

Nanosystems and  
Technologies  
GmbH



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 1650 nm to 1850 nm

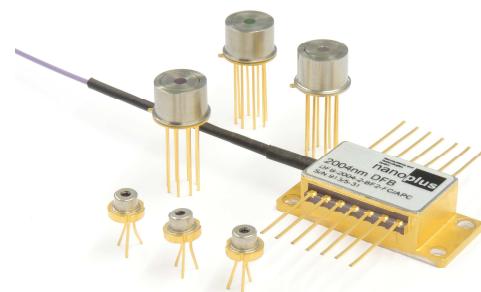
## nanoplus single mode laser diodes

nanoplus is the only manufacturer worldwide 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 1650 nm to 1850 nm range. In this wavelength range e.g. methane, nitric oxide and hydrogen chloride can be detected with high sensitivity. Overleaf data is given as an example for DFB lasers used for high sensitivity HCl sensing.

general ratings (T = 25 °C)	symbol	unit	typical
optical output power	P <sub>out</sub>	mW	5
reverse Voltage	V <sub>r</sub>	V	2
forward Current	I <sub>f</sub>	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](http://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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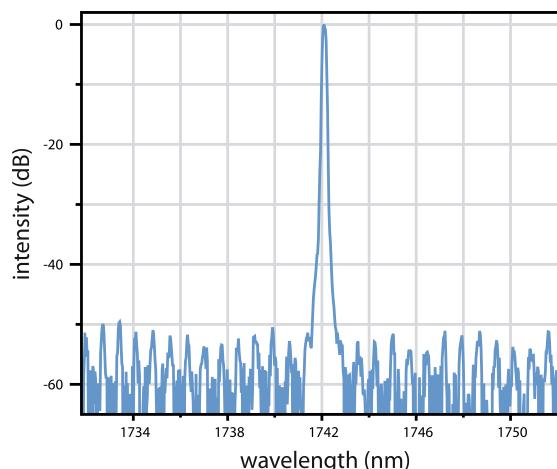
# nanoplus DFB laser diodes at 1742 nm

A wide variety of gas molecules exhibit characteristic absorption lines in the near infrared. DFB lasers emitting at 1742 nm are highly suited for sensitive detection of small HCl 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 1650 nm to 1850 nm. For examples of performance data of nanoplus lasers in other wavelength ranges, please see [www.nanoplus.com](http://www.nanoplus.com) or contact [sales@nanoplus.com](mailto:sales@nanoplus.com)

*Fig. 1*

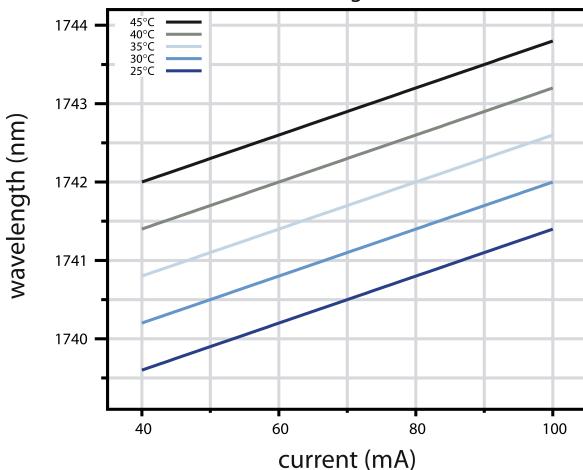
*Room temperature cw spectrum of a nanoplus DFB laser diode operating at 1742 nm*



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 1512 nm based DFBs by current variation at different temperatures*



electrooptical characteristics ( $T = 25^\circ\text{C}$ )	symbol	unit	min	typ	max
peak wavelength	$\lambda$	nm	1741	1742	1743
threshold current	$I_{\text{th}}$	mA	20	35	65
slope efficiency	$e$	mW / mA	0.05	0.10	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	$W \times H$	$\mu\text{m} \times \mu\text{m}$	2 x 1	3 x 1.5	5 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](mailto:sales@nanoplus.com)

