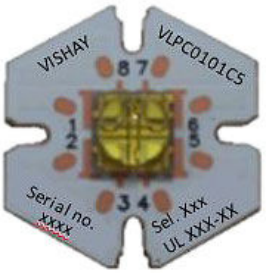
# High Brightness LED Power Module




## FEATURES

- Cu based PCB, 1.2 mm thickness
- Shiny white surface
- 4.4 W multichip LED, minimum 400 lm for cool white, 360 lm for natural white, and 300 lm for warm white at 700 mA each
- ESD withstand voltage: up to 1 kV according to JESD22-A114-B
- Color temperature binning
- Material categorization: For definitions of compliance please see www.vishay.com/doc?99912

Pb-free
RoHS COMPLIANT
GREEN (5-2008)

## DESCRIPTION

VLPC0101C5, VLPN0101C5, and VLPW0101C5 are high brightness LED modules. The 4.4 W multichip power LED is soldered on a Cu plate. The Cu plate with a thickness of 1.2 mm guarantees best heat removal and distribution. VLPC0101C5 is the cool white version in a color temperature range of 5000 K to 7000 K. VLPN0101C5 is natural white with a color temperature of 3640 K to 4240 K and VLPW0101C5 is warm white in a color temperature range of 2580 K to 3220 K. Additional to the modules a suitable LED driver is available.

## APPLICATIONS

- Internal lighting in buildings
- Tunnel lights
- Reading lamp, table lamp
- General lighting application

## PRODUCT GROUP AND PACKAGE DATA

- Product group: LED
- Package: LED module
- Product series: power
- Angle of half intensity: ± 65°

**PARTS TABLE**

| PART | COLOR | LUMINOUS FLUX (at $I_F$ = 700 mA typ.) | COLOR TEMPERATURE K | TECHNOLOGY |
|---|---|---|---|---|
| VLPC0101C5 | Cool white | $\Phi_V$ = 450 lm | 5000 to 7000 | InGaN |
| VLPN0101C5 | Natural white | $\Phi_V$ = 410 lm | 3640 to 4240 | InGaN |
| VLPW0101C5 | Warm white | $\Phi_V$ = 350 lm | 2580 to 3220 | InGaN |

**ABSOLUTE MAXIMUM RATINGS** ($T_{amb}$ = 25 °C, unless otherwise specified)
**VLPC0101C5, VLPN0101C5, VLPW0101C5**

| PARAMETER | TEST CONDITION | SYMBOL | VALUE | UNIT |
|---|---|---|---|---|
| Forward current | $T_{amb}$ < 80 °C | $I_F$ | 700 | mA |
| Power dissipation | $T_{amb}$ < 80 °C | $P_{tot}$ | 4.6 | W |
| Junction temperature | | $T_j$ | 115 | °C |
| Operating temperature range | | $T_{amb}$ | - 40 to + 80 | °C |
| Storage temperature range | | $T_{stg}$ | - 40 to + 100 | °C |

| **OPTICAL AND ELECTRICAL CHARACTERISTICS** ($T_{amb}$ = 25 °C, unless otherwise specified) **VLPC0101C5, COOL WHITE** | | | | | | |
|---|---|---|---|---|---|---|
| **PARAMETER** | **TEST CONDITION** | **SYMBOL** | **MIN.** | **TYP.** | **MAX.** | **UNIT** |
| Luminous flux | $I_F$ = 700 mA | $\Phi_V$ | 400 | 450 | - | lm |
| Color temperature | $I_F$ = 700 mA | CCT | 5000 | 5700 | 7000 | K |
| Forward voltage | $I_F$ = 700 mA | $V_F$ | 6.0 | 6.3 | 6.6 | V |
| Temperature coefficient of $V_F$ | $I_F$ = 700 mA | $TCV_F$ | - | 2.0 | - | mV/K |
| Temperature coefficient of $\Phi_V$ | $I_F$ = 700 mA | $TC\Phi_V$ | - | 0.18 | - | %/K |

**Note**

- Forward voltages are tested at a current pulse duration of 1 ms and a tolerance of ± 0.1 V. Luminous flux is measured at a current pulse duration of 25 ms and an accuracy of ± 11 %.

| **OPTICAL AND ELECTRICAL CHARACTERISTICS** ($T_{amb}$ = 25 °C, unless otherwise specified) **VLPN0101C5, NATURAL WHITE** | | | | | | |
|---|---|---|---|---|---|---|
| **PARAMETER** | **TEST CONDITION** | **SYMBOL** | **MIN.** | **TYP.** | **MAX.** | **UNIT** |
| Luminous flux | $I_F$ = 700 mA | $\Phi_V$ | 360 | 410 | - | lm |
| Color temperature | $I_F$ = 700 mA | CCT | 3640 | 4000 | 4240 | K |
| Forward voltage | $I_F$ = 700 mA | $V_F$ | 6.0 | 6.3 | 6.6 | V |
| Temperature coefficient of $V_F$ | $I_F$ = 700 mA | $TCV_F$ | - | 2.0 | - | mV/K |
| Temperature coefficient of $\Phi_V$ | $I_F$ = 700 mA | $TC\Phi_V$ | - | 0.18 | - | %/K |

