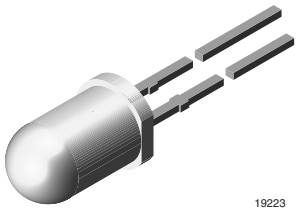
Ultrabright White LED, Ø 5 mm Untinted Non-Diffused



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: ± 10°

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

Pb-free

e3

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 to 11 200) mcd	InGaN and converter
VLHW5100-CS12	White, I_V = (5600 to 11 200) 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 ≤ 5 s	T_{sd}	260	°C
Thermal resistance junction/ ambient		R_{thJA}	400	K/W

Note:

[1] T_{amb} = 25 °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 mA	VLHW5100	I_V	5600		11 200	mcd
Chromaticity coordinate x acc. to CIE 1931	I_F = 20 mA		x		0.33		
Chromaticity coordinate y acc. to CIE 1931	I_F = 20 mA		y		0.33		
Angle of half intensity	I_F = 20 mA		φ		± 10		deg
Forward voltage	I_F = 20 mA		V_F	2.8		3.6	V
Reverse current	V_R = 5 V		I_R			50	µA
Temperature coefficient of V_F	I_F = 20 mA		TC_{VF}		- 4		mV/K
Temperature coefficient of I_V	I_F = 20 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 with a tolerance of ± 0.01.

LUMINOUS INTENSITY CLASSIFICATION

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

Note:
Luminous intensity is tested with 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 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 ± 0.1 V.

