

# Infrared Emitter

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## LED and VCSEL



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## Who we are ...

For almost 70 years, we have been one of the leading design-in distributors for electronic components and systems. At five locations in Germany with a total of 65 employees.



Headquarters:  
Weisdorf



Branch Office:  
Ahrensburg



Offices:  
Berlin, Dortmund, Munich



## ... and what we do

As a traditional and family-owned company, we work exclusively with renowned and leading manufacturers. Our focus is on individual consulting as well as solutions and custom-fit products for our customers. Because only when our customers are 100% satisfied we have done a good job.



You can also find us here



# Infrared

## LED and VCSEL

Neumüller offers you a wide range of high, mid and low power LEDs and VCSELs for applications in the near infrared spectrum from 800 nm to 950 nm from numerous established manufacturers. A large number of different designs (THT, SMD, TO, Sidelooker), radiation angles (symmetric: 6°...150°; asymmetric: 8°x6.8°...150°x100°) and radiation powers (up to 3,400 mW) are available. For applications with particularly harsh conditions, components with an extended temperature range from -65° C to +125° C and even certified to the High-Reliability Standard are available.

Thus, you will always find exactly the right infrared emitter for a wide range of applications. For special requirements, customer-specific combinations of wavelength, housing, beam angle and power can be realized at short notice.

### Typical Housing

#### Front- and Back view



## Customized development

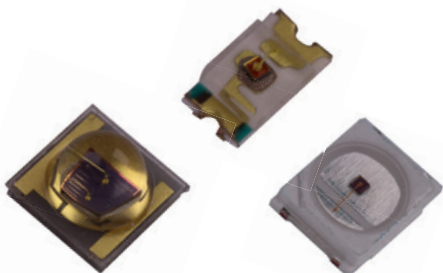
### According to your requirements

If you cannot find the right product, we will work with you to develop the right LED or VCSEL for your application:  
 package | beam angle | wavelength | power.

# Infrared LEDs

**leaded | Sidelooker | hermetically encapsulated | SMD housing**

Large selection of IR LEDs (infrared LEDs). Our product selection is trend-setting for the infrared optoelectronic sector. We supply powerful and durable IR LEDs from 810 nm to 940 nm in plastic or metal housings. For applications with extremely harsh conditions, the components with an operating temperature range from -65° C to +125° C are suitable.



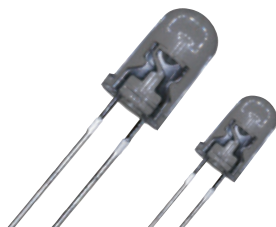
## IR-LED | SMD housing

- Packages: 4333, 3535, 2720, 2835, 0805, 0603, K1
- Extended temperature range optional, e.g. -40° C...+100° C
- High pulse handling capability, depending on type, up to max. 2 A
- Asymmetrical beam angles available
- High radiant power up to 2700 mW/sr
- Low-, Mid- and High-Power LEDs from 40 mW to 5 W

Wavelength	Forward current	Symmetrical beam angle											
		20°	30°	45°	60°	70°	80°	90°	100°	120°	130°	140°	150°
810...890 nm	20...1500 mA	✓	✓	✓	✓		✓	✓	✓	✓	✓		✓
935...940 nm	20...1500 mA	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓

Wavelength	Forward current	Asymmetrical beam angle								
		8°x6,8°*	20°x17°*	43°x25°	48°x30°	85°x40°	100°x60°	95°x55°	130°x85°	150°x100°
810...890 nm	500...1500 mA	✓	✓	✓	✓	✓	✓	✓	✓	✓
935...940 nm	500...1500 mA	✓	✓	✓	✓	✓	✓	✓	✓	✓

\*With additional lens



## IR-LED | leaded

- Diameter: 3 mm | 5 mm
- High pulse handling capability, depending on type, up to max. 5 A
- Extended temperature range optional, e.g. -40° C...+100° C

Wavelength	Forward current	Beam angle									
		10°	15°	18°	20°	25°	30°	40°	50°	60°	90°
850...890 nm	20...150 mA	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
935...940 nm	20...50 mA		✓	✓	✓		✓	✓	✓	✓	✓



The right product is not shown? This is just a selection from our portfolio!