**Note**

- Forward voltages are tested at a current pulse duration of 1 ms and a tolerance of ± 0.1 V. Luminous flux is measured at a current pulse duration of 25 ms and an accuracy of ± 11 %.

| **OPTICAL AND ELECTRICAL CHARACTERISTICS** ($T_{amb}$ = 25 °C, unless otherwise specified) **VLPW0101C5, WARM WHITE** | | | | | | |
|---|---|---|---|---|---|---|
| **PARAMETER** | **TEST CONDITION** | **SYMBOL** | **MIN.** | **TYP.** | **MAX.** | **UNIT** |
| Luminous flux | $I_F$ = 700 mA | $\Phi_V$ | 300 | 350 | - | lm |
| Color temperature | $I_F$ = 700 mA | CCT | 2580 | 3000 | 3220 | K |
| Forward voltage | $I_F$ = 700 mA | $V_F$ | 6.0 | 6.3 | 6.6 | V |
| Temperature coefficient of $V_F$ | $I_F$ = 700 mA | $TCV_F$ | - | 2.0 | - | mV/K |
| Temperature coefficient of $\Phi_V$ | $I_F$ = 700 mA | $TC\Phi_V$ | - | 0.18 | - | %/K |

**Note**

- Forward voltages are tested at a current pulse duration of 1 ms and a tolerance of ± 0.1 V. Luminous flux is measured at a current pulse duration of 25 ms and an accuracy of ± 11 %.

| **COLOR BINNING** ($I_F$ at 700 mA) | | |
|---|---|---|
| **PART** | **BIN CODE** | **CCT (K)** |
| VLPC0101C5 | A | 5000 to 5500 |
| | B | 5500 to 6000 |
| | C | 6000 to 6500 |
| | D | 6500 to 7000 |
| VLPN0101C5 | N | 3640 to 3920 |
| | M | 3920 to 4240 |
| VLPW0101C5 | J | 2580 to 2870 |
| | K | 2870 to 3220 |

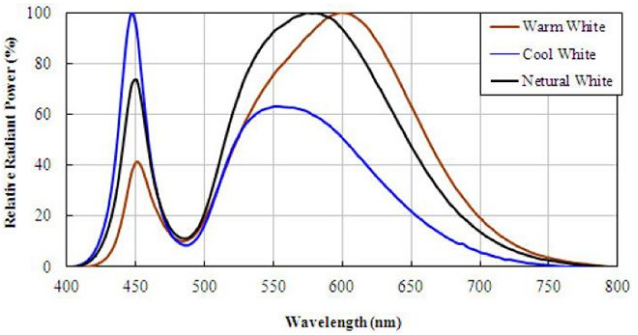



Fig. 1 - Relative Spectrale Emission

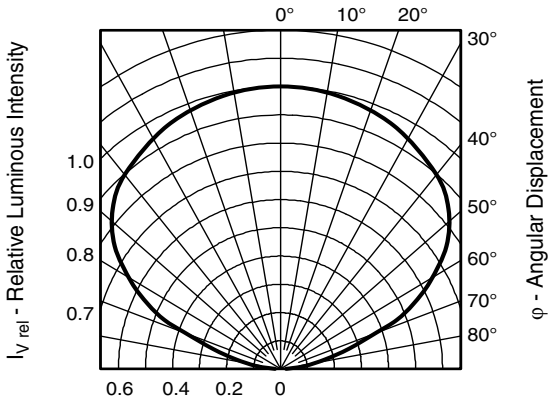



Fig. 2 - Relative Intensity vs. Angular Displacement

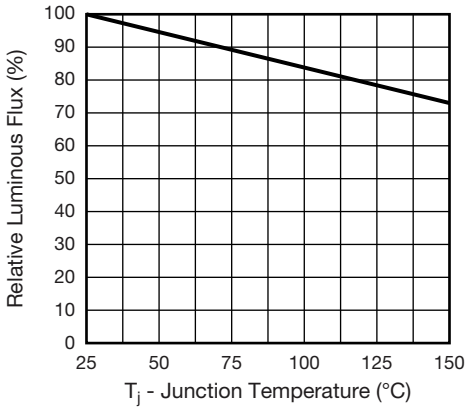



Fig. 3 - Relative Luminous Flux vs. Junction Temperature
($I_F$ = 3200 mA)

