

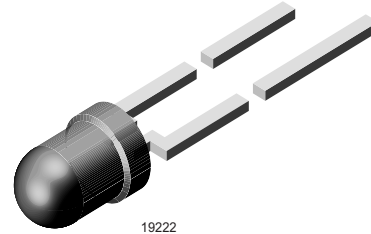
## High Efficiency Blue LED, $\varnothing$ 3 mm Tinted Non-Diffused Package

### Description

This device has been redesigned in 1998 replacing SiC by GaN technology to meet the increasing demand for high efficiency blue LEDs.

It is housed in a 3 mm tinted non-diffused plastic package.

All packing units are categorized in luminous intensity groups. That allows users to assemble LEDs with uniform appearance.



### Features

- GaN on SiC technology
- Standard  $\varnothing$  3 mm (T-1) package
- Small mechanical tolerances
- Medium viewing angle
- Very high intensity
- Luminous intensity categorized
- ESD class 1
- Lead-free device

### Applications

- Status lights
- OFF / ON indicator
- Background illumination
- Readout lights
- Maintenance lights
- Legend light

### Parts Table

Part	Color, Luminous Intensity	Angle of Half Intensity ( $\pm\phi$ )	Technology
TLHB4200	Blue, $I_V > 25$ mcd	22 °	GaN on SiC
TLHB4201	Blue, $I_V = (40 \text{ to } 132)$ mcd	22 °	GaN on SiC

### Absolute Maximum Ratings

$T_{amb} = 25$  °C, unless otherwise specified

#### TLHB420.

Parameter	Test condition	Symbol	Value	Unit
Reverse voltage		$V_R$	5	V
DC Forward current	$T_{amb} \leq 60$ °C	$I_F$	20	mA
Surge forward current	$t_p \leq 10$ $\mu$ s	$I_{FSM}$	0.1	A
Power dissipation	$T_{amb} \leq 60$ °C	$P_V$	100	mW
Junction temperature		$T_j$	100	°C
Operating temperature range		$T_{amb}$	- 40 to + 100	°C
Storage temperature range		$T_{stg}$	- 40 to + 100	°C
Soldering temperature	$t \leq 5$ s, 2 mm from body	$T_{sd}$	260	°C
Thermal resistance junction/ambient		$R_{thJA}$	400	K/W

### Optical and Electrical Characteristics

$T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified

#### Blue

Parameter	Test condition	Part	Symbol	Min	Typ.	Max	Unit
Luminous intensity <sup>1)</sup>	$I_F = 20\text{ mA}$	TLHB4200	$I_V$	25	50		mcd
		TLHB4201	$I_V$	40		132	mcd
Dominant wavelength	$I_F = 10\text{ mA}$		$\lambda_d$		466		nm
Peak wavelength	$I_F = 10\text{ mA}$		$\lambda_p$		428		nm
Angle of half intensity	$I_F = 10\text{ mA}$		$\phi$		$\pm 22$		deg
Forward voltage	$I_F = 20\text{ mA}$		$V_F$		3.9	4.5	V
Reverse voltage	$I_R = 10\text{ }\mu\text{A}$		$V_R$	5			V

