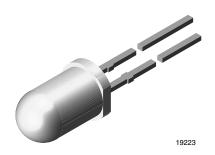


Vishay Semiconductors

Ultrabright White LED, Ø 5 mm Untinted Non-Diffused Package



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: LEDPackage: 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
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912



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

• Untinted





HALOGEN FREE

GREEN (5-2008)

PARTS TABLE														
PART COLOR		(IIICa)		at I _F	CO	COORDINATE (x, y)		at I _F	FORWARD VOLTAGE (V)		at I _F	TECHNOLOGY		
		MIN.	TYP.	MAX.	(IIIA)	MIN.	TYP.	MAX.	(mA)	MIN.	TYP.	MAX.	(mA)	
VLHW5100	White	5600	-	11 200	20	1	0.33, 0.33	1	20	2.8	-	3.6	20	InGaN and converter

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	А
Power dissipation		P _V	100	mW
Zener reverse current		I _Z	100	mA
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-to-ambient		$R_{th,JA}$	400	K/W



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OPTICAL AND ELECTRICAL CHARACTERISTICS (T _{amb} = 25 °C, unless otherwise specified) 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		х	-	0.33	-		
Chromaticity coordinate y acc. to CIE 1931	I _F = 20 mA		У	-	0.33	-		
Angle of half intensity	I _F = 20 mA		φ	-	± 10	-	0	
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	

CHROMATICITY COORDINATED CLASSIFICATION						
GROUP	Х		•	Y		
GROUP	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 \pm 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)					
GROUP	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)

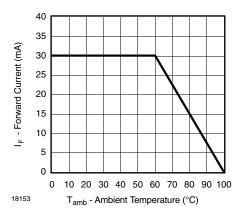


Fig. 1 - Forward Current vs. Ambient Temperature

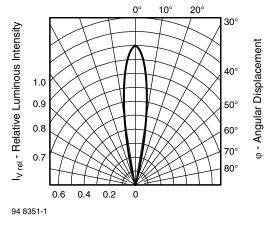


Fig. 2 - Relative Luminous Intensity vs. Angular Displacement

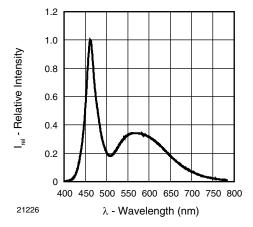


Fig. 3 - Relative Intensity vs. Wavelength

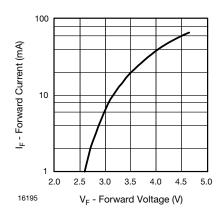


Fig. 4 - Forward Current vs. Forward Voltage

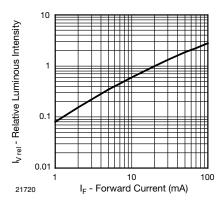


Fig. 5 - Relative Luminous Flux vs. Forward Current

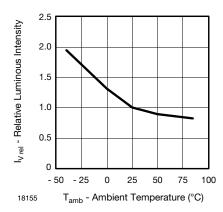


Fig. 6 - Relative Luminous Intensity vs. Ambient Temperature



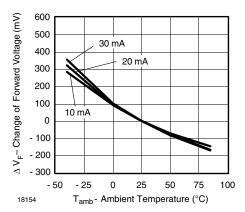


Fig. 7 - Change of Forward Voltage vs. Ambient Temperature

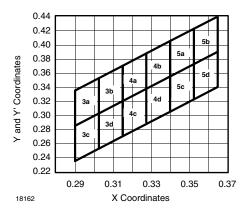


Fig. 8 - Coordinates of Colorgroups

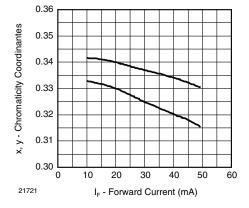
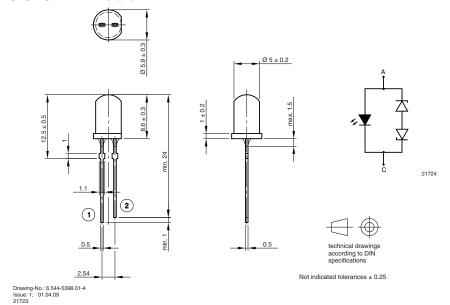


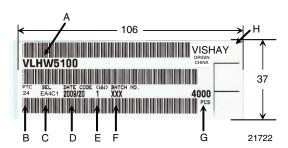
Fig. 9 - Chromaticity Coordinate Shift vs. Forward Current

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PACKAGE DIMENSIONS in millimeters



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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