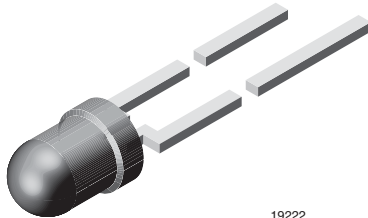


## High Efficiency Blue LED, Ø 3 mm Tinted Diffused Package



19222

### 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 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 Ø 3 mm (T-1) package
- Small mechanical tolerances
- Wide viewing angle
- Very high intensity
- Luminous intensity categorized
- ESD class 1
- Compliant to RoHS Directive 2002/95/EC and in accordance to WEEE 2002/96/EC



### APPLICATIONS

- Status lights
- Off/on indicator
- Background illumination
- Readout lights
- Maintenance lights
- Legend light

### PRODUCT GROUP AND PACKAGE DATA

- Product group: LED
- Package: 3 mm
- Product series: standard
- Angle of half intensity:  $\pm 30^\circ$

### PARTS TABLE

PART	COLOR, LUMINOUS INTENSITY	TECHNOLOGY
TLHB4400	Blue, $I_V > 6.3$ mcd	GaN on SiC

### ABSOLUTE MAXIMUM RATINGS <sup>1)</sup> TLHB4400

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

Note:

<sup>1)</sup>  $T_{amb} = 25^\circ\text{C}$ , unless otherwise specified

\*\* Please see document "Vishay Material Category Policy": [www.vishay.com/doc?99902](http://www.vishay.com/doc?99902)

OPTICAL AND ELECTRICAL CHARACTERISTICS <sup>1)</sup> TLHB4400, BLUE						
PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Luminous intensity <sup>2)</sup>	$I_F = 20 \text{ mA}$	$I_V$	6.3	15		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	$I_F = 10 \text{ mA}$	$\varphi$		$\pm 30$		deg
Forward voltage	$I_F = 20 \text{ mA}$	$V_F$		3.9	4.5	V
Reverse voltage	$I_R = 10 \mu\text{A}$	$V_R$	5			V

Note:

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

2) In one packing unit  $I_{Vmax}/I_{Vmin} \leq 0.5$

LUMINOUS INTENSITY CLASSIFICATION		
GROUP STANDARD	LIGHT INTENSITY (mcd)	
	MIN.	MAX.
Q	6.3	12.5
R	10	20
S	16	32
T	25	50
U	40	80
V	63	125
W	100	200
X	130	260
Y	180	360
Z	240	480

Note:

Luminous intensity is tested at a current pulse duration of 25 ms.

The above type numbers represent the order groups which include only a few brightness groups. Only one group will be shipped on each bag (there will be no mixing of two groups on each bag).

In order to ensure availability, single brightness groups will not be orderable.

In a similar manner for colors where wavelength groups are measured and binned, single wavelength groups will be shipped on any one bag.

In order to ensure availability, single wavelength groups will not be orderable.

