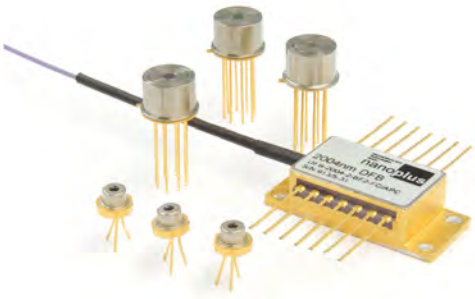
DFB laser diodes from 1850 nm to 1900 nm

Nanosystems and Technologies GmbH
nanoplus

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 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 1850 nm to 1900 nm. In this wavelength range water vapor can be detected with very high sensitivity. Overleaf data for DFB lasers used in this application is given as an example.

general ratings (T = 25 °C)	symbol	unit	typical
optical output power	P_{out}	mW	5
typical maximum operating voltage	V_{op}	V	2
forward current	I_f	mA	100
side mode suppression ratio (SMSR)		dB	> 35

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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REGISTERED COMPANY ISO 9001: 2008

nanoplus DFB laser diodes at 1877 nm

A wide variety of gas molecules exhibit characteristic absorption lines in the near infrared. DFB lasers emitting at 1877 nm are perfectly suited for sensitive detection of small H_2O 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 1850 nm to 1900 nm. For examples of performance data of nanoplus lasers in other wavelength ranges, please see www.nanoplus.com or contact sales@nanoplus.com

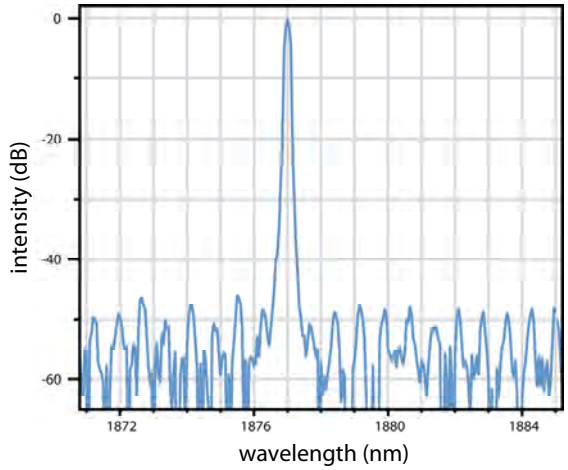

Fig. 1
Room temperature cw spectrum of a nanoplus DFB laser diode operating at 1877 nm

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

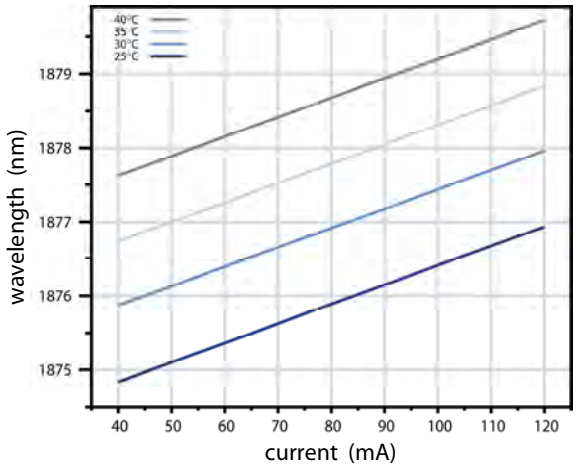

Fig. 2
Mode hop free tuning of 1877 nm based DFBs by current variation at different temperatures

electrooptical characteristics (T = 25 °C)	symbol	unit	min	typ	max
peak wavelength	λ	nm	1876	1877	1878
threshold current	I_{th}	mA	20	35	65
temperature tuning coefficient	C_T	nm / K	0.16	0.20	0.23
current tuning coefficient	C_I	nm / mA	0.015	0.020	0.035
slow axis (FWHM)		degrees	20	30	40
fast axis (FWHM)		degrees	40	50	60
emitting area	W x H	µm x µm	3 x 1	4 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

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