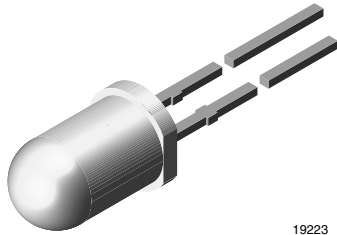




High Brightness LED, Ø 5 mm Untinted Non-Diffused Package



19223

DESCRIPTION

The VLC.52.. series is a clear, non-diffused 5 mm LED for high end applications where supreme luminous intensity is required.

These lamps with clear untinted plastic case utilize the highly developed ultrabright AllnGaP technology.

PRODUCT GROUP AND PACKAGE DATA

- Product group: LED
- Package: 5 mm
- Product series: power
- Angle of half intensity: $\pm 15^\circ$

FEATURES

- Untinted non-diffused lens
- Utilizing ultrabright AllnGaP technology
- Very high luminous intensity
- High operating temperature: T_j (chip junction temperature) up to 125 °C for AllnGaP 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
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

AUTOMOTIVE GRADE



RoHS
COMPLIANT
HALOGEN
FREE
GREEN
(5-2008)

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 (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. | | |
| VLCS5230 | Red | 3200 | 7500 | - | 50 | 620 | 624 | 630 | 50 | - | 2.2 | 3 | 50 | AllnGaP on Si |

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

VLCS5230

| PARAMETER | TEST CONDITION | SYMBOL | VALUE | UNIT |
|-------------------------------------|---------------------------------------|------------|---------------|------------------|
| Reverse voltage ⁽¹⁾ | | 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} | 0.1 | A |
| Power dissipation | | P_V | 150 | mW |
| Junction temperature | | T_j | 125 | $^\circ\text{C}$ |
| Operating temperature range | | T_{amb} | - 40 to + 100 | $^\circ\text{C}$ |
| Storage temperature range | | T_{stg} | - 40 to + 100 | $^\circ\text{C}$ |
| Soldering temperature | $t \leq 5 \text{ s}$, 2 mm from body | T_{sd} | 260 | $^\circ\text{C}$ |
| Thermal resistance junction/ambient | | R_{thJA} | 300 | K/W |

Note

- ⁽¹⁾ Driving the LED in reverse direction is suitable for short term application



| OPTICAL AND ELECTRICAL CHARACTERISTICS (T _{amb} = 25 °C, unless otherwise specified) | | | | | | | |
|---|------------------------|----------|-----------------------------|------|------|------|------|
| VLCS5230, RED | | | | | | | |
| PARAMETER | TEST CONDITION | PART | SYMBOL | MIN. | TYP. | MAX. | UNIT |
| Luminous intensity ⁽²⁾ | I _F = 50 mA | VLCS5230 | I _v | 3200 | 7500 | - | mcd |
| Dominant wavelength ⁽³⁾ | I _F = 50 mA | | λ _d | 620 | 624 | 630 | nm |
| Peak wavelength | I _F = 50 mA | | λ _p | - | 631 | - | nm |
| Spectral bandwidth at 50 % I _{rel max.} | I _F = 50 mA | | Δλ | - | 18 | - | nm |
| Angle of half intensity | I _F = 50 mA | | φ | - | ± 15 | - | deg |
| Forward voltage ⁽¹⁾ | I _F = 50 mA | | V _F | - | 2.2 | 3 | V |
| Reverse voltage | I _R = 10 μA | | V _R | 5 | - | - | V |
| Temperature coefficient of V _F | I _F = 50 mA | | TC _{V_F} | - | - 2 | - | mV/K |
| Temperature coefficient of λ _d | I _F = 50 mA | | TC _{λ_d} | - | 0.05 | - | nm/K |

Notes

- (1) Forward voltages are tested at a current pulse duration of 1 ms and a tolerance of ± 0.05 V
- (2) In one packing unit I_{vmax}/I_{vmin} ≤ 2.0
- (3) Wavelengths are tested at a current pulse duration of 25 ms and a tolerance of ± 1 nm

| LUMINOUS INTENSITY CLASSIFICATION | | |
|-----------------------------------|-----------------------|--------|
| GROUP | LIGHT INTENSITY (mcd) | |
| | MIN. | MAX. |
| II | 3200 | 6400 |
| KK | 4300 | 8600 |
| LL | 5750 | 11 500 |
| MM | 7500 | 15 000 |
| NN | 10 000 | 20 000 |
| PP | 13 500 | 27 000 |

Note

- Luminous intensity is tested at a current pulse duration of 25 ms and 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 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 °C, unless otherwise specified)