## TYPICAL CHARACTERISTICS ( $T_{amb} = 25 \text{ }^\circ\text{C}$ , unless otherwise specified)

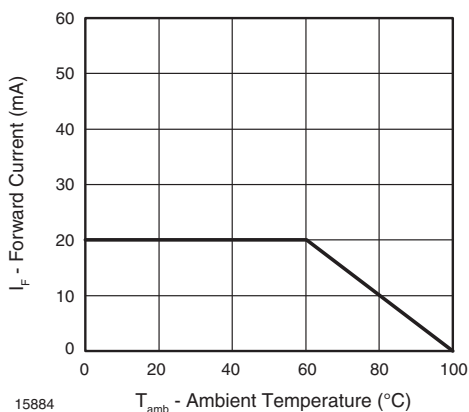


Figure 1. Forward Current vs. Ambient Temperature for InGaN

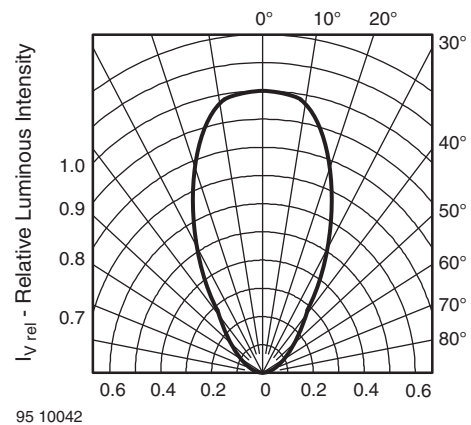


Figure 2. Rel. Luminous Intensity vs. Angular Displacement

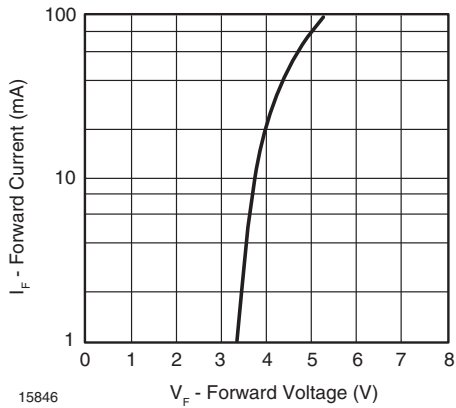


Figure 3. Forward Current vs. Forward Voltage

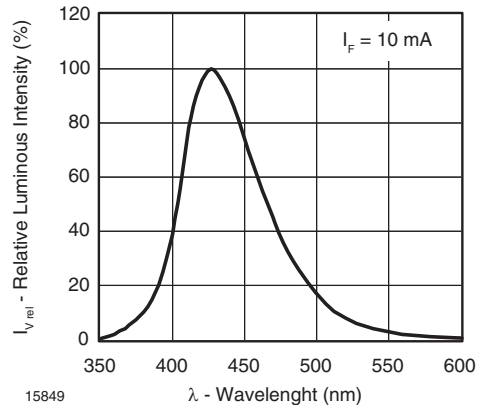


Figure 6. Relative Intensity vs. Wavelength

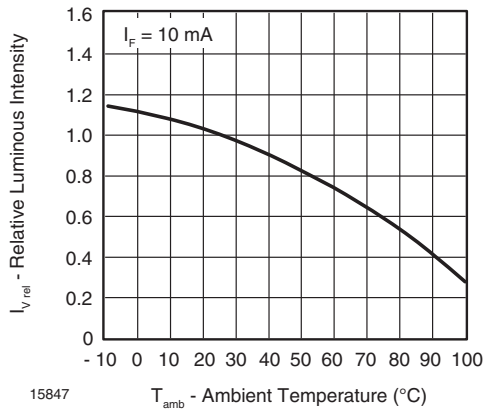


Figure 4. Rel. Luminous Flux vs. Ambient Temperature

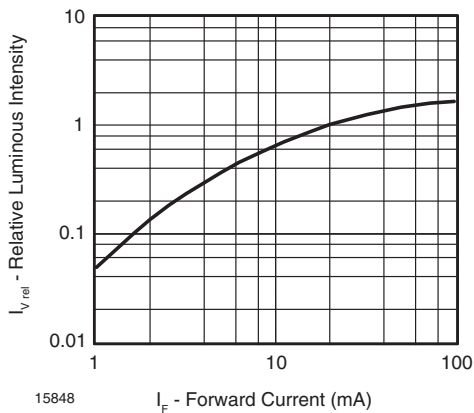
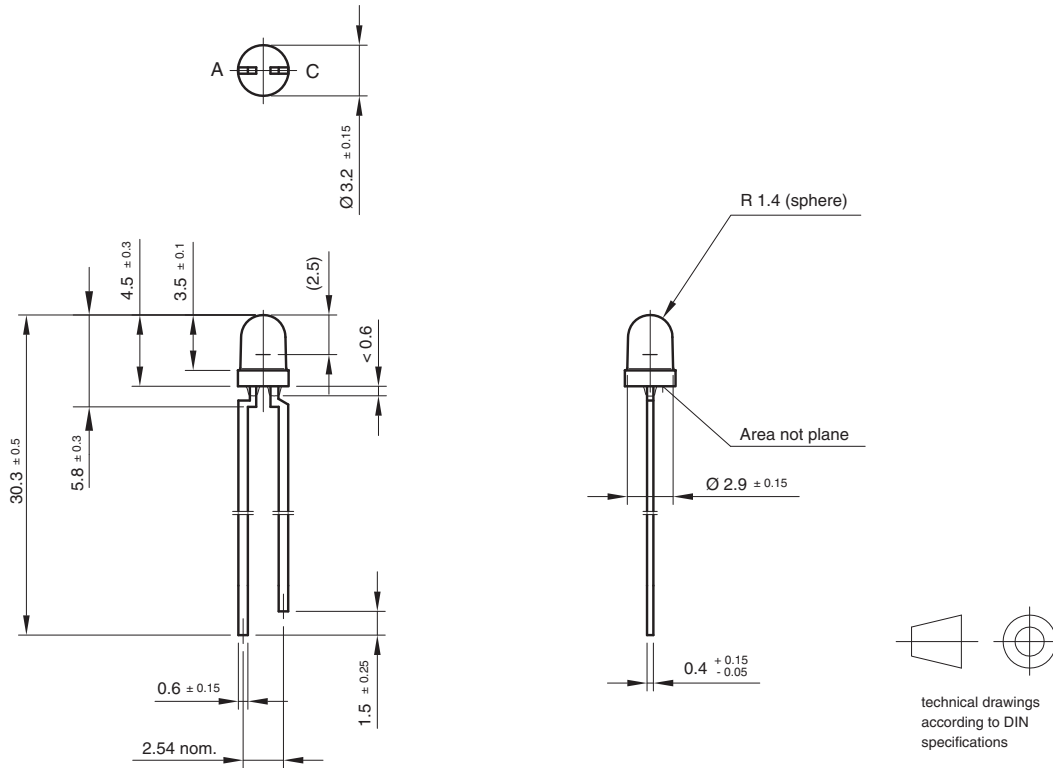


Figure 5. Relative Luminous Flux vs. Forward Current

## PACKAGE DIMENSIONS in millimeters



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95 10913



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