TYPICAL CHARACTERISTICS

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

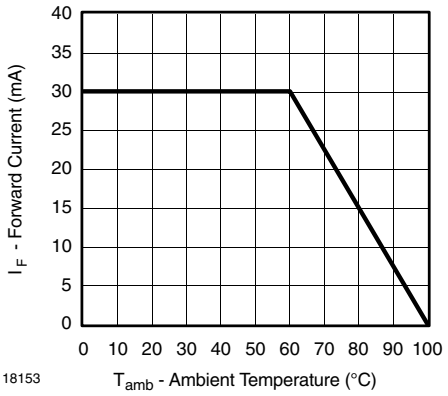


Figure 1. Forward Current vs. Ambient Temperature

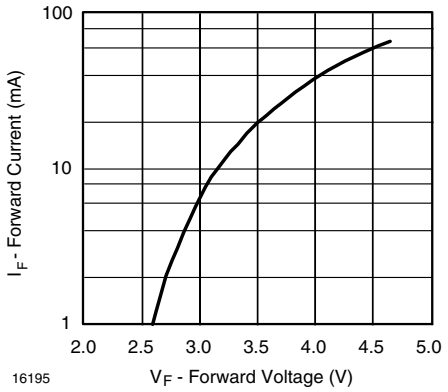


Figure 4. Forward Current vs. Forward Voltage

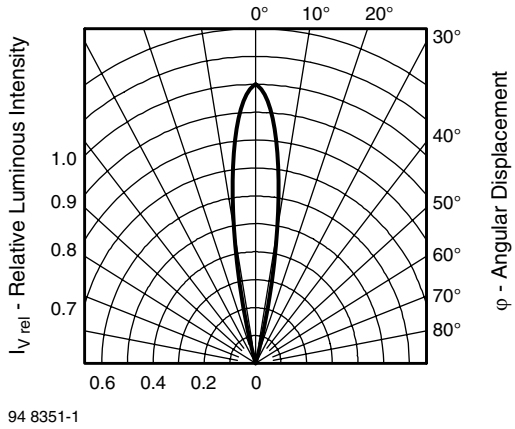


Figure 2. Relative Luminous Intensity vs. Angular Displacement

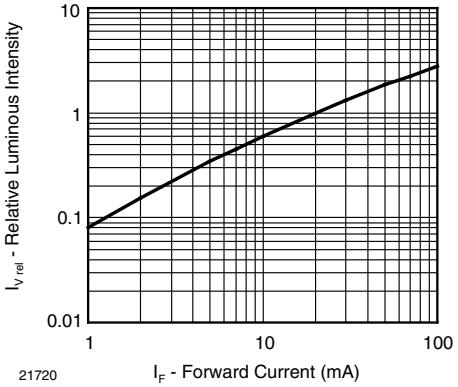


Figure 5. Relative Luminous Flux vs. Forward Current

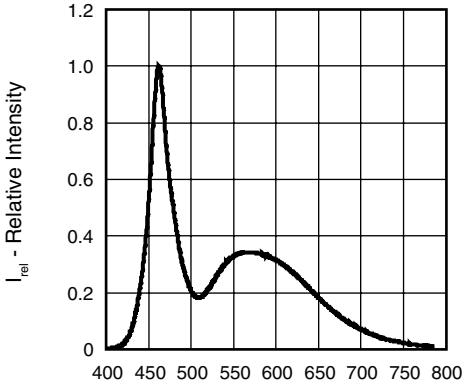


Figure 3. Relative Intensity vs. Wavelength

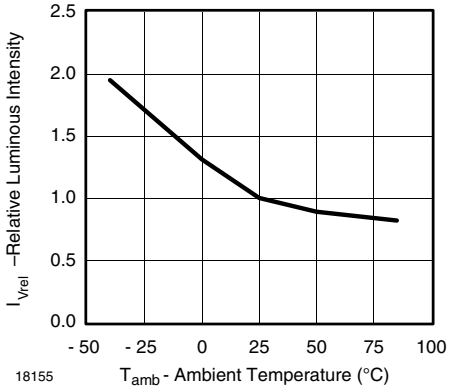


