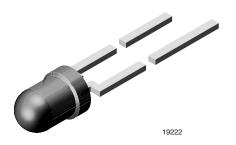
# **TLHE4600**



**Vishay Semiconductors** 

# High Intensity LED in Ø 3 mm Tinted Diffused Package



### DESCRIPTION

This device has been designed to meet the increasing demand for AllnGaP technology general indicating and lighting purposes.

It is housed in a 3 mm diffused plastic package. The wide viewing angle of these devices provides a high brightness.

All packing units are categorized in luminous intensity and color groups. That allows users to assemble LEDs with uniform appearance.developed for standard applications like general indicating and lighting purposes.

## FEATURES

- AllnGaP technology
- Standard Ø 3 mm (T-1) package
- Small mechanical tolerances
- Suitable for DC and high peak current
- Wide viewing angle
- Very high intensity
- · Luminous intensity color categorized
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

### **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: ± 60°

PARTS TABLE														
PART	COLOR	LUMINOUS INTENSITY (mcd)		at I <sub>F</sub> (mA)	WAVELENGTH (nm)		at I <sub>F</sub> (mA)	FORWARD VOLTAGE (V)		at I <sub>F</sub> (mA)	TECHNOLOGY			
		MIN.	TYP.	MAX.	(IIIA)	MIN.	TYP.	MAX.	(IIIA)	MIN.	TYP.	MAX.	(IIIA)	
TLHE4600	Yellow	10	26	-	10	581	588	594	10	-	1.9	2.6	20	AllnGaP on GaAs

<b>ABSOLUTE MAXIMUM RATINGS</b> (T <sub>amb</sub> = 25 °C, unless otherwise specified) <b>TLHE4600</b>						
PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT		
Reverse voltage		V <sub>R</sub>	5	V		
DC forward current	T <sub>amb</sub> ≤ 60 °C	I <sub>F</sub>	30	mA		
Surge forward current	t <sub>p</sub> ≤ 10 μs	I <sub>FSM</sub>	0.1	А		
Power dissipation	T <sub>amb</sub> ≤ 60 °C	Pv	80	mW		
Junction temperature		Тj	100	°C		
Operating temperature range		T <sub>amb</sub>	-40 to +100	°C		
Storage temperature range		T <sub>stg</sub>	-55 to +100	°C		
Soldering temperature	$t \le 5$ s, 2 mm from body	T <sub>sd</sub>	260	°C		
Thermal resistance junction/ambient		R <sub>thJA</sub>	400	K/W		





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# **TLHE4600**

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<b>OPTICAL AND ELECTRICAL CHARACTERISTICS</b> ( $T_{amb}$ = 25 °C, unless otherwise specified) <b>TLHE4600, YELLOW</b>							
PARAMETER	TEST CONDITION	SYMBOL	MIN	TYP.	MAX	UNIT	
Luminous intensity <sup>(1)</sup>	I <sub>F</sub> = 10 mA	I <sub>V</sub>	10	26	-	mcd	
Dominant wavelength	I <sub>F</sub> = 10 mA	λ <sub>d</sub>	581	588	594	nm	
Peak wavelength	I <sub>F</sub> = 10 mA	λρ	-	590	-	nm	
Angle of half intensity	I <sub>F</sub> = 10 mA	φ	-	± 60	-	deg	
Forward voltage	I <sub>F</sub> = 20 mA	V <sub>F</sub>	-	1.9	2.6	V	
Reverse voltage	I <sub>R</sub> = 10 μA	V <sub>R</sub>	5	-	-	V	
Junction capacitance	V <sub>R</sub> = 0 V, f = 1 MHz	Cj	-	15	-	pF	

#### Note

 $^{(1)}$  In one packing unit  $I_{Vmin.}/I_{Vmax.} \leq 0.5.$ 

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

#### Note

 Luminous intensity is tested at a current pulse duration of 25 ms. These type numbers represent the order groups which include only a few brightness groups. Only one group will be shipped on each reel (there will be no mixing of two groups on each reel). In order to ensure availability, single brightness groups are 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 reel.

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

COLOR CLASSIFICATION						
	YELLOW DOM. WAVELENGTH (nm)					
GROUP						
	MIN.	MAX.				
1	581	584				
2	583	586				
3	585	588				
4	587	590				
5	589	592				
6	591	594				

#### Note

· Wavelengths are tested at a current pulse duration of 25 ms.

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## **TYPICAL CHARACTERISTICS** ( $T_{amb} = 25$ °C, unless otherwise specified)

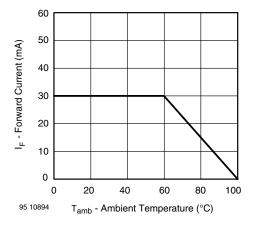


Fig. 1 - Forward Current vs. Ambient Temperature for InGaN

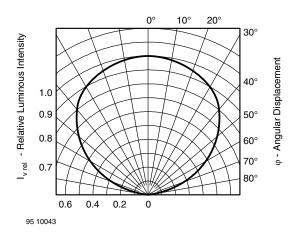


Fig. 2 - Relative Luminous Intensity vs. Angular Displacement

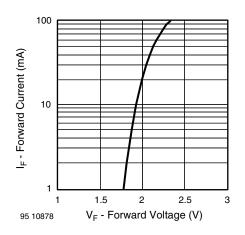


Fig. 3 - Forward Current vs. Forward Voltage

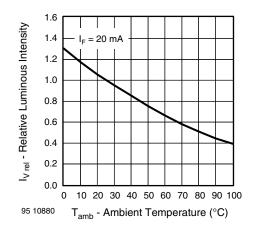


Fig. 4 - Relative Luminous Intensity vs. Ambient Temperature

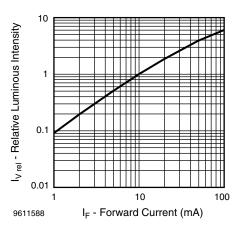


Fig. 5 - Relative Luminous Intensity vs. Forward Current

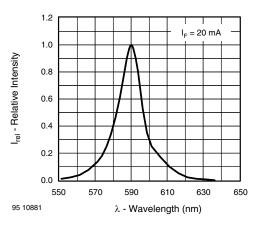


Fig. 6 - Relative Intensity vs. Wavelength

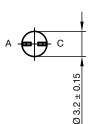
**3** For technical questions, contact: <u>LED@vishay.com</u>

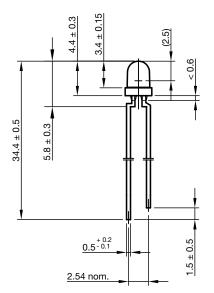
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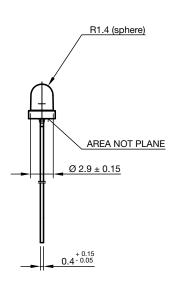
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### **PACKAGE DIMENSIONS** in millimeters









technical drawings according to DIN specifications

Drawing-No.: 6.544-5255.01-4 Issue: 9; 28.07.14



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