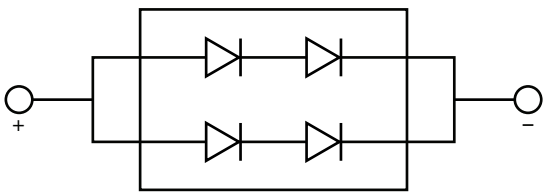
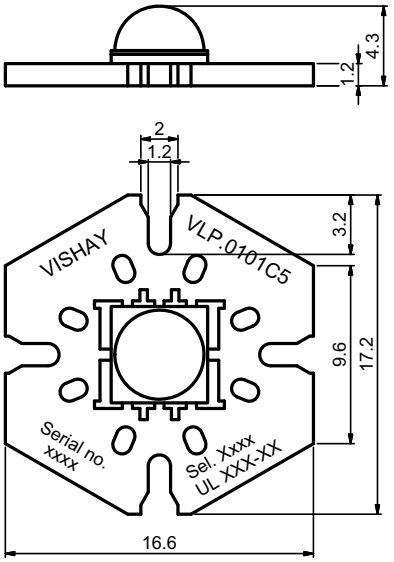



Fig. 4 - Array Circuit Type

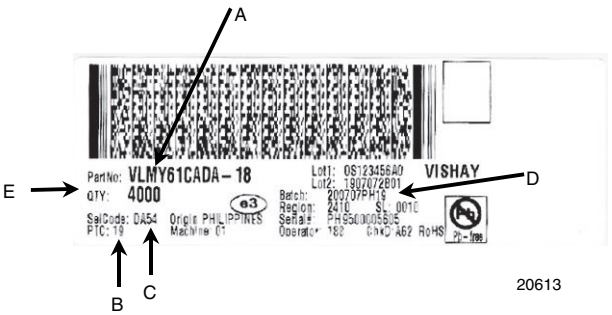
## PACKAGE DIMENSIONS in millimeters



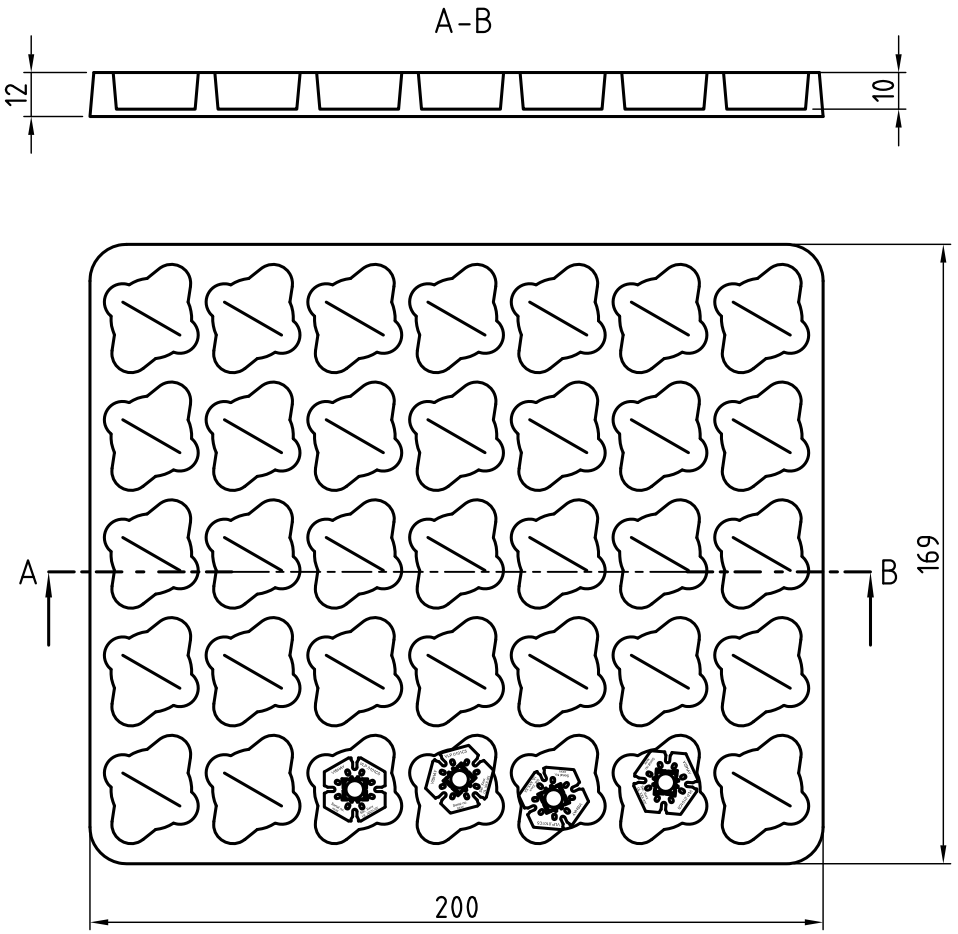

Not indicated tolerances ± 0.2
All dimensions in mm
Drawing refers to following types: VLP.0101C5
Drawing-No.: 9.920-6807.01-4
Issue: prel; 23.04.2012

Technical drawings according to DIN specification.

