

760 - 830 nm

830 - 920 nm

920 - 1100 nm

1100 - 1300 nm

1300 - 1450 nm

1450 - 1650 nm

1650 - 1850 nm

1850 - 1900 nm

1900 - 2200 nm

2200 - 2600 nm

2600 - 3000 nm

3000 - 6000 nm

DFB laser diodes from 830 nm to 920 nm

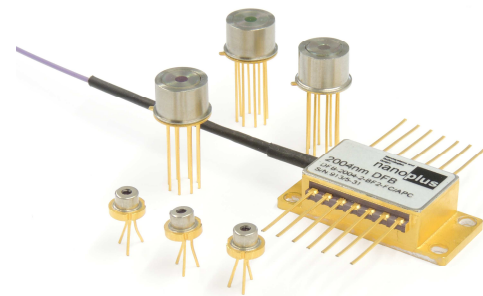
nanoplus single mode laser diodes

nanoplus is the only manufacturer world-wide routinely providing single and multi mode lasers at any wavelength from 760 to 6000 nm. At wavelengths up to 14 μm , QCLs complete nanoplus' laser portfolio. Our patented distributed feedback laser diodes deliver single mode emission with well defined optical properties enabling a wide range of applications.

nanoplus lasers operate reliably in tens of thousands of installations worldwide, including chemical and metallurgical industries, gas pipelines, power plants, medical systems, airborne and satellite applications.

key features

- ✓ very high spectral purity
- ✓ narrow linewidth
- ✓ excellent reliability
- ✓ wide variety of packaging options
- ✓ customer-specific designs available



application areas

- ✓ high performance gas sensing for process and environmental control
- ✓ precision metrology
- ✓ atomic clocks
- ✓ spectroscopy
- ✓ space technology

nanoplus lasers with excellent performance are specifically designed and characterized to fit your needs. This data sheet summarizes typical properties of nanoplus DFB lasers in the range from 830 nm to 920 nm. Overleaf data for lasers used for high performance Cs D2 spectroscopy as used for atomic clocks are given as an example.

| general ratings (T = 25 °C) | symbol | unit | typical |
|------------------------------------|------------------|------|---------|
| optical output power | P_{out} | mW | 10 |
| reverse Voltage | V_r | V | 1.8 |
| forward Current | I_f | mA | 30 |
| side mode suppression ratio (SMSR) | | dB | > 32 |

On request, lasers with specifically optimized properties, e.g. higher output power, are available.

laser packaging options

TO5.6 header with or without cap

TO5 header with TEC and NTC

butterfly housing with SM and PM fiber

For dimensions and accessories, please see www.nanoplus.com
Further packaging options available on request.

device protected by
US patent 6.671.306
US patent 6.846.689
EU patent EP0984535

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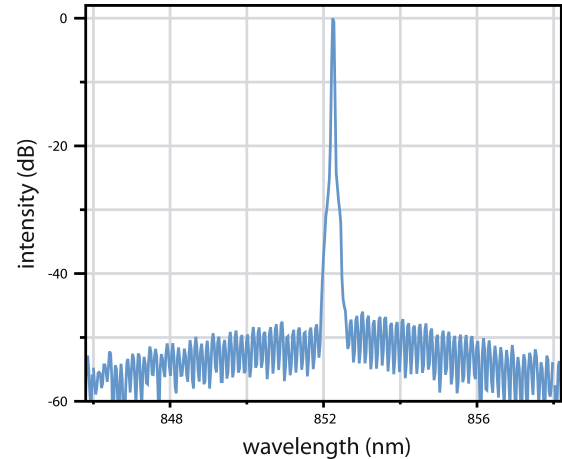


Rev. DFB852.05

nanoplus DFB laser diodes at 852 nm

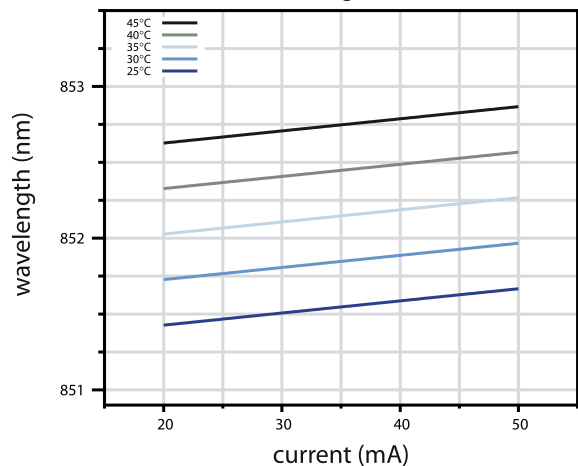
A wide variety of gas molecules exhibit characteristic absorption lines in the near infrared. Near 852 nm for example, there is the Cs D2 transition, which can be used for high precision atomic clocks. This data sheet reports performance data of laterally and longitudinally single mode nanoplus DFB lasers at this wavelength. Similar performance data are obtained in the entire wavelength range from 830 nm to 920 nm. For examples of performance data of nanoplus lasers in other wavelength ranges, please see www.nanoplus.com or contact sales@nanoplus.com

Fig. 1
Room temperature cw spectrum
of a nanoplus DFB laser diode
operating at 852 nm



In many applications, temperature and/or current variations are used to adjust the laser emission precisely to the target wavelength.

Fig. 2
Mode hop free tuning of 852 nm
based DFBs by current variation at
different temperatures



| electrooptical characteristics (T = 25 °C) | symbol | unit | min | typ | max |
|--|-----------|----------------------------------|-------|---------|-------|
| peak wavelength | λ | nm | 851 | 852 | 853 |
| threshold current | I_{th} | mA | 15 | 20 | 30 |
| slope efficiency | e | mW / mA | 0.4 | 0.7 | 0.9 |
| temperature tuning coefficient | C_T | nm / K | 0.05 | 0.10 | 0.15 |
| current tuning coefficient | C_I | nm / mA | 0.003 | 0.005 | 0.008 |
| slow axis (FWHM) | | degrees | 17 | 20 | 25 |
| fast axis (FWHM) | | degrees | 25 | 30 | 40 |
| emitting area | W x H | $\mu\text{m} \times \mu\text{m}$ | 2 x 1 | 3 x 1.5 | 4 x 2 |
| storage temperatures | T_S | °C | - 40 | + 20 | + 80 |
| operational temperature at case | T_c | °C | + 10 | + 25 | + 50 |

We will be happy to answer further questions. Please contact us at sales@nanoplus.com

