



High Brightness LED Power Module



FEATURES

- Metal core PCB: Al > 1 thickness
- Single side/single layer PCB
- Shiny white surface
- 6 or 12 LEDs, max. current per LED 1 A
- Prepared to divide in half strips also, by cutting
- Conductive top layer: Cu (min. 18 μm)
- Isolation layer prepreg (100 μm)
- ESD withstand voltage: up to 2 kV according to JESD22-A114-B
- Color binning
- LM80 certified LEDs
- Material categorization: For definitions of compliance please see www.vishay.com/doc?99912



RoHS COMPLIANT GREEN (5-2008)

DESCRIPTION

VLPC1201A2, VLPC1201A2J and VLPC0601A2 are metal core based high brightness LED power modules assembled with 6 or 12 white LED's. Color temperature range of 5000 K to 7000 K.

The VLPC1201A2J has 12 units in row, while the VLPC1201A2 can be divided in 2 strips 6 LED's each by sawing or driven as 2 x 6 LED's.

APPLICATIONS

- Automotive internal lighting
- 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: ± 80°

| PARTS TABLE | | | | |
|-------------|------------|---|---------------------|------------|
| PART | COLOR | LUMINOUS FLUX (at I _F = 700 mA typ.) | COLOR TEMPERATURE K | TECHNOLOGY |
| VLPC0601A2 | Cool white | Φ _V = 1050 lm | 5000 to 7000 | InGaN |
| VLPC1201A2 | Cool white | Φ _V = 2 x 1050 lm | 5000 to 7000 | InGaN |
| VLPC1201A2J | Cool white | Φ _V = 2100 lm | 5000 to 7000 | InGaN |

| ABSOLUTE MAXIMUM RATINGS (T _{amb} = 25 °C, unless otherwise specified) VLPC0601A2, VLPC1201A2, VLPC1201A2J | | | | | |
|--|----------------|-------------|------------------|--------------|------|
| PARAMETER | TEST CONDITION | PART | SYMBOL | VALUE | UNIT |
| Forward current | | | I _F | 700 | mA |
| Power dissipation | Total | VLPC0601A2 | P _{tot} | 16.1 | W |
| | | VLPC1206A2 | P _{tot} | 32.2 | W |
| | | VLPC1206A2J | P _{tot} | 32.2 | W |
| Junction temperature | | | T _j | 120 | °C |
| Operating temperature range | | | T _{amb} | - 40 to + 85 | °C |
| Storage temperature range | | | T _{stg} | - 40 to + 85 | °C |
| Decomposition temperature of PCB (for cable assembly) | 3 x 10 s | | T _D | 350 | °C |



| OPTICAL AND ELECTRICAL CHARACTERISTICS ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified) VLPC0601A2, COOL WHITE | | | | | | |
|---|-----------------------|------------|------|-------|------|------|
| PARAMETER | TEST CONDITION | SYMBOL | MIN. | TYP. | MAX. | UNIT |
| Luminous flux total ⁽¹⁾ | $I_F = 700\text{ mA}$ | Φ_V | 860 | 1050 | - | lm |
| Color temperature | $I_F = 700\text{ mA}$ | TK | 5000 | - | 7000 | K |
| Forward voltage | $I_F = 700\text{ mA}$ | V_F | 19 | 21 | 23 | V |
| Temperature coefficient of V_F | $I_F = 350\text{ mA}$ | TC_{V_F} | - | - 21 | - | mV/K |
| Temperature coefficient of Φ_V | $I_F = 350\text{ mA}$ | $TC\Phi_V$ | - | - 0.4 | - | %/K |

Notes

- Forward voltages are tested at a current pulse duration of 1 ms and a tolerance of $\pm 0.1\text{ V}$. Luminous flux is measured at a current pulse duration of 25 ms and an accuracy of $\pm 11\text{ \%}$.
- ⁽¹⁾ Calculated based on single LED unit.

| OPTICAL AND ELECTRICAL CHARACTERISTICS ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified) VLPC1201A2J, COOL WHITE | | | | | | |
|--|-----------------------|------------|------|-------|------|------|
| PARAMETER | TEST CONDITION | SYMBOL | MIN. | TYP. | MAX. | UNIT |
| Luminous flux total ⁽¹⁾ | $I_F = 700\text{ mA}$ | Φ_V | 1720 | 2100 | - | lm |
| Color temperature | $I_F = 700\text{ mA}$ | TK | 5000 | - | 7000 | K |
| Forward voltage | $I_F = 700\text{ mA}$ | V_F | 38 | 42 | 46 | V |
| Temperature coefficient of V_F | $I_F = 350\text{ mA}$ | TC_{V_F} | - | - 40 | - | mV/K |
| Temperature coefficient of Φ_V | $I_F = 350\text{ mA}$ | $TC\Phi_V$ | - | - 0.4 | - | %/K |

