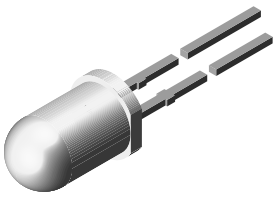
Ultrabright White LED, ∅ 5 mm Untinted Non-Diffused



FEATURES

- Untinted non diffused lens
- Utilizing ultrabright InGaN technology
- High luminous intensity
- Luminous intensity and color categorized for each packing unit
- ESD-withstand voltage: up to 1 kV according to JESD22-A114-B
- Lead (Pb)-free component
- RoHS compliant
- Automotive qualified

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.

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	ANGLE OF HALF INTENSITY (± φ)	TECHNOLOGY
VLCW5100	White, I_V > 1800 mcd (typ.)	9°	InGaN / TAG on SiC
VLCW5101	White, I_V > 3200 mcd (typ.)	9°	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	$T_{amb} \leq 60$ °C	I_F	30	mA
Surge forward current	$t_p \leq 10$ µs	I_{FSM}	0.1	A
Power dissipation		P_V	135	mW
Junction temperature		T_j	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:

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

[2] Driving the LED in reverse direction is suitable for 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
		VLCW5101	I_V	3200	6000		mcd
Chromaticity coordinate x acc. to CIE 1931	I_F = 30 mA		x		0.33		
Chromaticity coordinate y acc. to CIE 1931	I_F = 30 mA		y		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 mA		TC_{IV}		- 0.5		% / K

Note:
[1] T_{amb} = 25 °C, unless otherwise specified

CHROMATICITY COORDINATE CLASSIFICATION				
GROUP	**X**		**Y**	
	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 ± 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

