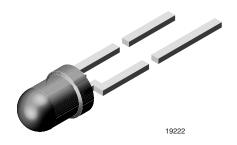


RoHS

# Ultrabright White LED, Ø 3 mm



### DESCRIPTION

The VLHW41 series is a clear, untinted 3 mm LED for high end applications where supreme luminous intensity is required.

These lamps utilize the highly developed ultrabright InGaN technologies.

The lens and the viewing angle is optimized to achieve best performance of light output and visibility.

#### PRODUCT GROUP AND PACKAGE DATA

Product group: LEDPackage: 3 mm

Product series: standard
Angle of half intensity: ± 22.5°

#### **FEATURES**

- · Clear, untinted lens
- Utilizing ultrabright InGaN technology
- High luminous intensity
- Luminous intensity and color categorized for each packing unit
- ESD-withstand voltage: Up to 2 kV according to JESD22-A114-B
- Material categorization: For definitions of compliance please see <a href="https://www.vishay.com/doc?99912"><u>www.vishay.com/doc?99912</u></a>

# APPLICATIONS

- · Interior and exterior lighting
- Outdoor LED panels
- · Instrumentation and front panel indicators
- Replaces incandescent lamps
- Light guide compatible

PARTS TABLE														
PART	COLOR	LUMINOUS INTENSITY (mcd)		at I <sub>F</sub>	COORDINATE (x, y)		at I <sub>F</sub>	FORWARD VOLTAGE (V)		at I <sub>F</sub> (mA)	TECHNOLOGY			
		MIN.	TYP.	MAX.	(IIIA)	MIN.	TYP.	MAX.	(IIIA)	MIN.	TYP.	MAX.	(11174)	
VLHW4100	White	4500	7150	11 250	20	ı	0.33, 0.33	-	20	2.8	3.2	3.8	20	InGaN and converter
VLHW4101-YLWU	White	5600	8400	11 250	20	-	0.31, 0.32	-	20	2.8	3.2	3.8	20	InGaN and converter

<b>ABSOLUTE MAXIMUM RATINGS</b> ( $T_{amb} = 25$ °C, unless otherwise specified) <b>VLHW4100, VLHW4101-YLWU</b>							
PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT			
Reverse voltage		$V_R$	5	V			
DC forward current		I <sub>F</sub>	25	mA			
Peak forward current	at 1 kHz, t <sub>p</sub> /T = 0.1	I <sub>FSM</sub>	0.1	Α			
Power dissipation		P <sub>V</sub>	95	mW			
Junction temperature		Tj	+ 120	°C			
Operating temperature range		T <sub>amb</sub>	- 40 to + 85	°C			
Storage temperature range		T <sub>stg</sub>	- 40 to + 85	°C			
Soldering temperature	t ≤ 5 s	T <sub>sd</sub>	260	°C			
Thermal resistance junction/ambient		$R_{thJA}$	400	K/W			



OPTICAL AND ELECTRICAL CHARACTERISTICS (T <sub>amb</sub> = 25 °C, unless otherwise specified) VLHW4100, VLHW4101-YLWU, WHITE									
PARAMETER	TEST CONDITION	PART	SYMBOL	MIN.	TYP.	MAX.	UNIT		
Luminous intensity	1 - 20 mA	VLHW4100	I <sub>V</sub>	4500	7150	11 250	mcd		
Luminous intensity	$I_F = 20 \text{ mA}$	VLHW4101-YLWU	Ι <sub>V</sub>	5600	8400	11 250	mcd		
Chromotically according to years to CIF 1021	J 00 m A	VLHW4100	Х	-	0.33	-			
Chromatically coordinate x acc. to CIE 1931	$I_F = 20 \text{ mA}$	VLHW4101-YLWU	Х	-	0.31	-			
Charactically and disease to OF 1001	J 00 A	VLHW4100	у	-	0.33	-			
Chromatically coordinate y acc. to CIE 1931	$I_F = 20 \text{ mA}$	VLHW4101-YLWU	у	-	0.32	-			
Angle of half intensity	$I_F = 20 \text{ mA}$		φ	-	± 22.5	-	deg		
Forward voltage	I <sub>F</sub> = 20 mA		V <sub>F</sub>	2.8	3.2	3.8	V		
Reverse current	$V_R = 5 V$		I <sub>R</sub>	-	-	50	μΑ		
Temperature coefficient of V <sub>F</sub>	$I_F = 20 \text{ mA}$		TC <sub>VF</sub>	-	- 4	-	mV/K		
Temperature coefficient of I <sub>V</sub>	$I_F = 20 \text{ mA}$		TC <sub>IV</sub>	-	- 0.5	-	%/K		