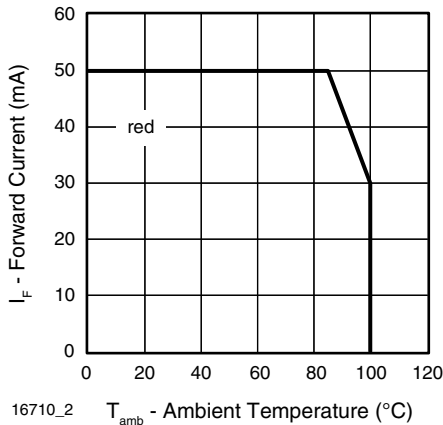


Fig. 1 - Maximum Permissible Forward Current vs. Ambient Temperature

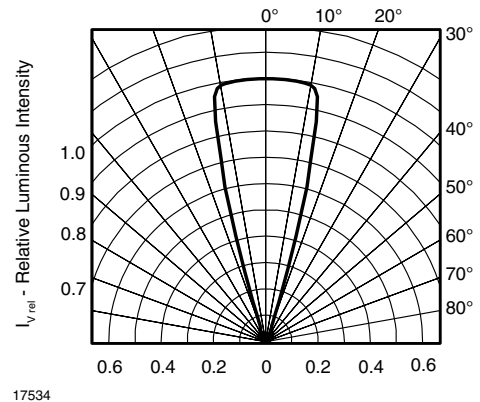


Fig. 2 - Relative Intensity vs. Angular Displacement

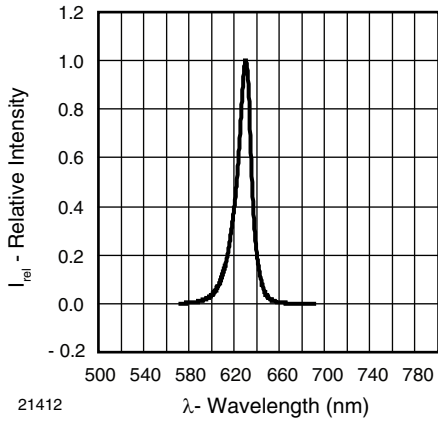


Fig. 3 - Relative Intensity vs. Wavelength

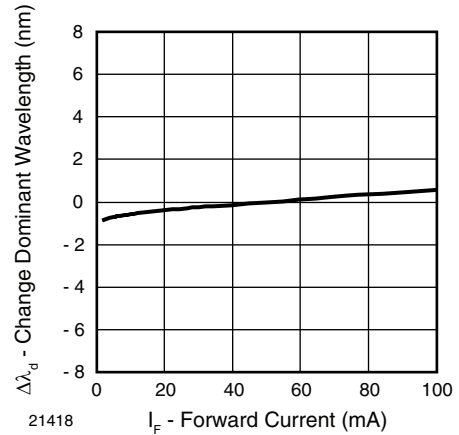


Fig. 6 - Change of Dominant Wavelength vs. Forward Current

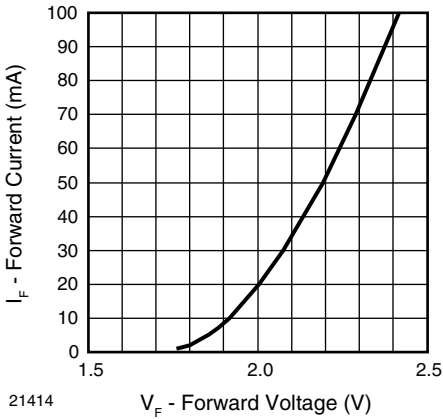


Fig. 4 - Forward Current vs. Forward Voltage

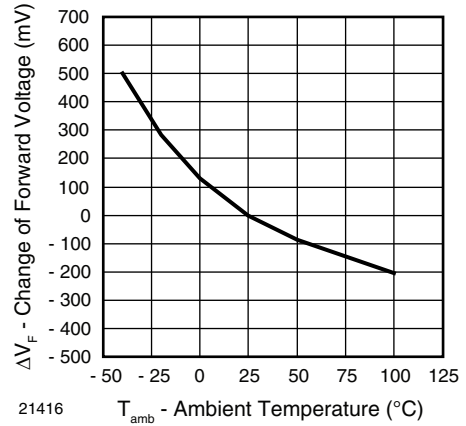


