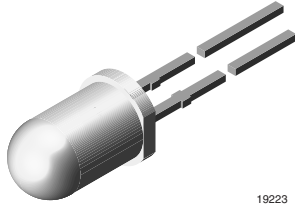


Ultrabright White LED, Ø 5 mm Untinted Non-Diffused



DESCRIPTION

The VLHW5100 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: LED
- Package: 5 mm
- Product series: standard
- Angle of half intensity: $\pm 10^\circ$

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 4 kV according to JESD22-A114-B
- Circuit protection by Zener diode
- Compliant to RoHS directive 2002/95/EC


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	TECHNOLOGY
VLHW5100	White, $I_V = (5600 \text{ to } 11\,200) \text{ mcd}$	InGaN and converter
VLHW5100-CS12	White, $I_V = (5600 \text{ to } 11\,200) \text{ mcd}$	InGaN and converter

ABSOLUTE MAXIMUM RATINGS ¹⁾ VLHW5100

PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
Reverse voltage		V_R	5	V
DC forward current		I_F	30	mA
Peak forward current	at 1 kHz, $t_p/T = 0.1$	I_{FSM}	0.1	A
Power dissipation		P_V	100	mW
Zener reverse current		I_Z	100	mA
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	$t \leq 5 \text{ s}$	T_{sd}	260	°C
Thermal resistance junction/ambient		R_{thJA}	400	K/W

Note:

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

OPTICAL AND ELECTRICAL CHARACTERISTICS ¹⁾ WHITE VLHW5100							
PARAMETER	TEST CONDITION	PART	SYMBOL	MIN.	TYP.	MAX.	UNIT
Luminous intensity	$I_F = 20 \text{ mA}$	VLHW5100	I_V	5600		11 200	mcd
Chromaticity coordinate x acc. to CIE 1931	$I_F = 20 \text{ mA}$		x		0.33		
Chromaticity coordinate y acc. to CIE 1931	$I_F = 20 \text{ mA}$		y		0.33		
Angle of half intensity	$I_F = 20 \text{ mA}$		φ		± 10		deg
Forward voltage	$I_F = 20 \text{ mA}$		V_F	2.8		3.6	V
Reverse current	$V_R = 5 \text{ V}$		I_R			50	μA
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

Note:

¹⁾ $T_{amb} = 25 \text{ }^\circ\text{C}$, 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 with a tolerance of ± 0.01 .

LUMINOUS INTENSITY CLASSIFICATION		
GROUP	LIGHT INTENSITY (mcd)	
	MIN.	MAX.
DB	5600	7100
EA	7100	9000
EB	9000	11 200

Note:

Luminous intensity is tested with 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 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.

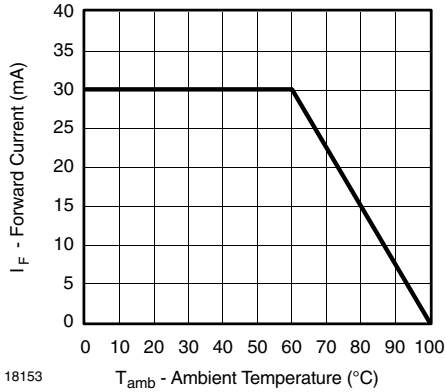
FORWARD VOLTAGE CLASSIFICATION		
GROUP	FORWARD VOLTAGE (V)	
	MIN.	MAX.
0	2.8	3.0
1	3.0	3.2
2	3.2	3.4
3	3.4	3.6

Note:

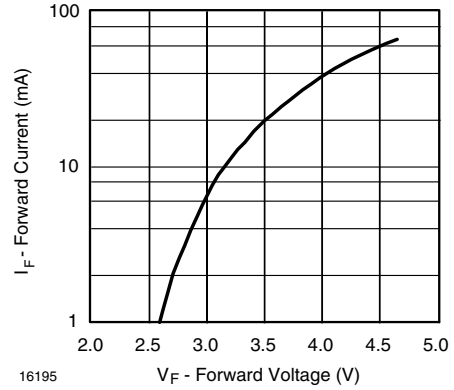
Forward voltage is tested with an accuracy of $\pm 0.1 \text{ V}$.

TYPICAL CHARACTERISTICS

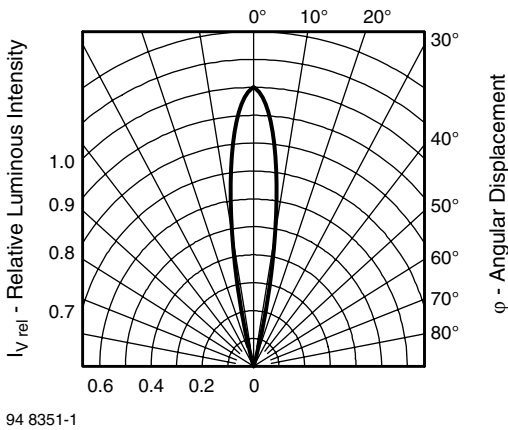
$T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified



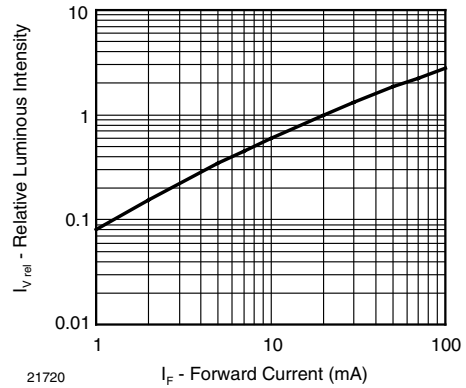
18153
Figure 1. Forward Current vs. Ambient Temperature