## IR-LED | hermetically sealed

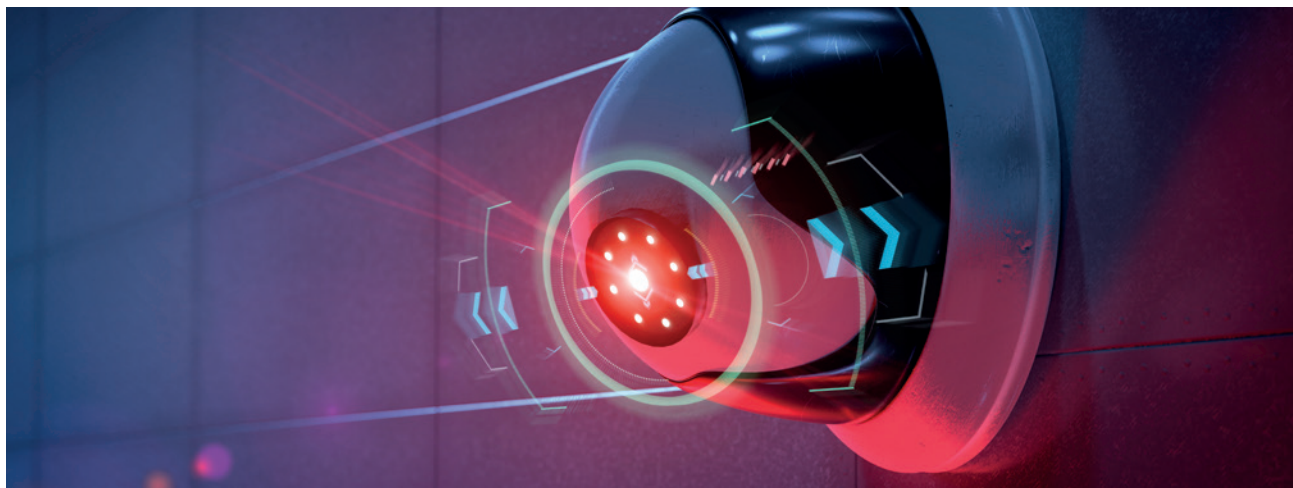
- Packages: Pill, TO-46, Pig-Tale
- Extended temperature range optional, e.g.  $-65^{\circ}\text{C} \dots +125^{\circ}\text{C}$
- High pulse handling capability, depending on type, up to max. 10 A
- High Reliability versions available (MIL-PRF-19500)

Wavelength	Forward current	Beam angle				
		10°	18°	24°	50°	90°
850...890 nm	50...100 mA	✓	✓	✓	✓	✓
935...940 nm	20...100 mA		✓	✓	✓	

## IR-LED | Sidelooker | sealed

- Extended temperature range optional, e.g.  $-40^{\circ}\text{C} \dots +100^{\circ}\text{C}$
- High pulse handling capability, depending on type, up to max. 3 A
- For space-saving applications

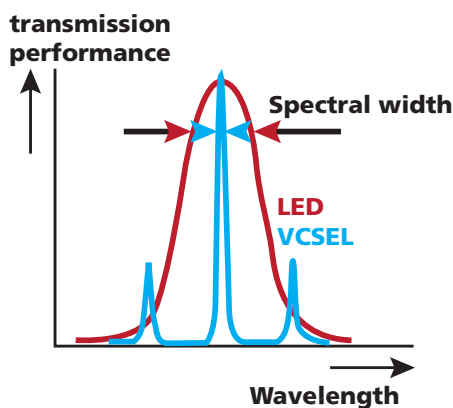
Wavelength	Forward current	Beam angle					
		16°	18°	30°	36°	40°	104°
850...890 nm	50 mA	✓	✓		✓		✓
935...940 nm	50...100 mA			✓		✓	



# Infrared VCSEL

**Sidelooker | hermetically sealed | SMD housing**

Neumüller offers you a wide range of VCSELs for applications in the near infrared spectrum from 850 nm to 940 nm from numerous established manufacturers.



The classic area of application for VCSELs is in the field of high-speed data communication due to their outstanding properties in terms of light output and radiation characteristics. Meanwhile, VCSELs are also increasingly used in the field of IR area illumination for e.g. camera systems, time-of-flight imaging and industrial sensors.

