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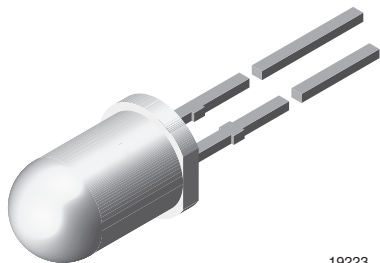
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# Ultrabright LED, Ø 5 mm Untinted Non-Diffused Package



19223

## DESCRIPTION

The VLCPG5100 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 AlInGaP (AS).

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: ultrabright
- Angle of half intensity:  $\pm 9^\circ$

## FEATURES

- Untinted non-diffused lens
- Utilizing ultrabright AlInGaP (AS)
- High luminous intensity
- High operating temperature:  $T_j$  (chip junction temperature) up to 125 °C for AlInGaP devices
- Luminous intensity and color categorized for each packing unit
- ESD-withstand voltage: Up to 2 kV according to JESD22-A114-B
- Material categorization: For definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



**RoHS**  
COMPLIANT  
HALOGEN  
**FREE**  
**GREEN**  
(5-2008)

## APPLICATIONS

- Interior and exterior lighting
- Outdoor LED panels
- Instrumentation and front panel indicators
- Central high mounted stop lights (CHMSL) for motor vehicles
- Replaces incandescent lamps
- Traffic signals
- Light guide design

## PARTS TABLE

PART	COLOR	LUMINOUS INTENSITY (mcd)			at $I_F$ (mA)	WAVELENGTH (nm)			at $I_F$ (mA)	FORWARD VOLTAGE (V)			at $I_F$ (mA)	TECHNOLOGY
		MIN.	TYP.	MAX.		MIN.	TYP.	MAX.		MIN.	TYP.	MAX.		
VLCPG5100	Pure green	430	1250	-	50	555	562	567	50	-	2.2	2.7	50	AlInGaP on GaAs

## ABSOLUTE MAXIMUM RATINGS ( $T_{amb} = 25^\circ\text{C}$ , unless otherwise specified)

### VLCPG5100

PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
Reverse voltage <sup>(1)</sup>		$V_R$	5	V
DC forward current	$T_{amb} \leq 85^\circ\text{C}$	$I_F$	50	mA
Surge forward current	$t_p \leq 10 \mu\text{s}$	$I_{FSM}$	1	A
Power dissipation		$P_V$	135	mW
Junction temperature		$T_j$	125	°C
Operating temperature range		$T_{amb}$	- 40 to + 100	°C
Storage temperature range		$T_{stg}$	- 40 to + 100	°C
Soldering temperature	$t \leq 5 \text{ s}$ , 2 mm from body	$T_{sd}$	260	°C
Thermal resistance junction/ambient		$R_{thJA}$	300	K/W

### Note

- <sup>(1)</sup> Driving the LED in reverse direction is suitable for a short term application

**OPTICAL AND ELECTRICAL CHARACTERISTICS** ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)  
**VLCPG5100, PURE GREEN**

PARAMETER	TEST CONDITION	PART	SYMBOL	MIN.	TYP.	MAX.	UNIT
Luminous intensity <sup>(1)</sup>	$I_F = 50\text{ mA}$	VLCPG5100	$I_V$	430	1250	-	mcd
Dominant wavelength	$I_F = 50\text{ mA}$		$\lambda_d$	555	562	567	nm
Peak wavelength	$I_F = 50\text{ mA}$		$\lambda_p$	-	563	-	nm
Spectral bandwidth at 50 % $I_{rel\text{ max.}}$	$I_F = 50\text{ mA}$		$\Delta\lambda$	-	20	-	nm
Angle of half intensity	$I_F = 50\text{ mA}$		$\phi$	-	$\pm 9$	-	deg
Forward voltage	$I_F = 50\text{ mA}$		$V_F$	-	2.2	2.7	V
Reverse voltage	$I_R = 10\text{ }\mu\text{A}$		$V_R$	5	-	-	V
Temperature coefficient of $V_F$	$I_F = 50\text{ mA}$		$TC_{V_F}$	-	- 3.5	-	mV/K
Temperature coefficient of $\lambda_d$	$I_F = 50\text{ mA}$		$TC_{\lambda_d}$	-	0.1	-	nm/K

**Note**(1) In one packing unit  $I_{Vmax}/I_{Vmin.} \leq 2.0$ **LUMINOUS INTENSITY CLASSIFICATION**

GROUP STANDARD	LUMINOUS INTENSITY (mcd)	
	MIN.	MAX.
BB	430	860
CC	575	1150
DD	750	1500
EE	1000	2000
FF	1350	2700
GG	1800	3600
HH	2400	4800
II	3200	6400
KK	4300	8600
LL	5750	11 500
MM	7500	15 000
NN	10 000	20 000
PP	13 500	27 000
QQ	18 000	36 000
RR	24 000	48 000
SS	32 000	64 000
TT	43 000	86 000
UU	57 500	115 000

**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 bag (there will be no mixing of two groups on each bag).  
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 in any one bag.  
In order to ensure availability, single wavelength groups will not be orderable.