16195
Figure 4. Forward Current vs. Forward Voltage



94 8351-1
Figure 2. Relative Luminous Intensity vs. Angular Displacement



21720
Figure 5. Relative Luminous Flux vs. Forward Current

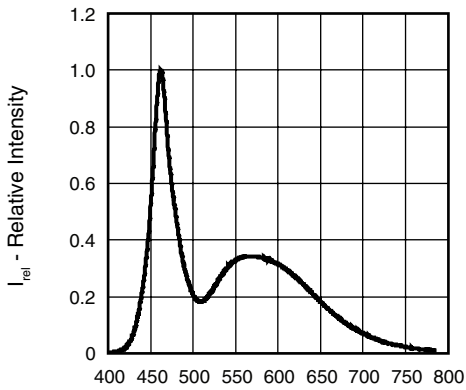
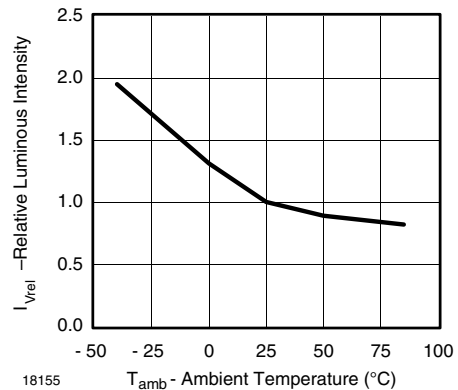


Figure 3. Relative Intensity vs. Wavelength



18155
Figure 6. Relative Luminous Intensity vs. Amb. Temperature

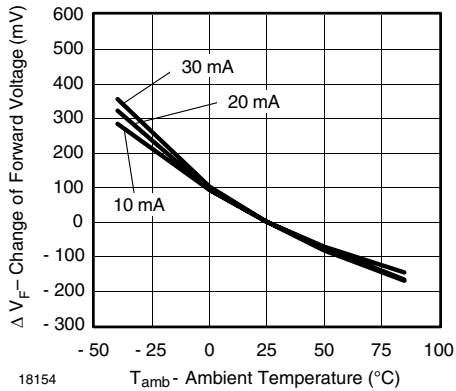


Figure 7. Change of Forward Voltage vs. Ambient Temperature

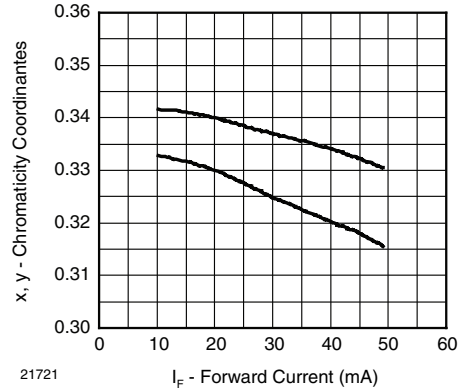


Figure 9. Chromaticity Coordinate Shift vs. Forward Current

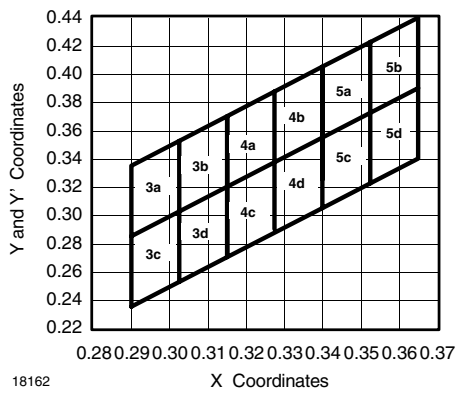


Figure 8. Coordinates of Colorgroups



Disclaimer

ALL PRODUCT, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE TO IMPROVE RELIABILITY, FUNCTION OR DESIGN OR OTHERWISE.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "Vishay"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained in any datasheet or in any other disclosure relating to any product.

Vishay makes no warranty, representation or guarantee regarding the suitability of the products for any particular purpose or the continuing production of any product. To the maximum extent permitted by applicable law, Vishay disclaims (i) any and all liability arising out of the application or use of any product, (ii) any and all liability, including without limitation special, consequential or incidental damages, and (iii) any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.

Statements regarding the suitability of products for certain types of applications are based on Vishay's knowledge of typical requirements that are often placed on Vishay products in generic applications. Such statements are not binding statements about the suitability of products for a particular application. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Parameters provided in datasheets and/or specifications may vary in different applications and performance may vary over time. All operating parameters, including typical parameters, must be validated for each customer application by the customer's technical experts. Product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein.

Except as expressly indicated in writing, Vishay products are not designed for use in medical, life-saving, or life-sustaining applications or for any other application in which the failure of the Vishay product could result in personal injury or death. Customers using or selling Vishay products not expressly indicated for use in such applications do so at their own risk and agree to fully indemnify and hold Vishay and its distributors harmless from and against any and all claims, liabilities, expenses and damages arising or resulting in connection with such use or sale, including attorneys fees, even if such claim alleges that Vishay or its distributor was negligent regarding the design or manufacture of the part. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay. Product names and markings noted herein may be trademarks of their respective owners.

Material Category Policy

Vishay Intertechnology, Inc. hereby certifies that all its products that are identified as RoHS-Compliant fulfill the definitions and restrictions defined under Directive 2011/65/EU of The European Parliament and of the Council of June 8, 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment (EEE) - recast, unless otherwise specified as non-compliant.

Please note that some Vishay documentation may still make reference to RoHS Directive 2002/95/EC. We confirm that all the products identified as being compliant to Directive 2002/95/EC conform to Directive 2011/65/EU.