

# Mid-Infrared LED

## (MIR LED): 4000 nm - 5300 nm

### WAVELENGTH

2800–4000 nm

4000–5300 nm

5300–6500 nm

### TOP WAVELENGTH

3400 nm

4300 nm

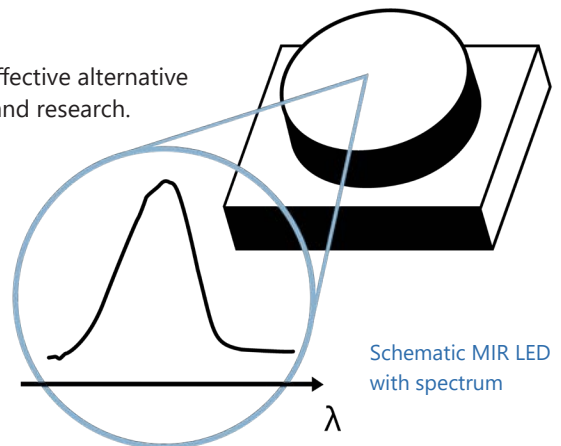
5200 nm

nanoplus Mid-Infrared LEDs (**MIR LED**) are specially designed and characterized to fit your requirements. For 25 years, nanoplus has been manufacturing Distributed Feed-back and Fabry-Pérot Lasers with excellent performance. Our devices operate **reliably** in more than 50,000 installations worldwide.

nanoplus **MIR LED** are a broadband, incoherent and cost-effective alternative to lasers for e.g. many gas sensing applications in industry and research.

### Key features:

- LOW POWER CONSUMPTION
- CW OPERATION
- BROADBAND
- INCOHERENT



Schematic MIR LED  
with spectrum

Any **custom wavelength** is possible: You tell us what you need and we deliver it. With our outstanding technology we design any wavelength **between 2800 nm and 6500 nm** within a spectral window where your desired emission wavelength reaches at least 95% of the maximum spectral intensity.

nanoplus MIR LED are the perfect light source **for mobile analyzers**, as they **consume little power**.

You can use our MIR LED in **true continuous wave operation** at **room temperature**.

The MIR LED's **output power** of **> 1 mW** leads to a strong signal and increases your measurement precision. Higher output power is available upon request.

We offer **various packaging options**, with or without TEC. You tell us what you need!

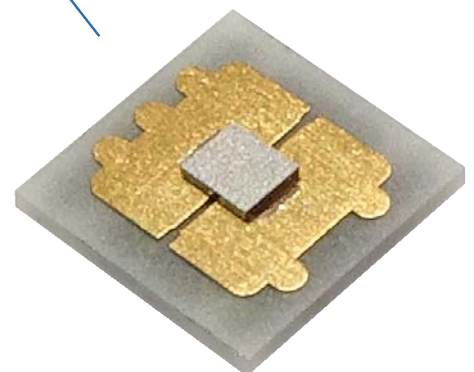
**Long-term stability** is what our customers really want! Even in **harsh environments** nanoplus devices perform excellently – low maintenance warranted.

**"Do not change your ideas, let us deliver the MIR LED that fits your application."**

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 whole 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.

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!**

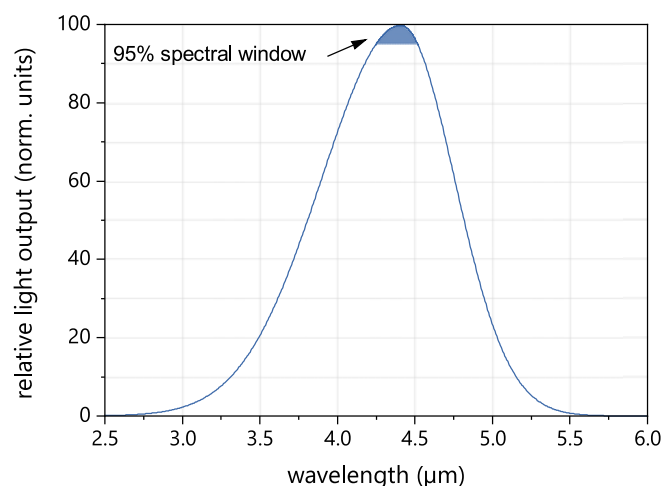


nanoplus MIR LED  
on ceramic submount

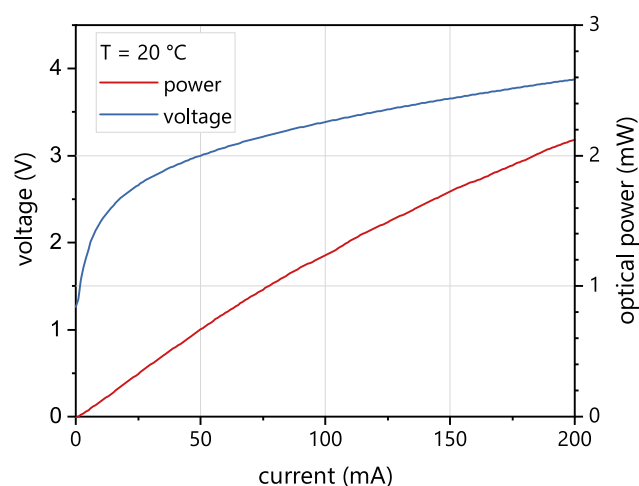


# Typical Specifications: 4000 nm - 5300 nm

This data sheet reports performance data of a **sample MIR LED at 4.3  $\mu\text{m}$** , which is representative for the entire wavelength range.



Typical room temperature cw spectrum  
of a nanoplus MIR LED at 4.3  $\mu\text{m}$



Typical PI and VI curve  
of a nanoplus MIR LED at 4.3  $\mu\text{m}$

| electro-optical characteristics                               | symbol           | unit          | min. | typical | max. |
|---------------------------------------------------------------|------------------|---------------|------|---------|------|
| operating wavelength (at $T_{op}$ , $I_{op}$ ) <sup>1,2</sup> | $\lambda_{op}$   | $\mu\text{m}$ | 4.11 | 4.3     | 4.46 |
| spectral bandwidth (FWHM)                                     | $\Delta \lambda$ | $\mu\text{m}$ |      | 1.0     |      |
| optical cw output power (at $\lambda_{op}$ ) <sup>3</sup>     | $P_{op}$         | mW            | 1    | 1.5     |      |
| operating current                                             | $I_{op}$         | mA            | 150  | 200     |      |
| operating voltage                                             | $V_{op}$         | V             |      | 4       |      |
| operating case temperature <sup>4</sup>                       | $T_{op}$         | °C            | -10  |         | 50   |
| storage temperature <sup>4</sup>                              | $T_s$            | °C            | -10  |         | 70   |

<sup>1</sup> ~ 20 nm peak-change per 10°C temperature-change

<sup>2</sup> spectral window defined as the range where the emission intensity reaches min. 95 % of max. spectral intensity

<sup>3</sup> power dissipation 1W [heatsink required]

<sup>4</sup> non condensing

**Pulsed operation for low power consumption is possible.  
Other operating temperatures are available on request.**

## packaging

ceramic submount

PCB mounted

Other packaging options may be discussed on request.

Technical drawings & accessories are available at: [nanoplus.com/packaging](https://nanoplus.com/packaging)

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.