

DFB laser diodes from 1300 nm to 1450 nm

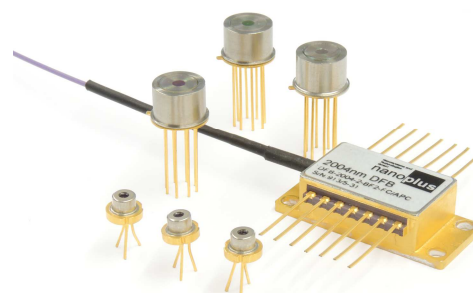
nanoplus single mode laser diodes

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 typically < 3 MHz
- ✓ 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 1300 nm to 1450 nm. Overleaf data for lasers permitting for high sensitivity water sensing in this wavelength range.

| general ratings (T = 25 °C) | symbol | unit | typical |
|------------------------------------|------------------|------|---------|
| optical output power | P_{out} | mW | 5 |
| reverse Voltage | V_r | V | 2 |
| forward Current | I_f | mA | 70 |
| 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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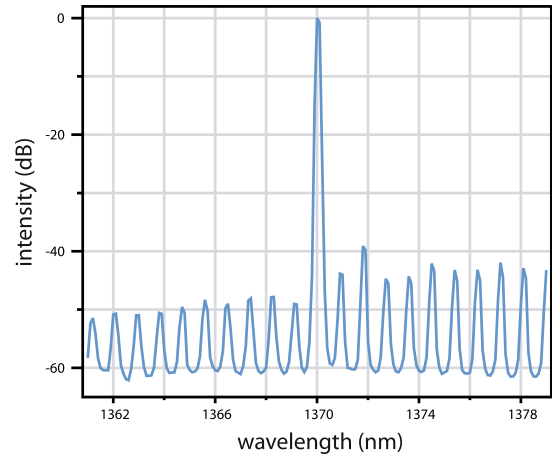
Rev. DFB1370.06

nanoplus DFB laser diodes at 1370 nm

A wide variety of gas molecules exhibit characteristic absorption lines in the near infrared. DFB lasers emitting at 1370 nm are highly suited for sensitive detection of small water vapor concentrations. For this application highly stable laterally and longitudinally single mode lasers are required.

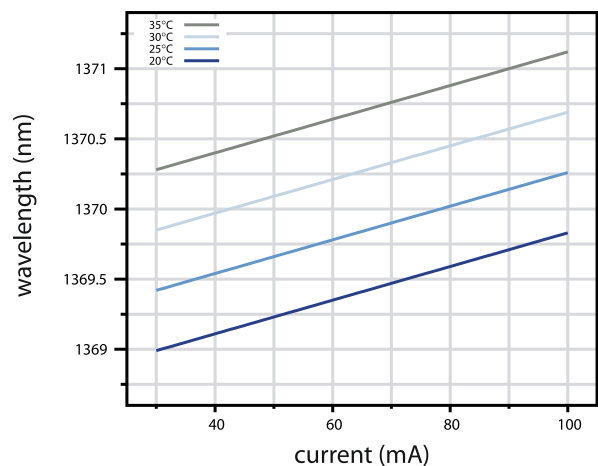
This data sheet reports performance data of nanoplus DFB lasers at this wavelength. Similar performance data are obtained in the entire wavelength range from 1300 nm to 1450 nm. For examples of performance data of nanoplus lasers in other wavelength ranges, please see www.nanoplus.com or contact sales@nanoplus.com

Fig. 1
Room temperature cw spectrum of a nanoplus DFB laser diode operating at 1370 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 1370 nm based DFBs by current variation at different temperatures



| electrooptical characteristics (T = 25 °C) | symbol | unit | min | typ | max |
|--|-----------|----------------------------------|-------|-----------|-------|
| peak wavelength | λ | nm | 1369 | 1370 | 1371 |
| threshold current | I_{th} | mA | 10 | 30 | 55 |
| slope efficiency | e | mW / mA | 0.05 | 0.15 | 0.25 |
| temperature tuning coefficient | C_T | nm / K | 0.07 | 0.10 | 0.14 |
| current tuning coefficient | C_I | nm / mA | 0.01 | 0.02 | 0.03 |
| slow axis (FWHM) | | degrees | 20 | 30 | 40 |
| fast axis (FWHM) | | degrees | 40 | 50 | 60 |
| emitting area | W x H | $\mu\text{m} \times \mu\text{m}$ | 2 x 1 | 2.5 x 1.5 | 4 x 2 |
| storage temperatures | T_s | °C | - 40 | + 20 | + 80 |
| operational temperature at case | T_c | °C | - 20 | + 25 | + 50 |

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

