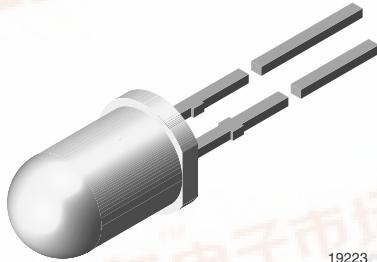


## High Brightness LED, Ø 5 mm Untinted Non-Diffused



### DESCRIPTION

The VLC.58.. series is a clear, non diffused 5 mm LED for high end applications where supreme luminous intensity and a very small emission angle is required. These lamps with clear untinted plastic case utilize the highly developed ultrabright AlInGaP technology. The very small viewing angle of these devices provide a very high luminous intensity.

### PRODUCT GROUP AND PACKAGE DATA

- Product group: LED
- Package: 5 mm
- Product series: power
- Angle of half intensity:  $\pm 4^\circ$

### FEATURES

- Untinted non diffused lens
- Utilizing ultrabright AlInGaP technology
- Very high luminous intensity
- Very small emission angle
- 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
- AEC-Q101 qualified
- Compliant to RoHS directive 2002/95/EC and in accordance to WEEE 2002/96/EC
- Find out more about Vishay's Automotive Grade Product requirements at: [www.vishay.com/applications](http://www.vishay.com/applications)

AUTOMOTIVE GRADE



e3

RoHS COMPLIANT

GREEN (S-2008)\*\*

### APPLICATIONS

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

### PARTS TABLE

PART	COLOR, LUMINOUS INTENSITY	TECHNOLOGY
VLCS5830	Red, $I_V > 24\,000$ mcd (typ. 65 000 mcd)	AlInGaP on Si

### ABSOLUTE MAXIMUM RATINGS ( $T_{amb} = 25$ °C, unless otherwise specified) VLCS5830

PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
Reverse voltage <sup>1)</sup>		$V_R$	5	V
DC Forward current	$T_{amb} \leq 85$ °C	$I_F$	50	mA
Surge forward current	$t_p \leq 10$ $\mu$ s	$I_{FSM}$	0.1	A
Power dissipation		$P_V$	150	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	$t \leq 5$ s, 2 mm from body	$T_{sd}$	260	°C
Thermal resistance junction/ambient		$R_{thJA}$	300	K/W

Note:

- Driving the LED in reverse direction is suitable for short term application

\*\* Please see document "Vishay Material Category Policy": [www.vishay.com/doc?99902](http://www.vishay.com/doc?99902)

**OPTICAL AND ELECTRICAL CHARACTERISTICS** ( $T_{amb} = 25^\circ C$ , unless otherwise specified)  
**VLCS5830, RED**

PARAMETER	TEST CONDITION	PART	SYMBOL	MIN.	TYP.	MAX.	UNIT
Luminous intensity <sup>1)</sup>	$I_F = 50 \text{ mA}$	VLCS5830	$I_V$	24 000	65 000		mcd
Dominant wavelength <sup>2)</sup>	$I_F = 50 \text{ mA}$		$\lambda_d$	620	624	630	nm
Peak wavelength	$I_F = 50 \text{ mA}$		$\lambda_p$		631		nm
Spectral bandwidth at 50 % $I_{rel \max.}$	$I_F = 50 \text{ mA}$		$\Delta\lambda$		18		nm
Angle of half intensity	$I_F = 50 \text{ mA}$		$\varphi$		$\pm 4$		deg
Forward voltage <sup>3)</sup>	$I_F = 50 \text{ mA}$		$V_F$		2.2	3.0	V
Reverse voltage	$I_R = 10 \mu\text{A}$		$V_R$	5			V
Temperature coefficient of $V_F$	$I_F = 50 \text{ mA}$		$TC_{VF}$		-2		mV/K
Temperature coefficient of $\lambda_d$	$I_F = 50 \text{ mA}$		$TC_{\lambda_d}$		0.05		nm/K

Note:

1) In one packing unit  $I_{Vmax.}/I_{Vmin.} \leq 2.0$ 2) Wavelengths are tested at a current pulse duration of 25 ms and a tolerance of  $\pm 1 \text{ nm}$ 3) Forward voltages are tested at a current pulse duration of 1 ms and a tolerance of  $\pm 0.05 \text{ V}$ **LUMINOUS INTENSITY CLASSIFICATION**

GROUP	LIGHT INTENSITY (mcd)	
	MIN.	MAX.
RR	24 000	48 000
SS	32 000	64 000
TT	43 000	86 000
UU	57 500	115 000
VV	72 000	150 000
WW	100 000	200 000

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 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 in any one reel.

In order to ensure availability, single wavelength groups will not be orderable.

