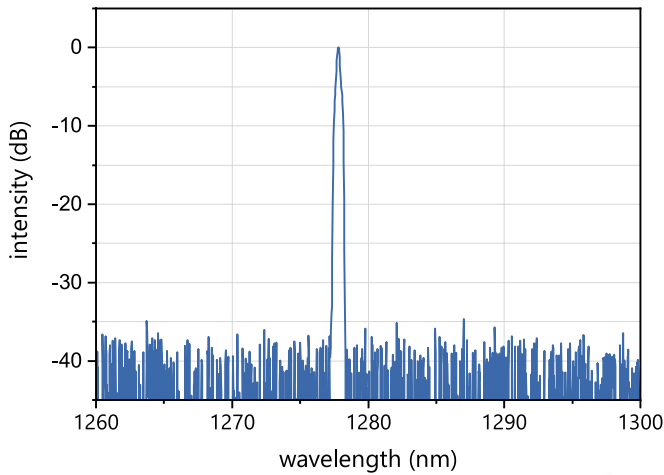
TO5, TO56 and fiber coupled butterfly package

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!**

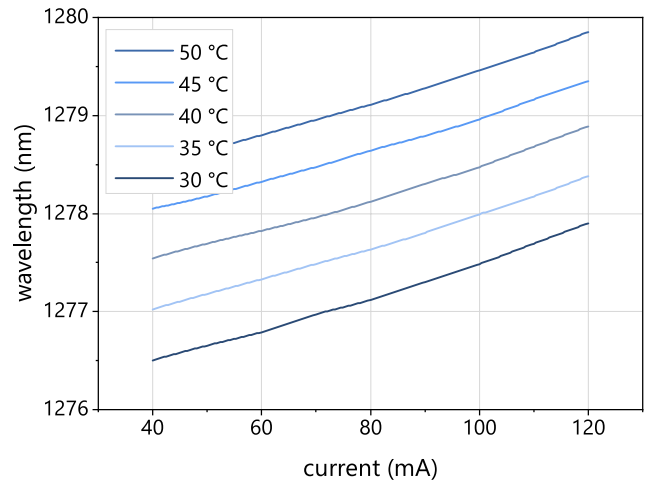


# Typical Specifications: 1100 nm - 1300 nm

This data sheet reports performance data of a **sample nanoplus DFB laser at 1178 nm**, which is representative for the entire wavelength range. We offer enhanced specifications for 1278.8 nm. Please refer to our [TOP Wavelengths](https://nanoplus.com/top-wavelengths) for further details: <https://nanoplus.com/top-wavelengths/1278nm>.



Typical room temperature cw spectrum of a nanoplus DFB laser at 1278 nm



Typical mode hop free tuning of a nanoplus DFB laser at 1278 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      |       | 20                        |      |
| operating current                              | $I_{op}$       | mA      |       | 70                        |      |
| operating voltage                              | $V_{op}$       | V       |       | 2                         |      |
| threshold current                              | $I_{th}$       | mA      | 12    | 15                        | 25   |
| side mode suppression ratio                    | SMSR           | dB      |       | > 35                      |      |
| current tuning coefficient                     | $C_I$          | nm / mA | 0.007 | 0.01                      | 0.02 |
| temperature tuning coefficient                 | $C_T$          | nm / K  | 0.07  | 0.09                      | 0.1  |
| 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

## laser packaging options

**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: <https://nanoplus.com/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.

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