



## Ultrabright White LED, Ø 3 mm



19222

### 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: LED
- Package: 3 mm
- Product series: standard
- Angle of half intensity:  $\pm 22.5^\circ$

### 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 [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



RoHS COMPLIANT

### 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> (mA)	COORDINATE (x, y)			at I <sub>F</sub> (mA)	FORWARD VOLTAGE (V)			at I <sub>F</sub> (mA)	TECHNOLOGY
		MIN.	TYP.	MAX.		MIN.	TYP.	MAX.		MIN.	TYP.	MAX.		
VLHW4100	White	4500	7150	11 250	20	-	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

ABSOLUTE MAXIMUM RATINGS (T <sub>amb</sub> = 25 °C, unless otherwise specified)				
VLHW4100, VLHW4101-YLWU				
PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
Reverse voltage		V <sub>R</sub>	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	A
Power dissipation		P <sub>V</sub>	95	mW
Junction temperature		T <sub>j</sub>	+ 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 <sub>thJA</sub>	400	K/W



<b>OPTICAL AND ELECTRICAL CHARACTERISTICS</b> ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified) <b>VLHW4100, VLHW4101-YLWU, WHITE</b>							
PARAMETER	TEST CONDITION	PART	SYMBOL	MIN.	TYP.	MAX.	UNIT
Luminous intensity	$I_F = 20\text{ mA}$	VLHW4100	$I_V$	4500	7150	11 250	mcd
		VLHW4101-YLWU	$I_V$	5600	8400	11 250	mcd
Chromatically coordinate x acc. to CIE 1931	$I_F = 20\text{ mA}$	VLHW4100	x	-	0.33	-	
		VLHW4101-YLWU	x	-	0.31	-	
Chromatically coordinate y acc. to CIE 1931	$I_F = 20\text{ mA}$	VLHW4100	y	-	0.33	-	
		VLHW4101-YLWU	y	-	0.32	-	
Angle of half intensity	$I_F = 20\text{ mA}$		$\phi$	-	$\pm 22.5$	-	deg
Forward voltage	$I_F = 20\text{ mA}$		$V_F$	2.8	3.2	3.8	V
Reverse current	$V_R = 5\text{ V}$		$I_R$	-	-	50	$\mu\text{A}$
Temperature coefficient of $V_F$	$I_F = 20\text{ mA}$		$TC_{VF}$	-	- 4	-	mV/K
Temperature coefficient of $I_V$	$I_F = 20\text{ mA}$		$TC_{IV}$	-	- 0.5	-	%/K

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

**Note**

- Chromaticity coordinate groups are tested at a current pulse duration of 25 ms and a tolerance of  $\pm 0.01$ .

<b>LUMINOUS INTENSITY CLASSIFICATION</b>		
GROUP	LIGHT INTENSITY (mcd)	
	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** ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)