**COLOR CLASSIFICATION**

GROUP	DOM. WAVELENGTH (nm)	
	PURE GREEN	
	MIN.	MAX.
0	555	559
1	558	561
2	560	563
3	562	565
4	564	567

**Note**

- Wavelengths are tested at a current pulse duration of 25 ms and an accuracy of  $\pm 1\text{ nm}$ .



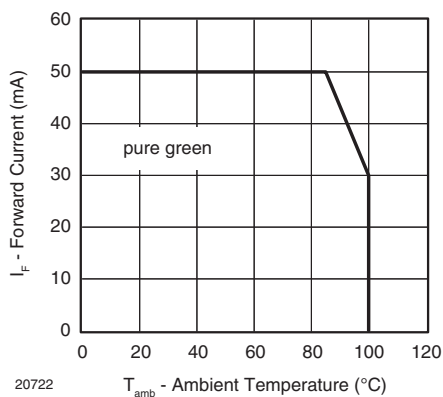
**TYPICAL CHARACTERISTICS** ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)


Fig. 1 - Forward Current vs. Ambient Temperature

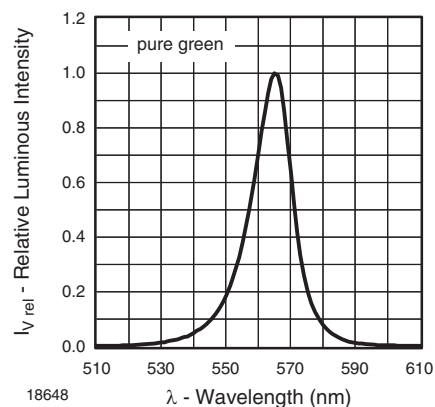


Fig. 4 - Relative Intensity vs. Wavelength

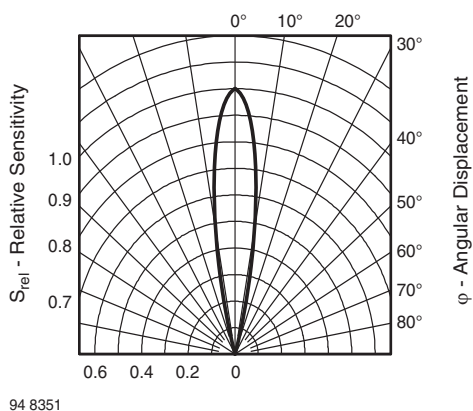


Fig. 2 - Relative Radiant Sensitivity vs. Angular Displacement

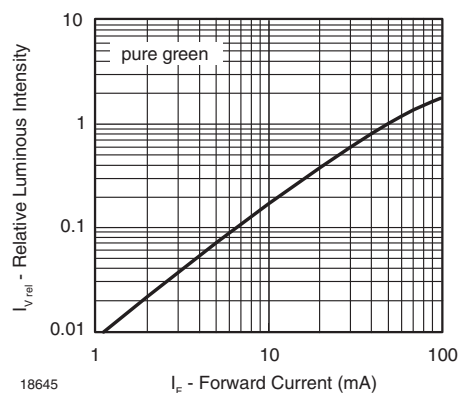


Fig. 5 - Relative Luminous Flux vs. Forward Current

