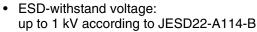


Ultrabright White LED, ∅ 5 mm Untinted Non-Diffused



FEATURES

- · Untinted non diffused lens
- Utilizing ultrabright InGaN technology
- High luminous intensity
- Luminous intensity and color categorized for each packing unit



- · Lead (Pb)-free component
- · RoHS compliant
- · Automotive qualified

APPLICATIONS

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

DESCRIPTION

The VLCW510. series is a clear, non diffused 5 mm LED for high end applications where supreme luminous intensity required.

These lamps with clear untinted plastic case 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: 5 mm

Product series: power
Angle of half intensity: ± 9°

PARTS TABLE					
PART	COLOR, LUMINOUS INTENSITY	TECHNOLOGY			
VLCW5100	White, $I_V > 1800 \text{ mcd (typ.)}$	InGaN/TAG on SiC			
VLCW5101	White, $I_V > 3200 \text{ mcd (typ.)}$	InGaN/TAG on SiC			

ABSOLUTE MAXIMUM RATINGS ¹⁾ VLCW510.					
PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT	
Reverse voltage ²⁾		V _R	5	V	
DC forward current	T _{amb} ≤ 60 °C	I _F	30	mA	
Surge forward current	t _p ≤ 10 μs	I _{FSM}	0.1	Α	
Power dissipation		P _V	135	mW	
Junction temperature		Tj	100	°C	
Operating temperature range		T _{amb}	- 40 to + 100	°C	
Storage temperature range		T _{stg}	- 40 to + 100	°C	
Soldering temperature	t ≤ 5 s	T _{sd}	260	°C	
Thermal resistance junction/ ambient		R _{thJA}	300	K/W	

Note:

Document Number 81247 Rev. 1.1, 31-Aug-07

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

²⁾ Driving the LED in reverse direction is suitable for a short term application



OPTICAL AND ELECTRICAL CHARACTERISTICS ¹⁾ WHITE VLCW510.							
PARAMETER	TEST CONDITION	PART	SYMBOL	MIN	TYP.	MAX	UNIT
Luminous intensity	I _F = 30 mA	VLCW5100	I _V	1800	5000		mcd
Luminous intensity		VLCW5101	I _V	3200	6000		mcd
Chromaticity coordinate x acc. to CIE 1931	I _F = 30 mA		х		0.33		
Chromaticity coordinate y acc. to CIE 1931	I _F = 30 mA		у		0.33		
Angle of half intensity	I _F = 30 mA		φ		± 9		deg
Forward voltage	I _F = 30 mA		V_{F}		3.9	4.5	V
Reverse voltage	I _R = 10 μA		V_{R}	5			V
Temperature coefficient of V _F	I _F = 30 mA		TC _{VF}		- 4		mV/K
Temperature coefficient of I _V	$I_F = 30 \text{ mA}$		TC _{IV}		- 0.5		% / K

Note:

 $^{^{1)}}$ T_{amb} = 25 °C, unless otherwise specified

ROMATICITY COORDINATE CLASSIFICATION					
GROUP	X		Υ		
	MIN	MAX	MIN	MAX	
3a	0.2900	0.3025	Y = 1.4x - 0.121	Y = 1.4x - 0.071	
3b	0.3025	0.3150	Y = 1.4x - 0.121	Y = 1.4x - 0.071	
3c	0.2900	0.3025	Y = 1.4x - 0.171	Y = 1.4x - 0.121	
3d	0.3025	0.3150	Y = 1.4x - 0.171	Y = 1.4x - 0.121	
4a	0.3150	0.3275	Y = 1.4x - 0.121	Y = 1.4x - 0.071	
4b	0.3275	0.3400	Y = 1.4x - 0.121	Y = 1.4x - 0.071	
4c	0.3150	0.3275	Y = 1.4x - 0.171	Y = 1.4x - 0.121	
4d	0.3275	0.3400	Y = 1.4x - 0.171	Y = 1.4x - 0.121	
5a	0.3400	0.3525	Y = 1.4x - 0.121	Y = 1.4x - 0.071	
5b	0.3525	0.3650	Y = 1.4x - 0.121	Y = 1.4x - 0.071	
5c	0.3400	0.3525	Y = 1.4x - 0.171	Y = 1.4x - 0.121	
5d	0.3525	0.3650	Y = 1.4x - 0.171	Y = 1.4x - 0.121	

Note:

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

LUMINOUS INTENSITY CLASSIFICATION					
GROUP	LIGHT INTENSITY (MCD)				
STANDARD	MIN	MAX			
GG	1800	3600			
HH	2400	4800			
II	3200	6400			
KK	4300	8600			
LL	5750	11500			

Note:

Luminous intensity is tested at a current pulse duration of 25 ms and an accuracy of \pm 11 %.