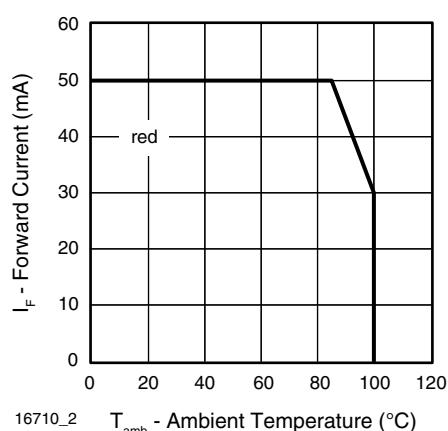
**TYPICAL CHARACTERISTICS** ( $T_{amb} = 25^\circ C$ , unless otherwise specified)

Figure 1. Max. Permissible Forward Current vs. Ambient Temperature

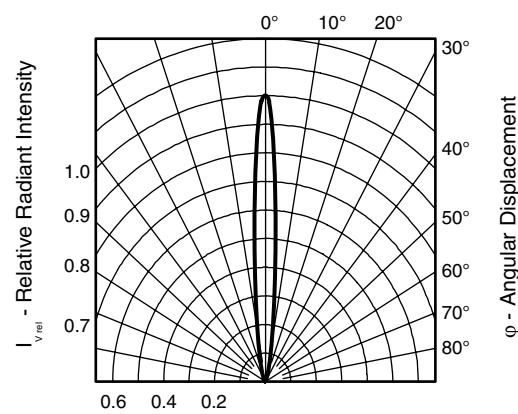
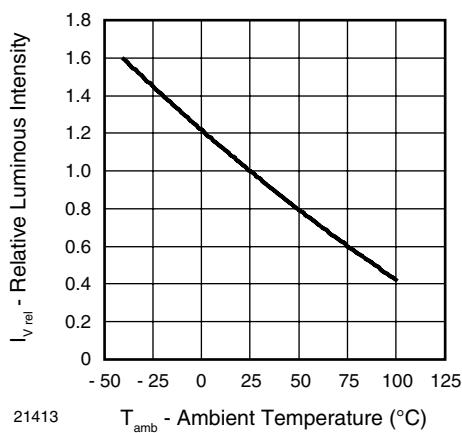
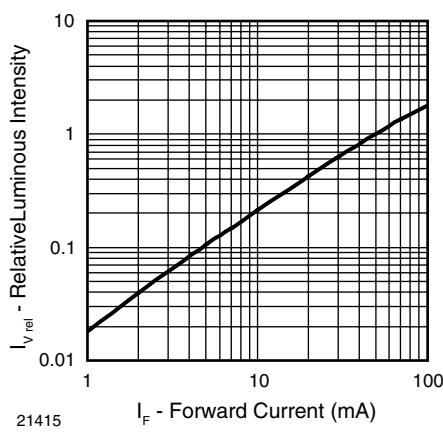
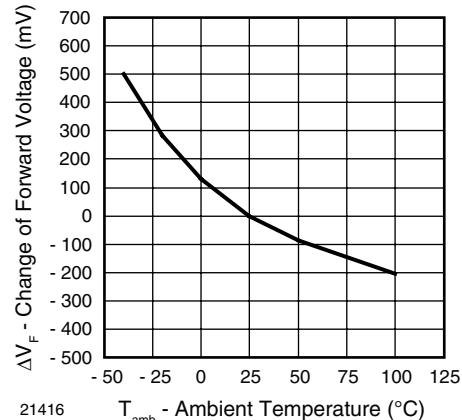
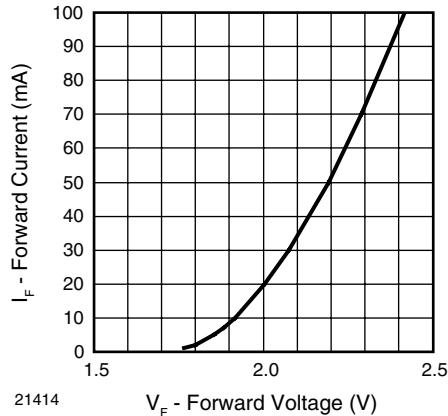
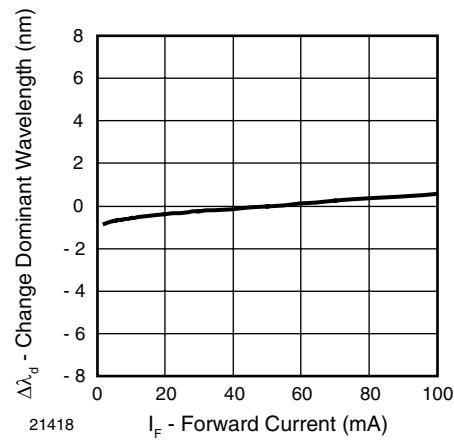
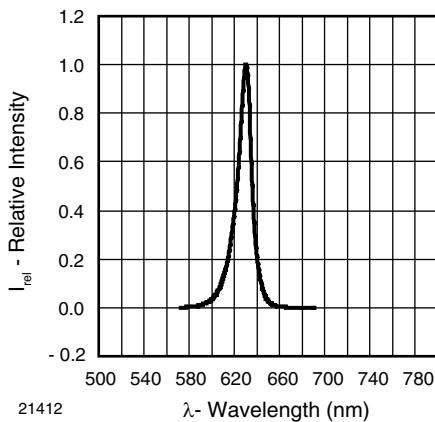