Fig. 7 - Change of Forward Voltage vs. Ambient Temperature

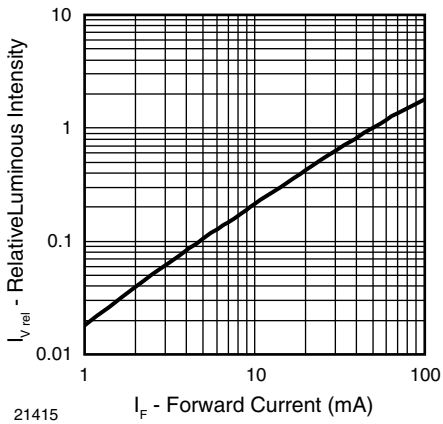


Fig. 5 - Relative Luminous Intensity vs. Forward Current

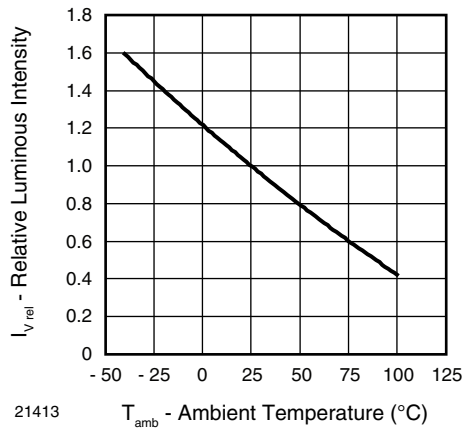


Fig. 8 - Relative Luminous Intensity vs. Ambient Temperature

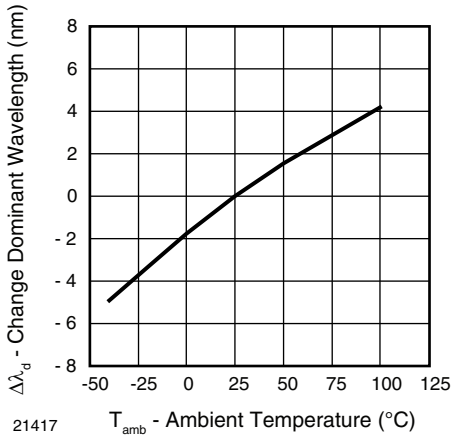
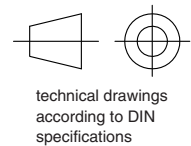
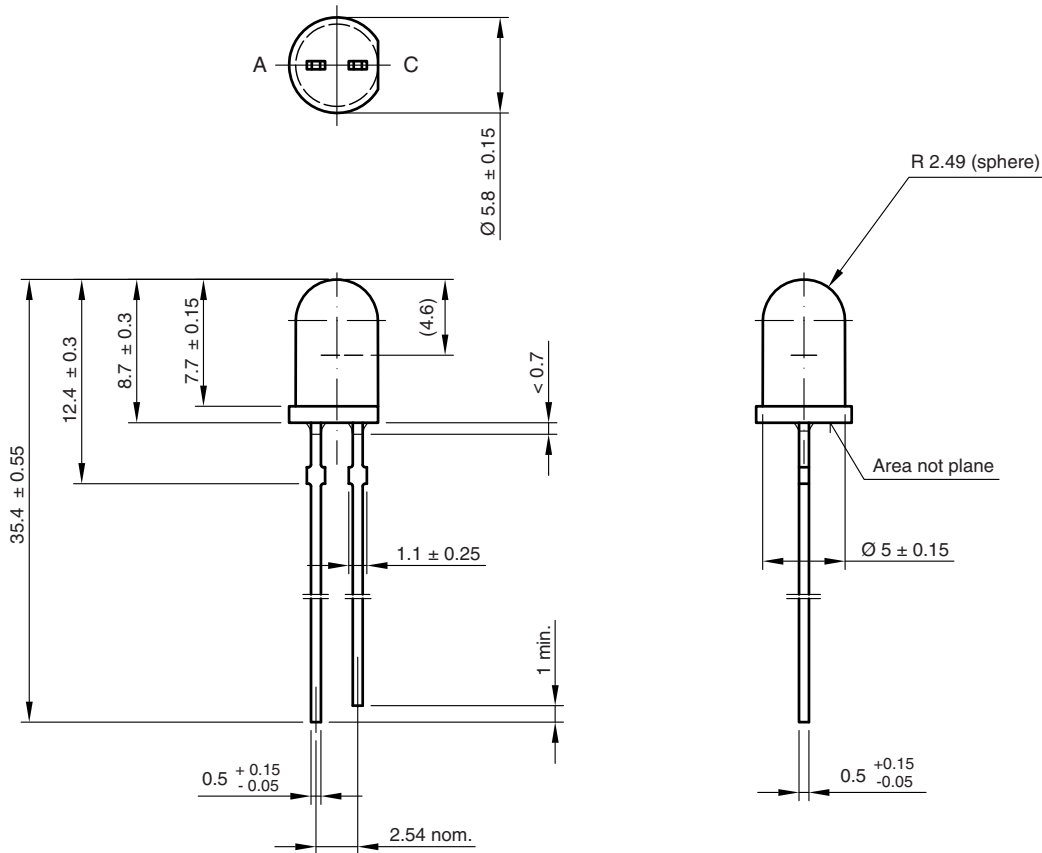


Fig. 9 - Change of Dominant Wavelength vs. Ambient Temperature

PACKAGE DIMENSIONS in millimeters



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