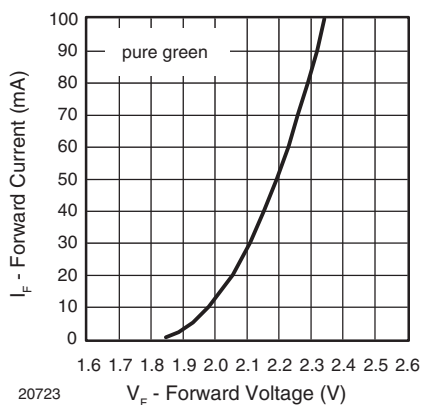


Fig. 3 - Forward Current vs. Forward Voltage

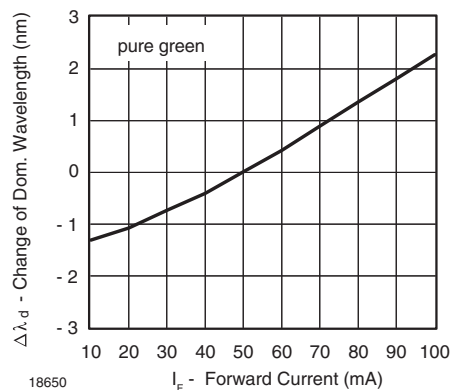


Fig. 6 - Change of Dominant Wavelength vs. Forward Current

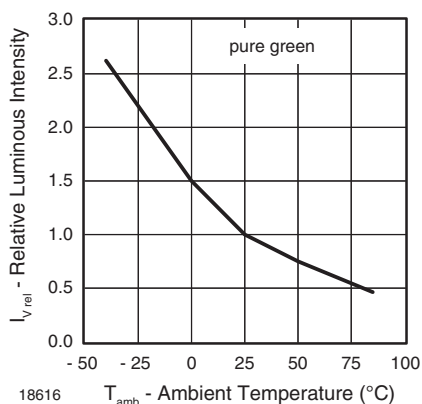


Fig. 7 - Relative Luminous Intensity vs. Ambient Temperature

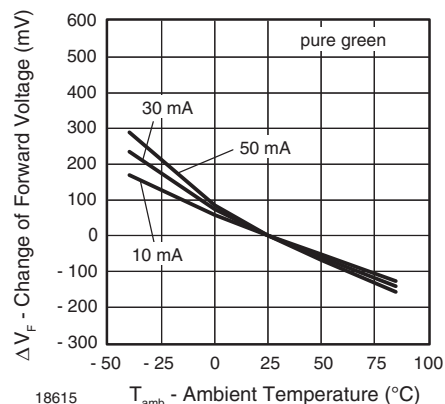


Fig. 9 - Change of Forward Voltage vs. Ambient Temperature

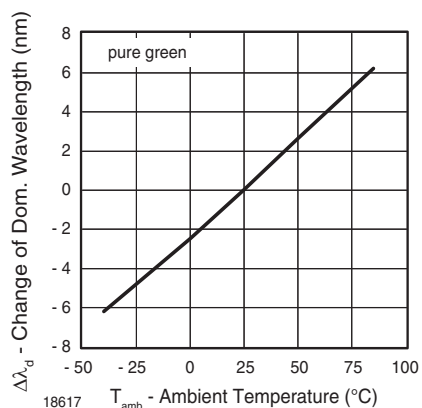
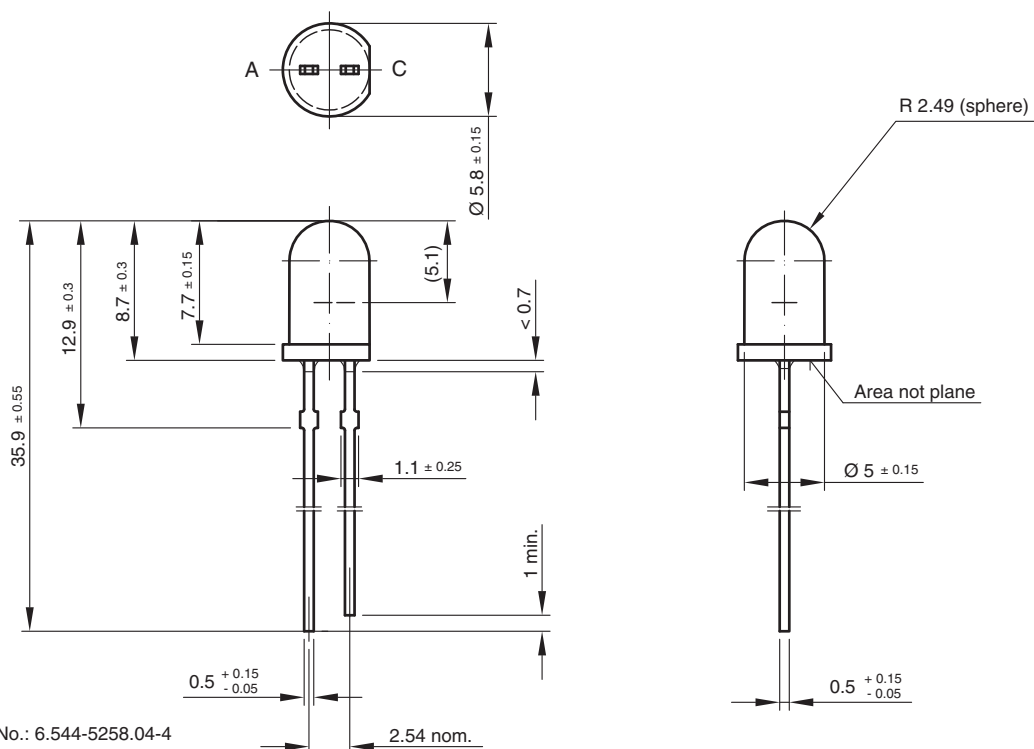


Fig. 8 - Change of Dominant Wavelength vs. Ambient Temperature

**PACKAGE DIMENSIONS** in millimeters


Drawing-No.: 6.544-5258.04-4

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