Figure 6. Relative Luminous Intensity vs. Amb. Temperature

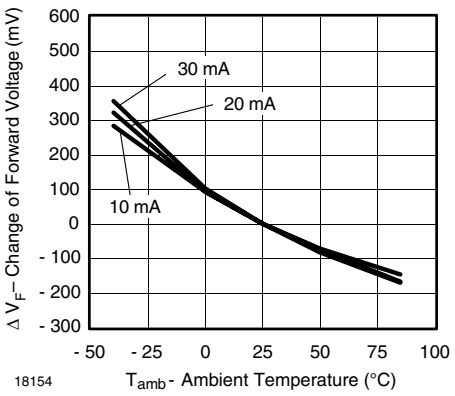


Figure 7. Change of Forward Voltage vs. Ambient Temperature

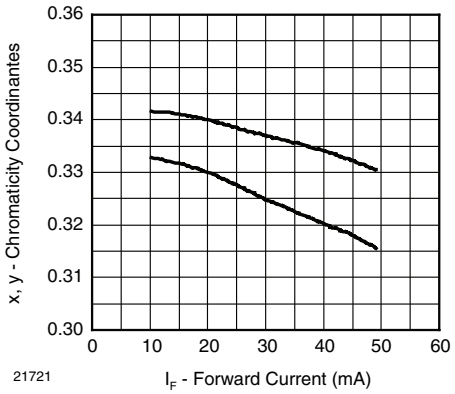


Figure 9. Chromaticity Coordinate Shift vs. Forward Current

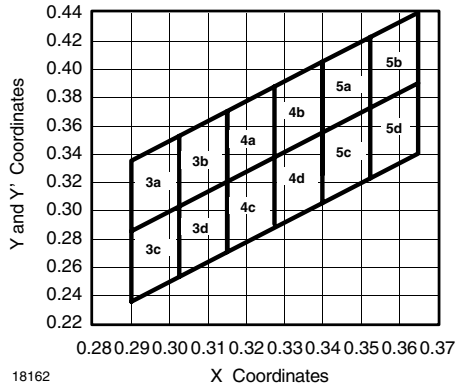
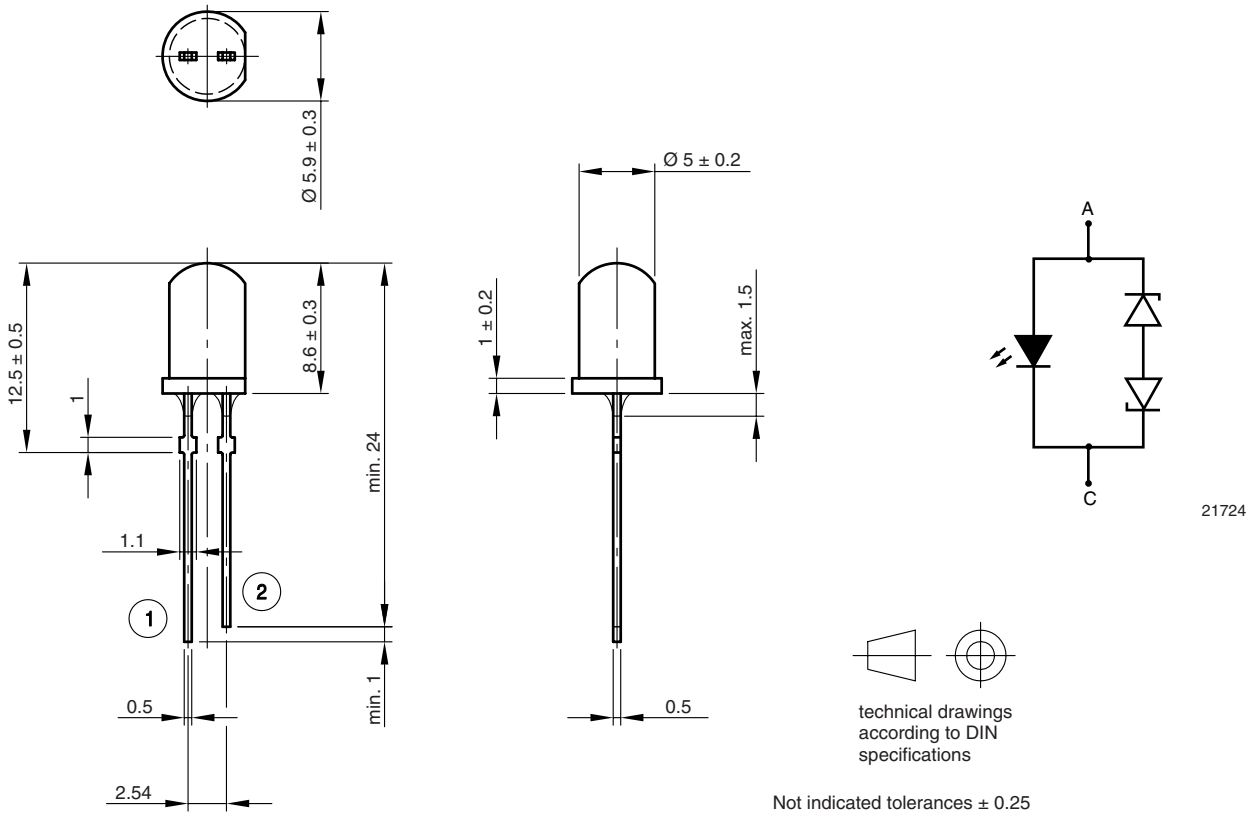


Figure 8. Coordinates of Colorgroups

PACKAGE DIMENSIONS in millimeters



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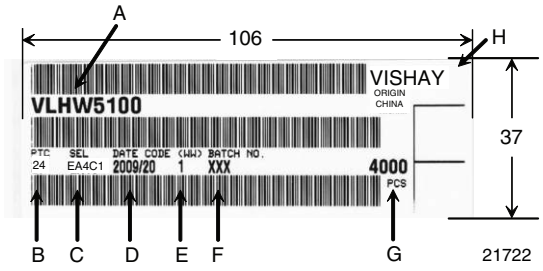
BAR CODE PRODUCT LABEL



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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