Notes

- Forward voltages are tested at a current pulse duration of 1 ms and a tolerance of $\pm 0.1\text{ V}$. Luminous flux is measured at a current pulse duration of 25 ms and an accuracy of $\pm 11\text{ \%}$.
- ⁽¹⁾ Calculated based on single LED unit.

| OPTICAL AND ELECTRICAL CHARACTERISTICS ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified) VLPC1201A2, COOL WHITE | | | | | | |
|---|-----------------------|------------|---------|----------|------|------|
| PARAMETER | TEST CONDITION | SYMBOL | MIN. | TYP. | MAX. | UNIT |
| Luminous flux total ⁽¹⁾ | $I_F = 700\text{ mA}$ | Φ_V | 2 x 860 | 2 x 1050 | - | lm |
| Color temperature | $I_F = 700\text{ mA}$ | TK | 5000 | - | 7000 | K |
| Forward voltage per 6 LEDs | $I_F = 700\text{ mA}$ | V_F | 19 | 21 | 23 | V |
| Temperature coefficient of V_F per 6 LEDs | $I_F = 350\text{ mA}$ | TC_{V_F} | - | - 20 | - | mV/K |
| Temperature coefficient of Φ_V | $I_F = 350\text{ mA}$ | $TC\Phi_V$ | - | - 0.4 | - | %/K |

Notes

- Forward voltages are tested at a current pulse duration of 1 ms and a tolerance of $\pm 0.1\text{ V}$. Luminous flux is measured at a current pulse duration of 25 ms and an accuracy of $\pm 11\text{ \%}$.
- ⁽¹⁾ Calculated based on single LED unit.



COLOR RANGE AND COLOR BINNING

VLPC0601A2; VLPC1201A2: 5000 K to 7000 K group 6P to 7R

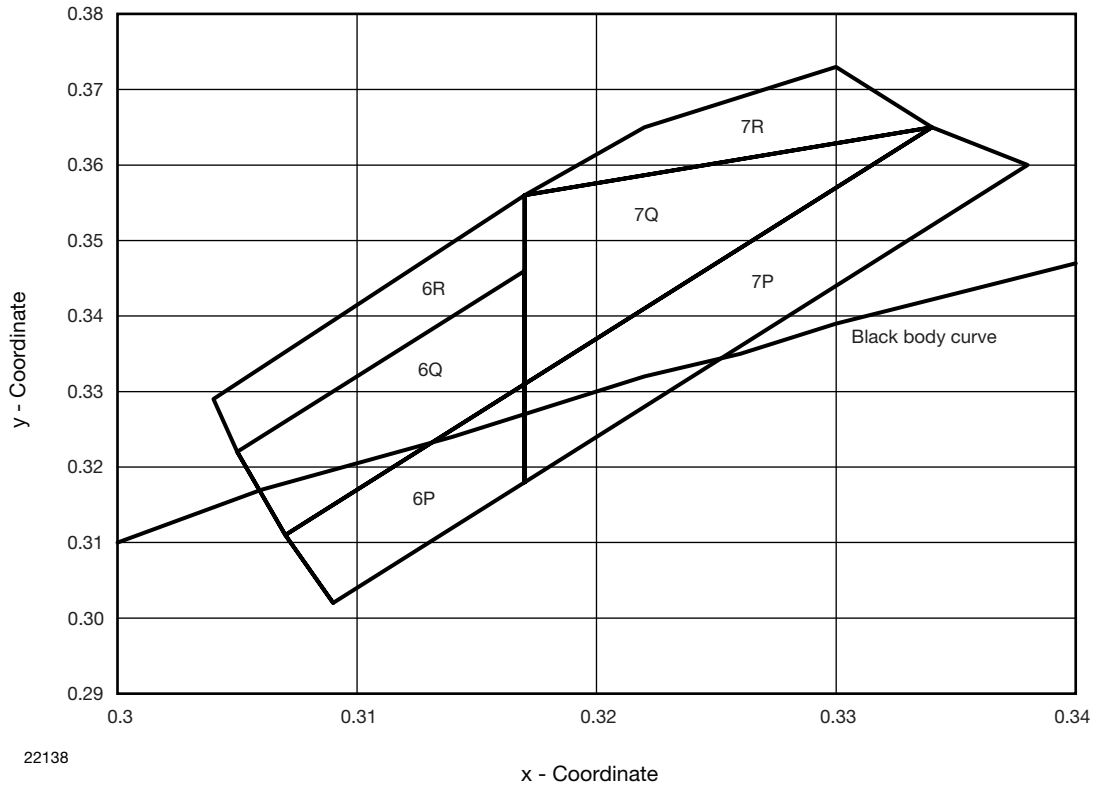
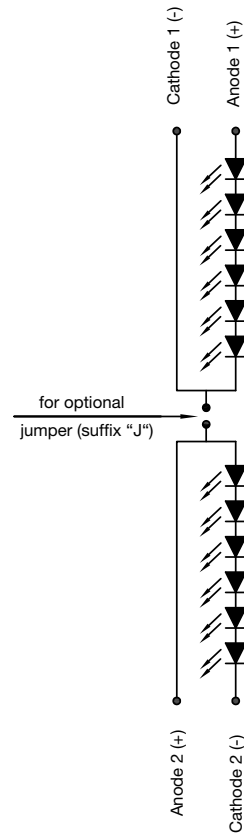
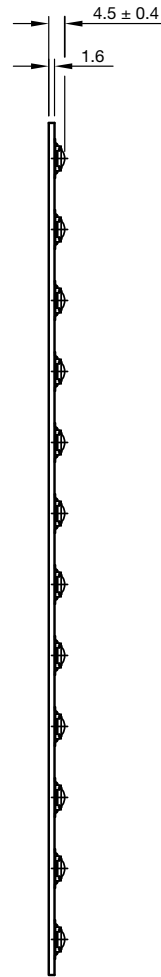
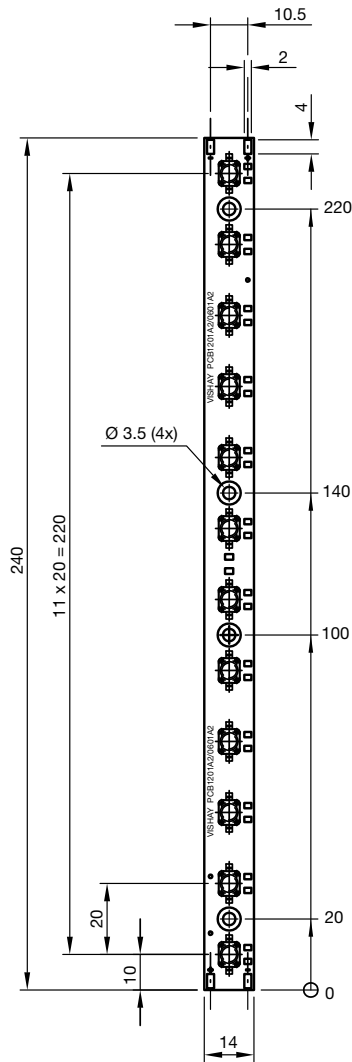