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 wavelength groups are measured and binned, single wavelength groups will be shipped on any one reel.

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





TYPICAL CHARACTERISTICS

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

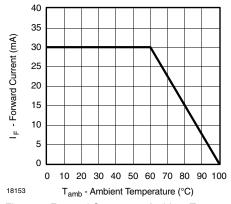


Figure 1. Forward Current vs. Ambient Temperature

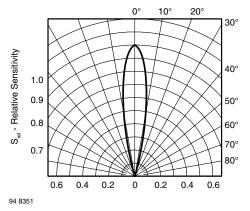


Figure 2. Relative Radiant Sensitivity vs. Angular Displacement

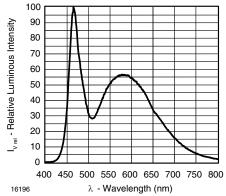


Figure 3. Relative Intensity vs. Wavelength

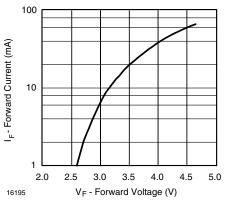


Figure 4. Forward Current vs. Forward Voltage

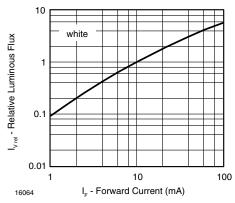


Figure 5. Relative Luminous Flux vs. Forward Current

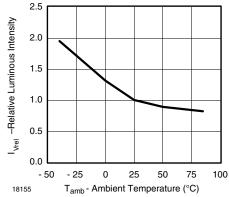


Figure 6. Relative Luminous Intensity vs. Amb. Temperature



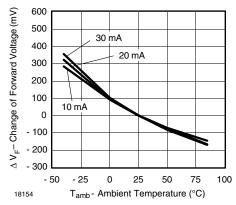


Figure 7. Change of Forward Voltage vs. Ambient Temperature

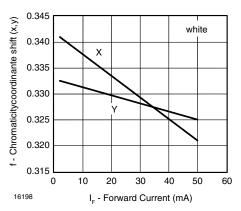


Figure 9. Chromaticity Coordinate Shift vs. Forward Current

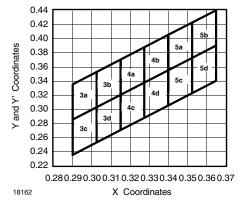
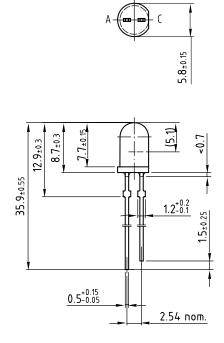


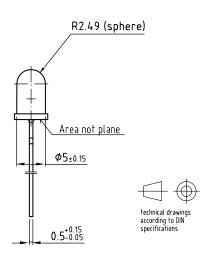
Figure 8. Coordinates of Colorgroups





PACKAGE DIMENSIONS in millimeters



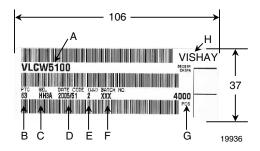


Drawing-No.: 6.544-5258.04-4

Issue: 6; 04.07.03

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BAR CODE PRODUCT LABEL



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

e.g.: HH = code for luminous intensity group 3A = code for color group

- D) Date code year/week
- E) Day code (e.g. 2: Tuesday)
- F) Batch no.
- G) Total quantity
- H) Company code



OZONE DEPLETING SUBSTANCES POLICY STATEMENT

It is the policy of Vishay Semiconductor GmbH to

- 1. Meet all present and future national and international statutory requirements.
- 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.

Vishay Semiconductor GmbH can certify that our semiconductors are not manufactured with ozone depleting substances and do not contain such substances.

We reserve the right to make changes to improve technical design and may do so without further notice.

Parameters can vary in different applications. All operating parameters must be validated for each customer application by the customer. Should the buyer use Vishay Semiconductors products for any unintended or unauthorized application, the buyer shall indemnify Vishay Semiconductors against all claims, costs, damages, and expenses, arising out of, directly or indirectly, any claim of personal damage, injury or death associated with such unintended or unauthorized use.

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Document Number 81247
Rev. 1.1, 31-Aug-07



Vishay

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Revision: 18-Jul-08

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