Figure 2. Relative Intensity vs. Angular Displacement



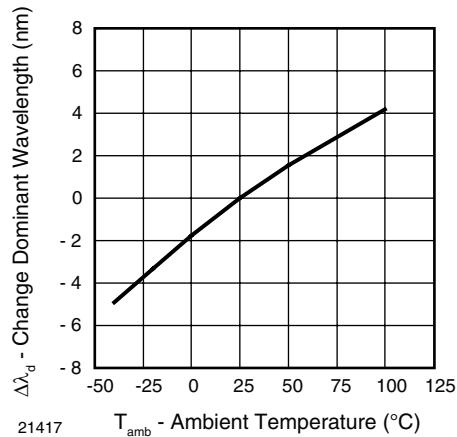
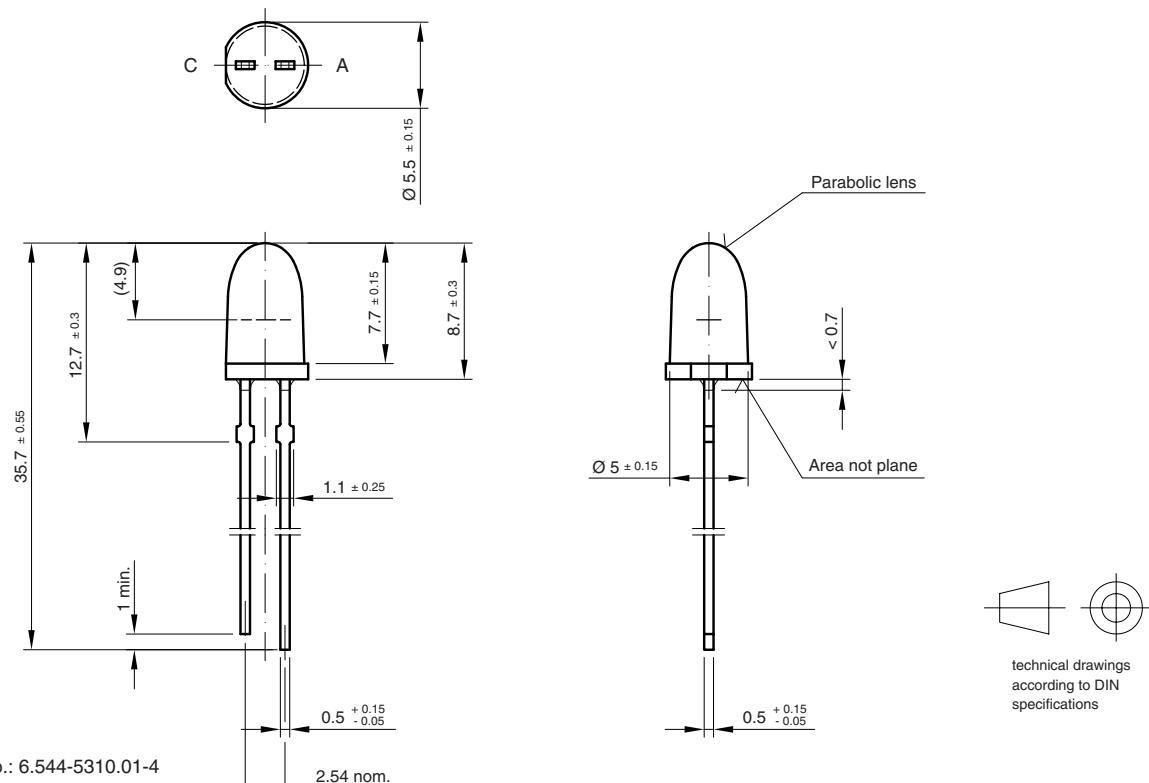
21417       $T_{\text{amb}}$  - Ambient Temperature (°C)

Figure 9. Change of Dominant Wavelength vs. Ambient Temperature

**PACKAGE DIMENSIONS** in millimeters

Drawing-No.: 6.544-5310.01-4

Issue: 4; 19.05.09

95 11476

## **Disclaimer**

All product specifications and data are subject to change without notice.

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 herein or in any other disclosure relating to any product.

Vishay disclaims any and all liability arising out of the use or application of any product described herein or of any information provided herein to the maximum extent permitted by law. The product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein, which apply to these products.

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.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications unless otherwise expressly indicated. Customers using or selling Vishay products not expressly indicated for use in such applications do so entirely at their own risk and agree to fully indemnify Vishay for any damages arising or resulting from such use or sale. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

Product names and markings noted herein may be trademarks of their respective owners.