Fig. 1 - Chromaticity Coordinates of Colorgroups

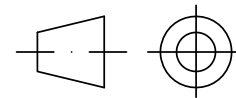
| CHROMATICITY COORDINATED GROUPS FOR COOL WHITE SMD LED | | | | | | | | | |
|--|-------|-------|-------|-------|-------|-------|-------|-------|--|
| GROUP | X | Y | GROUP | X | Y | GROUP | X | Y | |
| 6P | 0.309 | 0.302 | 6Q | 0.307 | 0.311 | 6R | 0.305 | 0.322 | |
| | 0.307 | 0.311 | | 0.305 | 0.322 | | 0.304 | 0.329 | |
| | 0.317 | 0.331 | | 0.317 | 0.346 | | 0.317 | 0.356 | |
| | 0.317 | 0.318 | | 0.317 | 0.331 | | 0.317 | 0.346 | |
| 7P | 0.317 | 0.318 | 7Q | 0.317 | 0.331 | 7R | 0.317 | 0.356 | |
| | 0.317 | 0.331 | | 0.317 | 0.356 | | 0.322 | 0.365 | |
| | 0.334 | 0.365 | | 0.334 | 0.365 | | 0.330 | 0.373 | |
| | 0.338 | 0.360 | | 0.317 | 0.331 | | 0.334 | 0.365 | |