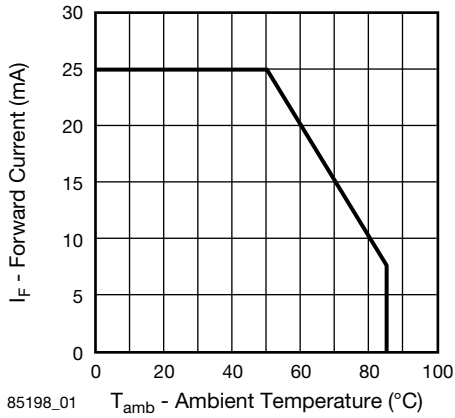


Fig. 1 - Forward Current vs. Ambient Temperature

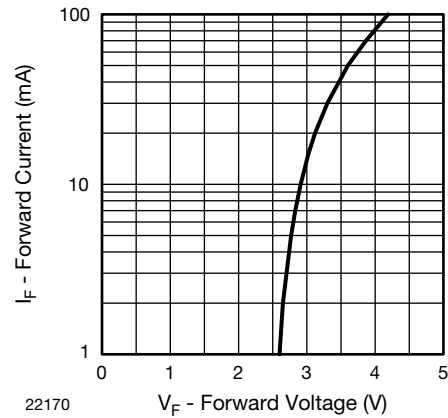


Fig. 4 - Forward Current vs. Forward Voltage

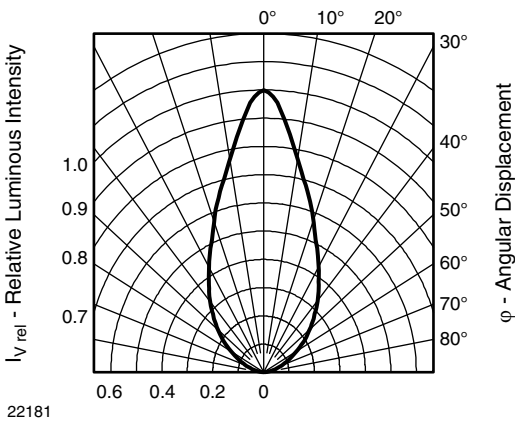


Fig. 2 - Relative Luminous Intensity vs. Angular Displacement

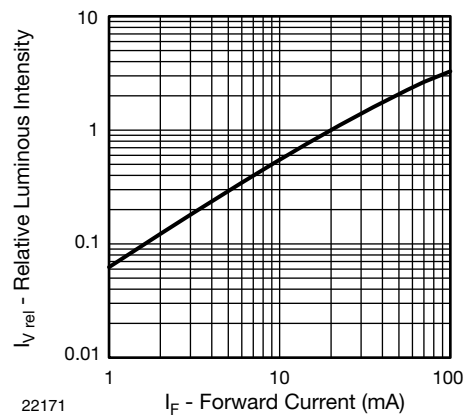


Fig. 5 - Relative Luminous Intensity vs. Forward Current

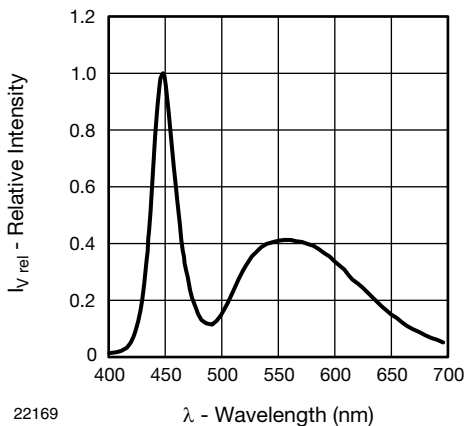


Fig. 3 - Relative Intensity vs. Wavelength

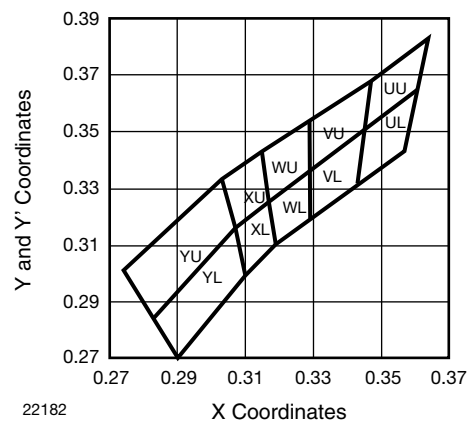
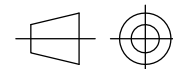
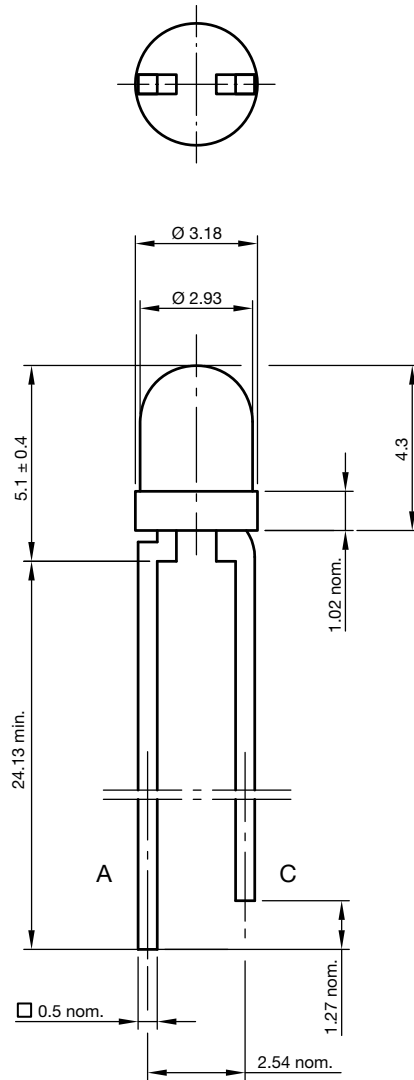


Fig. 6 - Coordinates of Colorgroups



## PACKAGE DIMENSIONS in millimeters



technical drawings according to DIN specifications

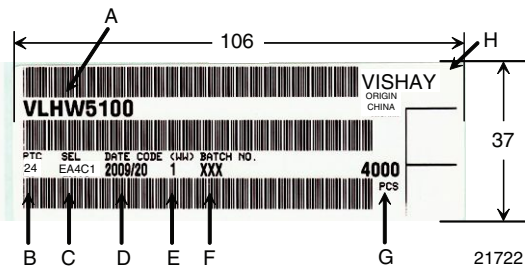
Not indicated tolerances  $\pm 0.25$

Drawing-No.: 6.544-5403.01-4

Issue: 2; 18.06.10

21948

## 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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