## BAR CODE PRODUCT LABEL




A. Type of component
B. Manufacturing plant
C. SEL - selection code (bin):
X = color group
D. Batch:
200707 = year 2007, week 07
PH19 = plant code
E. Total quantity

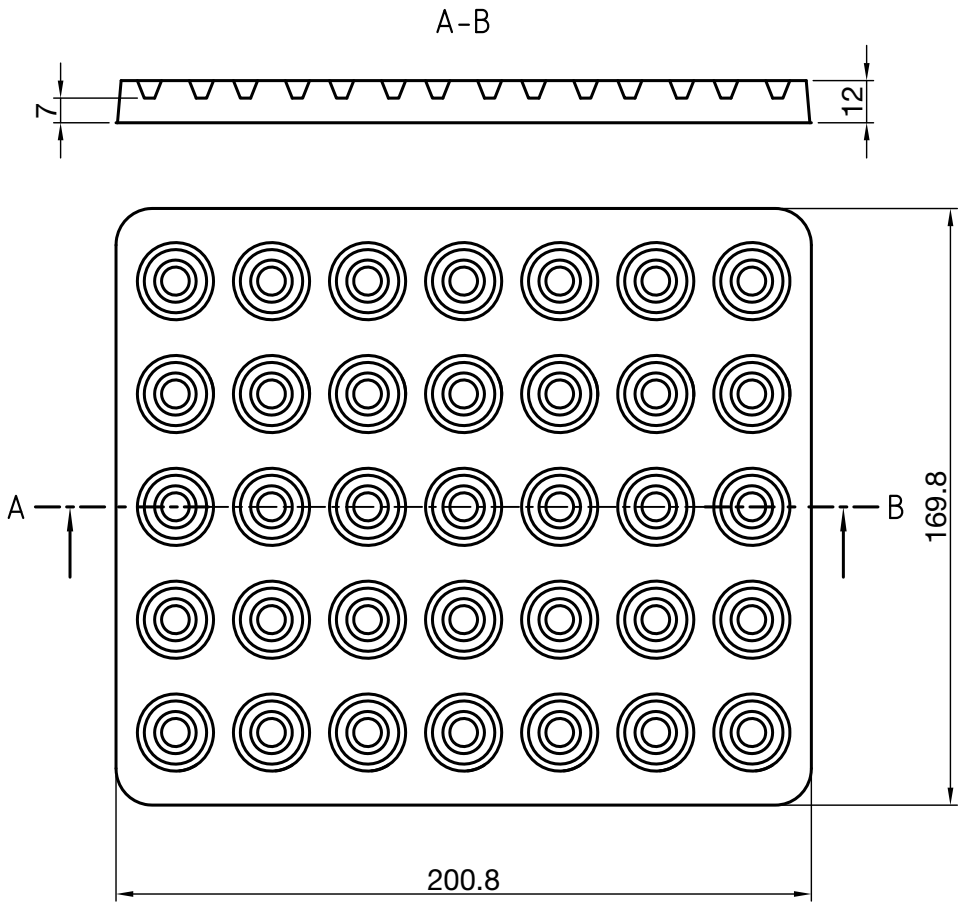



technical drawings
according to DIN
specifications

Drawing refers to following types: VLP.0101C5, VLP.0101C6

Drawing-No.: 9.700-5389.01-4
Issue: prel; 18.07.12

Fig. 5 - Tray with 7 x 5 Pieces




technical drawings
according to DIN
specifications

Drawing refers to following types: VLP.0101C5, VLP.0101C6

Drawing-No.: 9.700-5390.01-4
Issue: prel; 18.07.12

Fig. 6 - Tray Cover

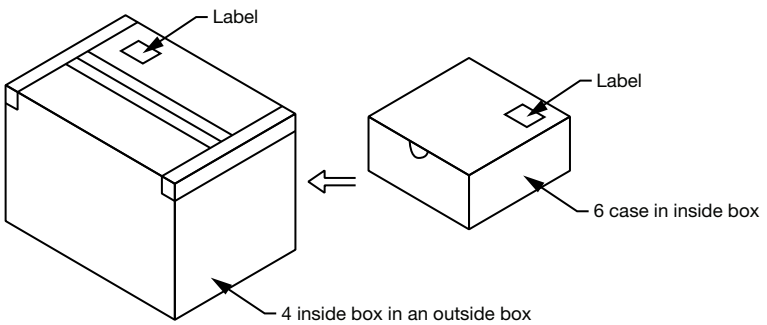



Fig. 7 - Box

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