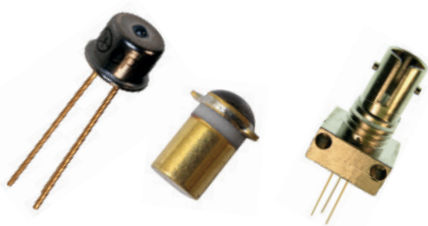
We offer VCSELs as single components or, if desired, in fiber-optic-receptacle.



## IR-VCSEL | Sidelooker

- Low power consumption for low-power applications
- Flat design allows secondary optics
- Extremely high temperature stability

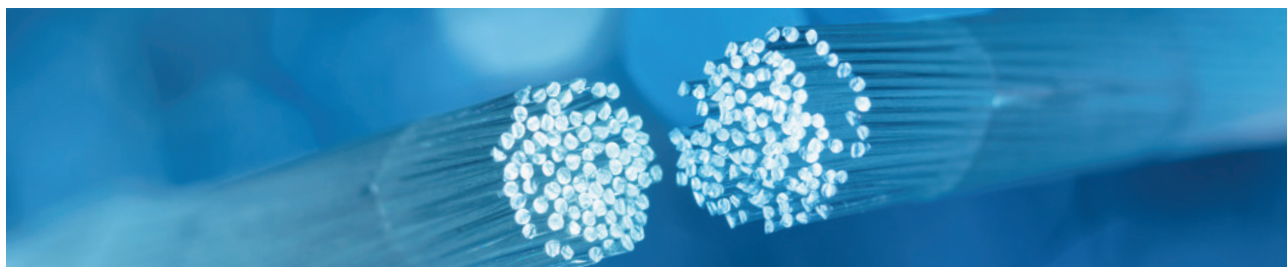
Wavelength	Forward current	Beam angle		Applications
		6°	20°	
850 nm	12mA	✓	✓	Sensors   Optical encoders   Light barriers



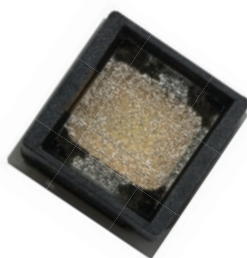
## IR-VCSEL | hermetically sealed

- Packages: Pill, TO-18, TO-46, ST TOSA
- For optical high speed data communication up to 14 Gbps
- Suitable for multimode fiber
- Extremely high temperature stability

Wavelength	Forward current	Beam angle		Applications
		6°	20°	
850 nm	12mA	✓	✓	Gigabit Ethernet   Sensors   Optical encoders   Light barriers



The right product is not shown? This is just a selection from our portfolio!



## IR-VCSEL | SMD Housing

- Packages: 3030, 3220, 3222, 3532, 3535
- Optional with "Eye Safety" function
- High pulse handling capability, depending on type, up to max. 3 A
- Asymmetrical radiation angles
- High radiant power up to 3,400 mW/sr
- Extremely low rise and fall times ( $t_r/t_f < 0.9\text{ns}$ )

Wavelength	Forward current	Beam angle						
		60° x 45°	72° x 55°	86° x 68°	90° x 69°	110° x 85°	110° x 90°	120° x 90°
850 nm	1,2...2,7A	✓	✓	✓	✓	✓	✓	
940 nm	1,2...4,5A	✓	✓	✓	✓	✓	✓	✓

## Laser class and eye safety



Below a wavelength of 1,400 nm, optical radiation is not absorbed by the cornea, so that far-reaching damage can occur here. The division of laser devices and systems is based on the maximum occurring power and energy densities. The duration of exposure and the wavelength are also decisive. Lasers are divided into equipment classes according to their danger to humans. The classification according to DIN EN 60825-1 is carried out by the manufacturer. For this reason, eye safety must always be taken into account when developing IR lighting.

For area illumination, the laser beam of the VCSEL is scattered via a diffuser, thus distributing the power over a large area. If the diffuser is damaged, this can have an influence on eye safety, depending on the radiation power. To ensure eye safety, VCSELs are optionally available with an integrated protection function that detects damage to the diffuser and shuts down the VCSEL in case of a failure.



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