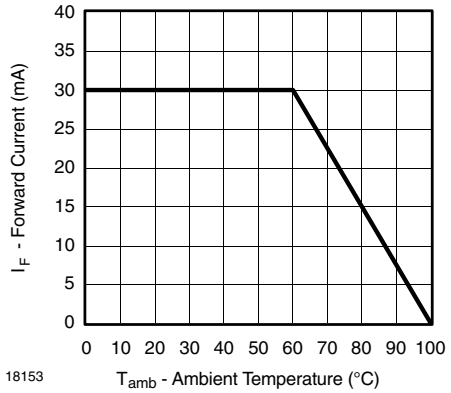


Figure 1. Forward Current vs. Ambient Temperature

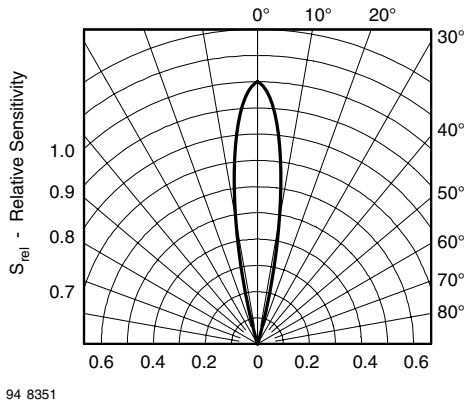


Figure 2. Relative Radiant Sensitivity vs. Angular Displacement

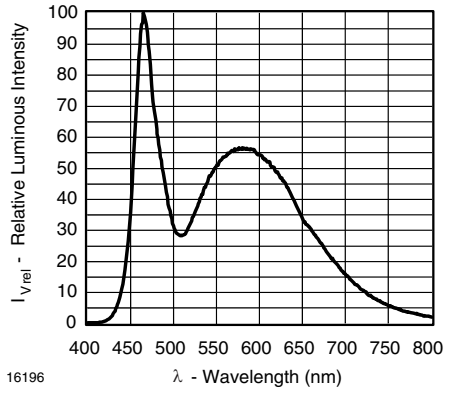


Figure 3. Relative Intensity vs. Wavelength

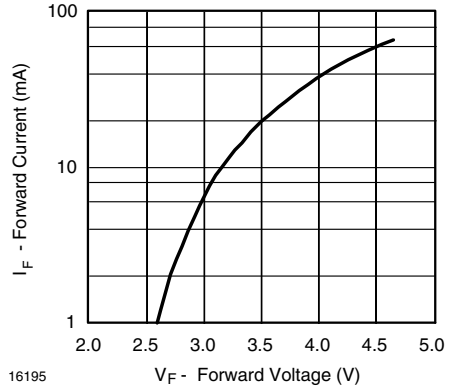


Figure 4. Forward Current vs. Forward Voltage

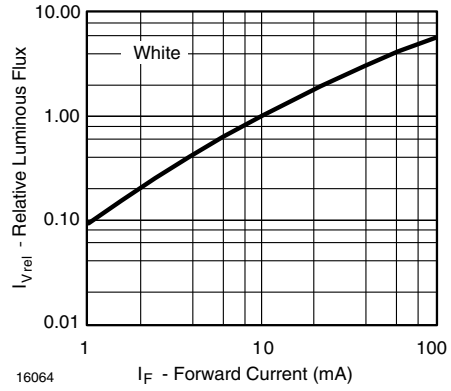


Figure 5. Relative Luminous Flux vs. Forward Current

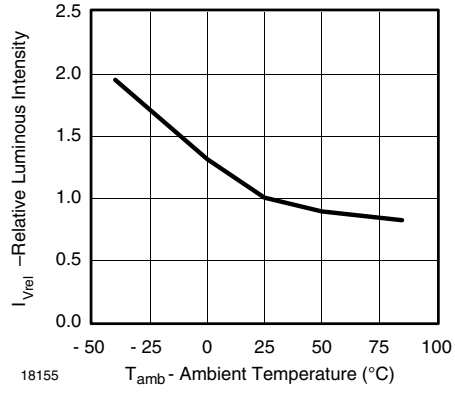


Figure 6. Relative Luminous Intensity vs. Amb. Temperature

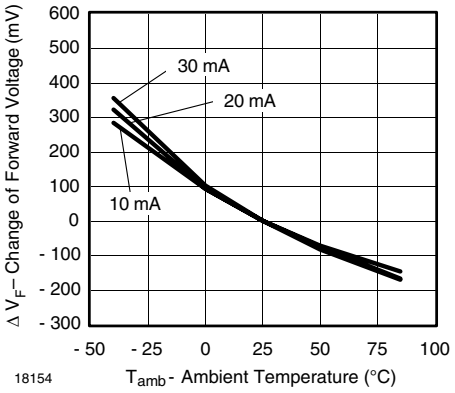


Figure 7. Change of Forward Voltage vs. Ambient Temperature

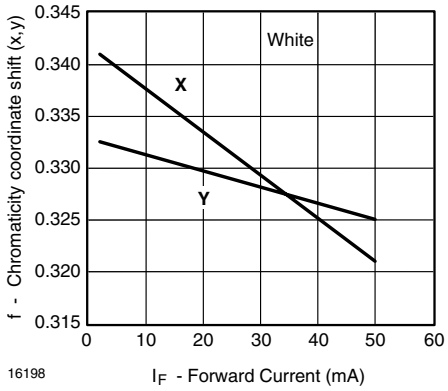


Figure 9. Chromaticity Coordinate Shift vs. Forward Current

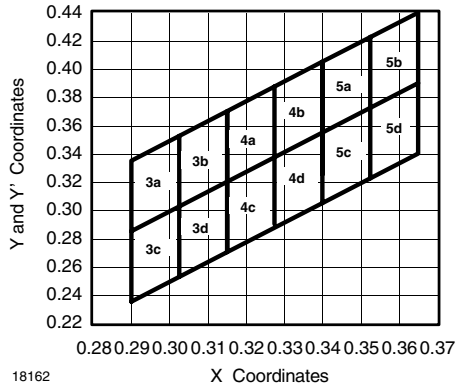
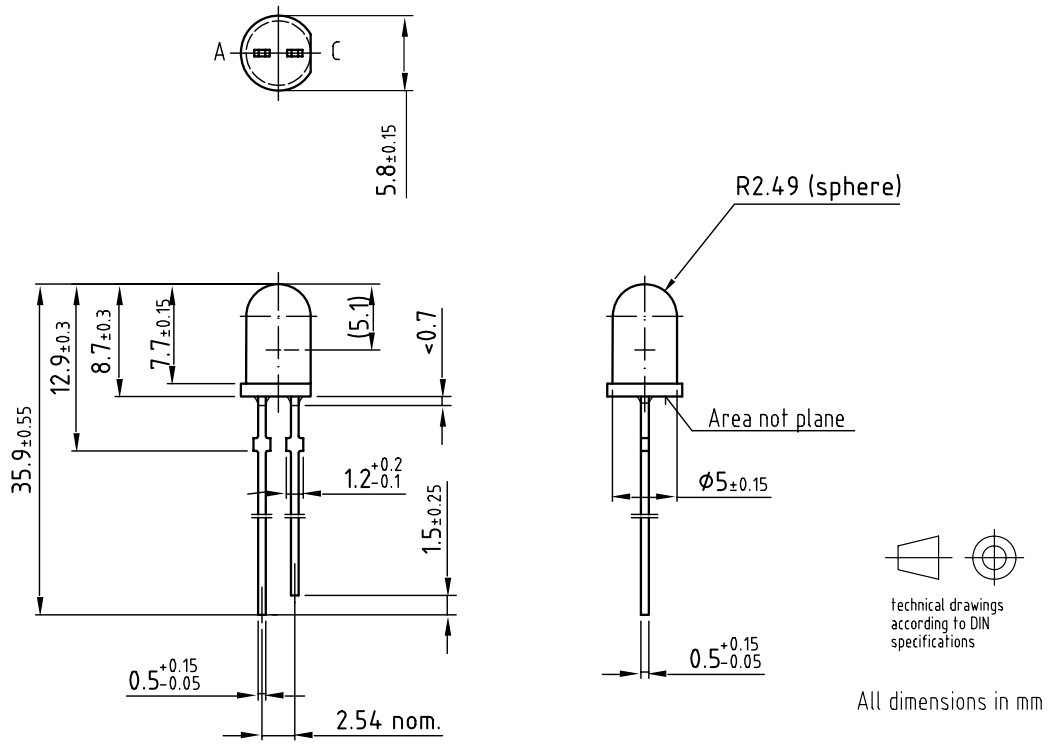


Figure 8. Coordinates of Colorgroups

PACKAGE DIMENSIONS IN MM



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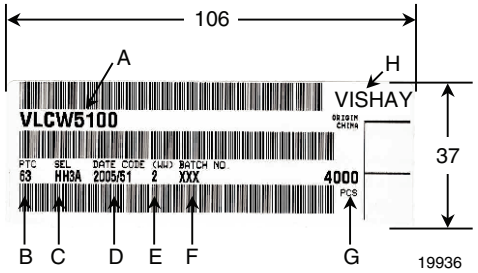
BARCODE-PRODUCT-LABEL



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.

Vishay Semiconductor GmbH, P.O.B. 3535, D-74025 Heilbronn, Germany

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