<sup>1)</sup> in one Packing Unit  $I_{Vmin}/I_{Vmax} \leq 0.5$

#### Typical Characteristics ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ unless otherwise specified)

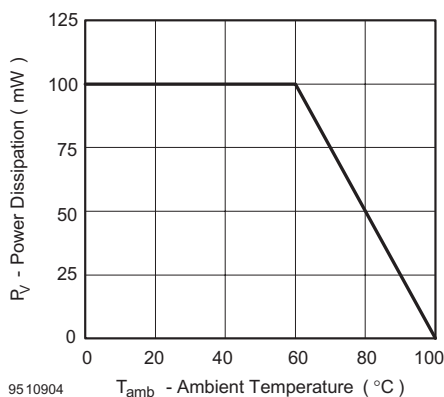


Figure 1. Power Dissipation vs. Ambient Temperature

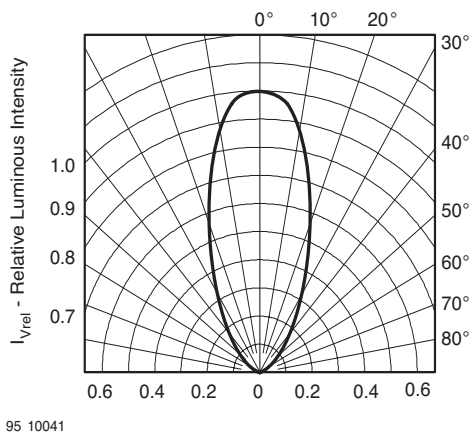


Figure 3. Rel. Luminous Intensity vs. Angular Displacement

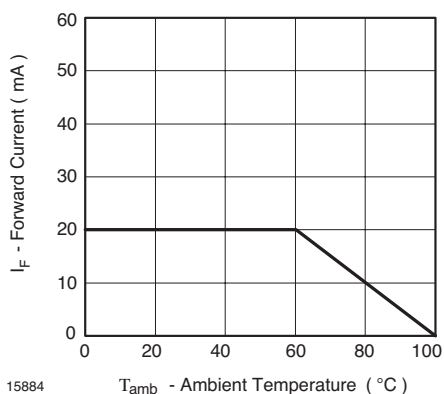


Figure 2. Forward Current vs. Ambient Temperature for InGaN

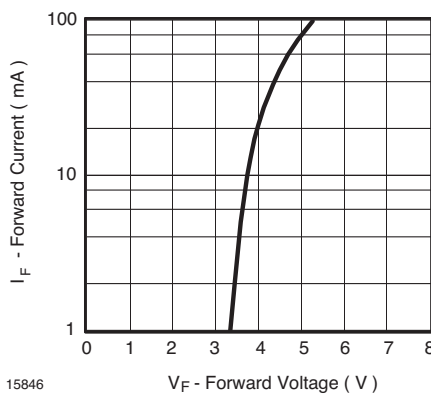


Figure 4. Forward Current vs. Forward Voltage

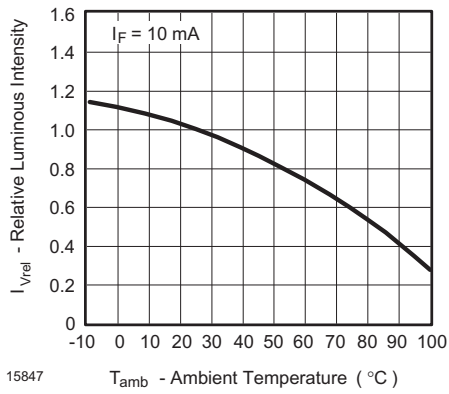


Figure 5. Rel. Luminous Flux vs. Ambient Temperature

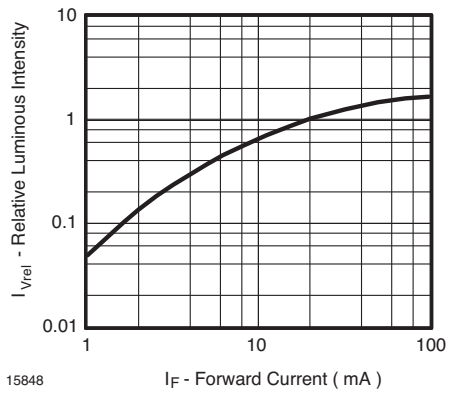


Figure 6. Relative Luminous Flux vs. Forward Current

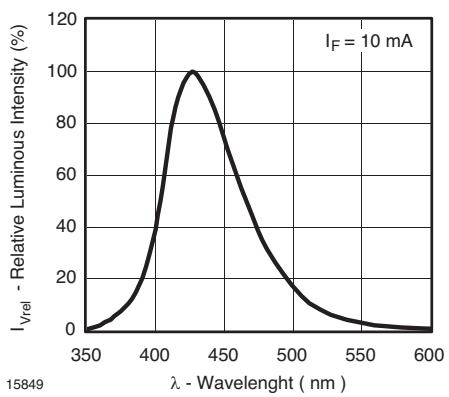
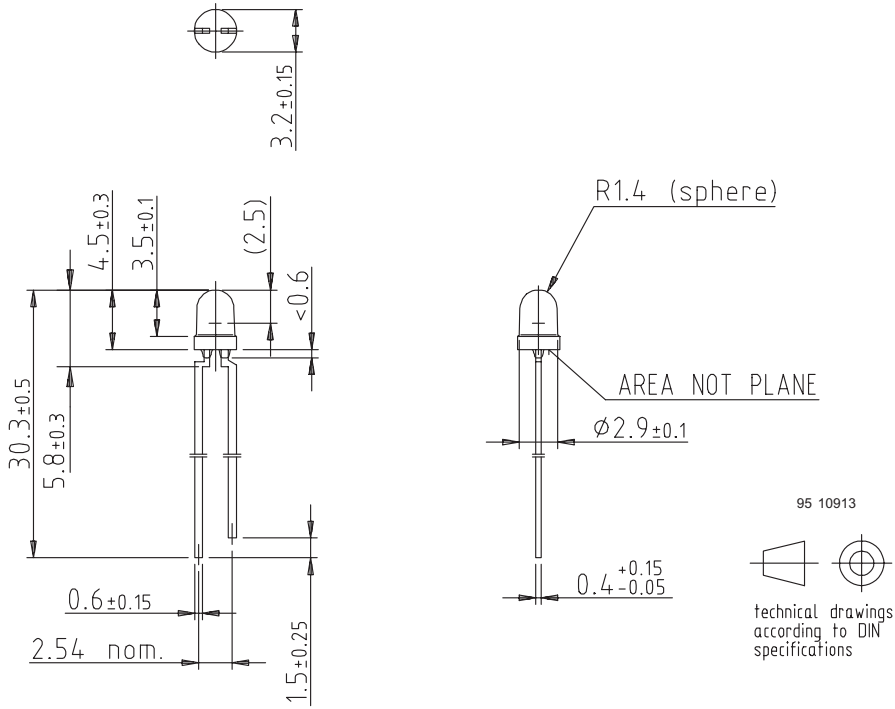


Figure 7. Relative Intensity vs. Wavelength

## Package Dimensions in mm



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2. Regularly and continuously improve the performance of our products, processes, distribution and operating systems with respect to their impact on the health and safety of our employees and the public, as well as their impact on the environment.

It is particular concern to control or eliminate releases of those substances into the atmosphere which are known as ozone depleting substances (ODSs).

The Montreal Protocol (1987) and its London Amendments (1990) intend to severely restrict the use of ODSs and forbid their use within the next ten years. Various national and international initiatives are pressing for an earlier ban on these substances.

**Vishay Semiconductor GmbH** has been able to use its policy of continuous improvements to eliminate the use of ODSs listed in the following documents.

1. Annex A, B and list of transitional substances of the Montreal Protocol and the London Amendments respectively
2. Class I and II ozone depleting substances in the Clean Air Act Amendments of 1990 by the Environmental Protection Agency (EPA) in the USA
3. Council Decision 88/540/EEC and 91/690/EEC Annex A, B and C (transitional substances) respectively.

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