CHROMATICALLY COORDINATED CLASSIFICATION							
	Х	Y			Х	Y	
	0.274	0.301			0.317	0.325	
VII	0.283	0.284		WL	0.319	0.310	
YU	0.307	0.316			0.329	0.319	
	0.303	0.333			0.329	0.336	
	0.283	0.284		VU	0.329	0.354	
VI	0.290	0.270			0.329	0.336	
YL	0.310	0.299			0.345	0.350	
	0.307	0.316			0.347	0.368	
	0.303	0.333			0.329	0.336	
XU	0.307	0.316		VL	0.329	0.319	
۸٥	0.317	0.325			0.343	0.331	
	0.315	0.343			0.345	0.350	
	0.307	0.316		UU	0.347	0.368	
VI	0.310	0.299			0.345	0.350	
XL	0.319	0.310			0.361	0.365	
	0.317	0.325			0.364	0.383	
	0.315	0.343		111	0.345	0.350	
WU	0.317	0.325			0.343	0.331	
VVU	0.329	0.336		UL	0.357	0.343	
	0.329	0.354			0.361	0.365	

#### Note

• Chromaticity coordinate groups are tested at a current pulse direction of 25 ms and a tolerance of ± 0.01.

LUMINOUS INTENSITY CLASSIFICATION							
GROUP	LIGHT INTENSITY (mcd)						
STANDARD	MIN.	MAX.					
Z1	4500	5600					
Z2	5600	7150					
AA	7150	9000					
AB	9000	11 250					

#### Note

• Luminous intensity is tested with an accuracy of  $\pm$  15 %.

The above 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 will not be orderable.

In a similar manner for colors where color groups are measured and binned, single color groups will be shipped on any one reel. In order to ensure availability, single color groups will not be orderable.

### **TYPICAL CHARACTERISTICS** (T<sub>amb</sub> = 25 °C, unless otherwise specified)

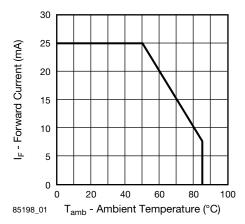


Fig. 1 - Forward Current vs. Ambient Temperature

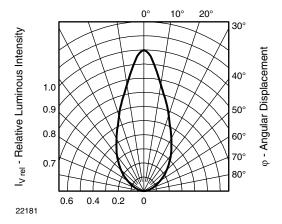


Fig. 2 - Relative Luminous Intensity vs. Angular Displacement

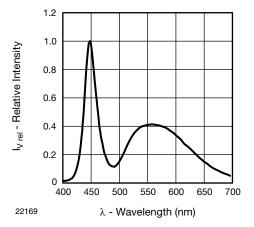


Fig. 3 - Relative Intensity vs. Wavelength

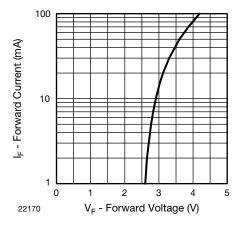


Fig. 4 - Forward Current vs. Forward Voltage

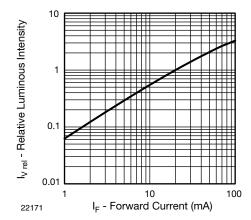


Fig. 5 - Relative Luminous Intensity vs. Forward Current

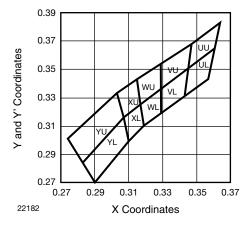
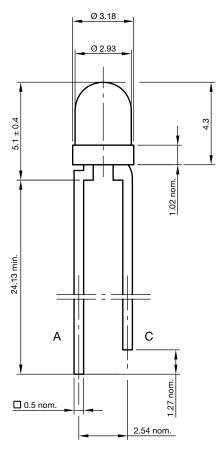


Fig. 6 - Coordinates of Colorgroups

#### **PACKAGE DIMENSIONS** in millimeters







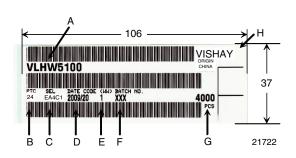
Not indicated tolerances ± 0.25

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Issue: 2; 18.06.10

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### **BAR CODE PRODUCT LABEL** (example)



- A. Type of component
- B. Manufacturing plant
- C. SEL selection code (bin):

e.g.: EA = code for luminous intensity group

4C = code for chromaticity coordinate

1 = code for forward voltage

- D. Date code year/week
- E. Day code (e.g. 1: Monday)
- F. Batch no.
- G. Total quantity
- H. Company code



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Vishay

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