PCB BASIC DESIGN DIMENSIONS in millimeters



Not indicated tolerances ± 0.2

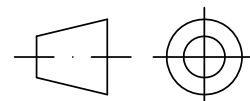
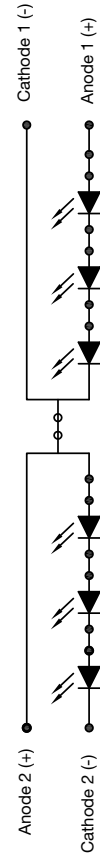
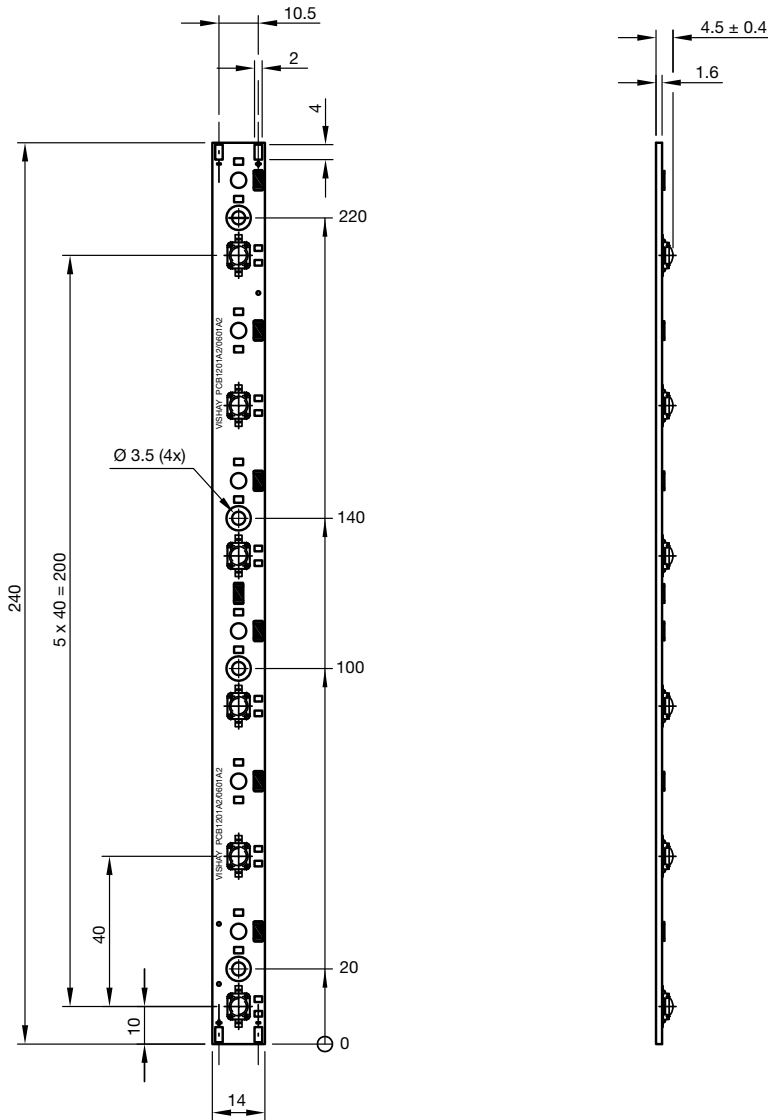


technical drawings according to DIN specifications

Drawing-No.: 9.920-6754.01-4
Issue: 1 ; 02.11.10
22435



PCB BASIC DESIGN DIMENSIONS in millimeters



technical drawings according to DIN specifications

Not indicated tolerances ± 0.2

Drawing-No.: 9.920-6756.01-4
Issue: 1 ; 02.11.10
22436

PCB CHARACTERISTICS

- Metal core PCB: Al (minimum 1000 µm - thickness)
- Prepreg minimum 63 µm
- Conductive pattern Cu minimum 18 µm
- Free of burrs
- Compliant to RoHS Directive 2002/95/EC
- Halogen-free according to IEC 61249-2-21 definition
- Solder resist on top side
- Shiny white surface (glossy-white Taiyo-PSR 2000)
- Galvanic of solder pads and backside pure matte Sn (0.8 µm to 1.2 µm)
- Assembled with 6 or 12 high brightness power LEDs. LED position accuracy ± 0.3

EMISSION CHARACTERISTIC

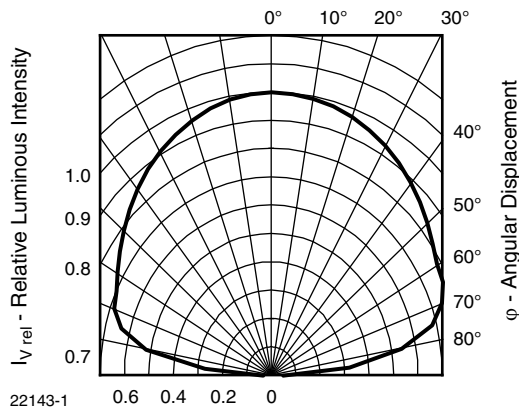
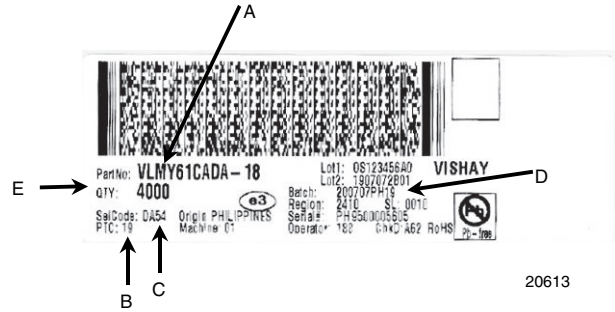


Fig. 2 - Rel. Luminous Intensity vs. Angular Displacement

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

Note

- 32 PCB's per box, minimum order quantity 32



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