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[VLPC0601A1](#)

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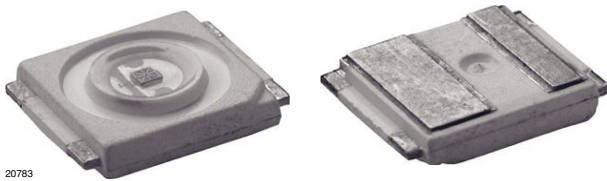


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# VLPC0601A1, VLPC1201A1, VLPC1201A1J

Vishay Semiconductors

## High Brightness LED Power Module



### FEATURES

- Metal core PCB: Al > 1 thickness
- Single side/single layer PCB
- Shiny white surface
- 6 or 12 LEDs minimum 87.4 lm at 350 mA each
- 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
- Compliant to RoHS Directive 2011/65/EU



RoHS  
COMPLIANT  
GREEN  
(5-2008)\*\*

### Note

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

### DESCRIPTION

VLPC1201A1, VLPC1201A1J and VLPC0601A1 are metal core based high brightness LED power modules assembled with 6 or 12 white LEDs. Color temperature range of 5000 K to 7000 K.

The VLPC1201A1J has 12 units in row, while the VLPC1201A1 can be divided in 2 strips 6 LEDs each by sawing or driven as 2 x 6 LEDs.

### 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: ± 60°

PARTS TABLE				
PART	COLOR	LUMINOUS FLUX (at I <sub>F</sub> = 350 mA typ.)	COLOR TEMPERATURE K	TECHNOLOGY
VLPC0601A1	Cool white	Φ <sub>V</sub> = 540 lm	5000 to 7000	InGaN
VLPC1201A1	Cool white	Φ <sub>V</sub> = 2 x 540 lm	5000 to 7000	InGaN
VLPC1201A1J	Cool white	Φ <sub>V</sub> = 1080 lm	5000 to 7000	InGaN

ABSOLUTE MAXIMUM RATINGS (T <sub>amb</sub> = 25 °C, unless otherwise specified) VLPC0601A1, VLPC1201A1, VLPC1201A1J					
PARAMETER	TEST CONDITION	PART	SYMBOL	VALUE	UNIT
Forward current			I <sub>F</sub>	350	mA
Power dissipation	Total	VLPC0601A1	P <sub>tot</sub>	8.4	W
		VLPC1206A1	P <sub>tot</sub>	16.8	W
		VLPC1206A1J	P <sub>tot</sub>	16.8	W
Junction temperature			T <sub>j</sub>	120	°C
Operating temperature range			T <sub>amb</sub>	- 40 to + 85	°C
Storage temperature range			T <sub>stg</sub>	- 40 to + 85	°C
Decomposition temperature of PCB (for cable assembly)	3 x 10 s		T <sub>D</sub>	350	°C



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<b>OPTICAL AND ELECTRICAL CHARACTERISTICS</b> ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)						
<b>VLPC0601A1, COOL WHITE</b>						
PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Luminous flux total <sup>(1)</sup>	$I_F = 350\text{ mA}$	$\Phi_V$	480	540	-	lm
Color temperature	$I_F = 350\text{ mA}$	TK	5000	-	7000	K
Forward voltage	$I_F = 350\text{ mA}$	$V_F$	18	20	24	V
Temperature coefficient of $V_F$	$I_F = 350\text{ mA}$	$TC_{V_F}$	-	- 18	-	mV/K
Temperature coefficient of $\Phi_V$	$I_F = 350\text{ mA}$	$TC_{\Phi_V}$	-	- 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  $\pm 11\%$ .
- <sup>(1)</sup> Calculated based on single LED unit.

<b>OPTICAL AND ELECTRICAL CHARACTERISTICS</b> ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)						
<b>VLPC1201A1J, COOL WHITE</b>						
PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Luminous flux total <sup>(1)</sup>	$I_F = 350\text{ mA}$	$\Phi_V$	960	1080	-	lm
Color temperature	$I_F = 350\text{ mA}$	TK	5000	-	7000	K
Forward voltage	$I_F = 350\text{ mA}$	$V_F$	36	40	44	V
Temperature coefficient of $V_F$	$I_F = 350\text{ mA}$	$TC_{V_F}$	-	- 36	-	mV/K
Temperature coefficient of $\Phi_V$	$I_F = 350\text{ mA}$	$TC_{\Phi_V}$	-	- 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  $\pm 11\%$ .
- <sup>(1)</sup> Calculated based on single LED unit.

<b>OPTICAL AND ELECTRICAL CHARACTERISTICS</b> ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)						
<b>VLPC1201A1, COOL WHITE</b>						
PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Luminous flux total <sup>(1)</sup>	$I_F = 350\text{ mA}$	$\Phi_V$	2 x 480	2 x 540	-	lm
Color temperature	$I_F = 350\text{ mA}$	TK	5000	-	7000	K
Forward voltage per 6 LEDs	$I_F = 350\text{ mA}$	$V_F$	18	20	24	V
Temperature coefficient of $V_F$ per 6 LEDs	$I_F = 350\text{ mA}$	$TC_{V_F}$	-	- 18	-	mV/K
Temperature coefficient of $\Phi_V$	$I_F = 350\text{ mA}$	$TC_{\Phi_V}$	-	- 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  $\pm 11\%$ .
- <sup>(1)</sup> Calculated based on single LED unit.

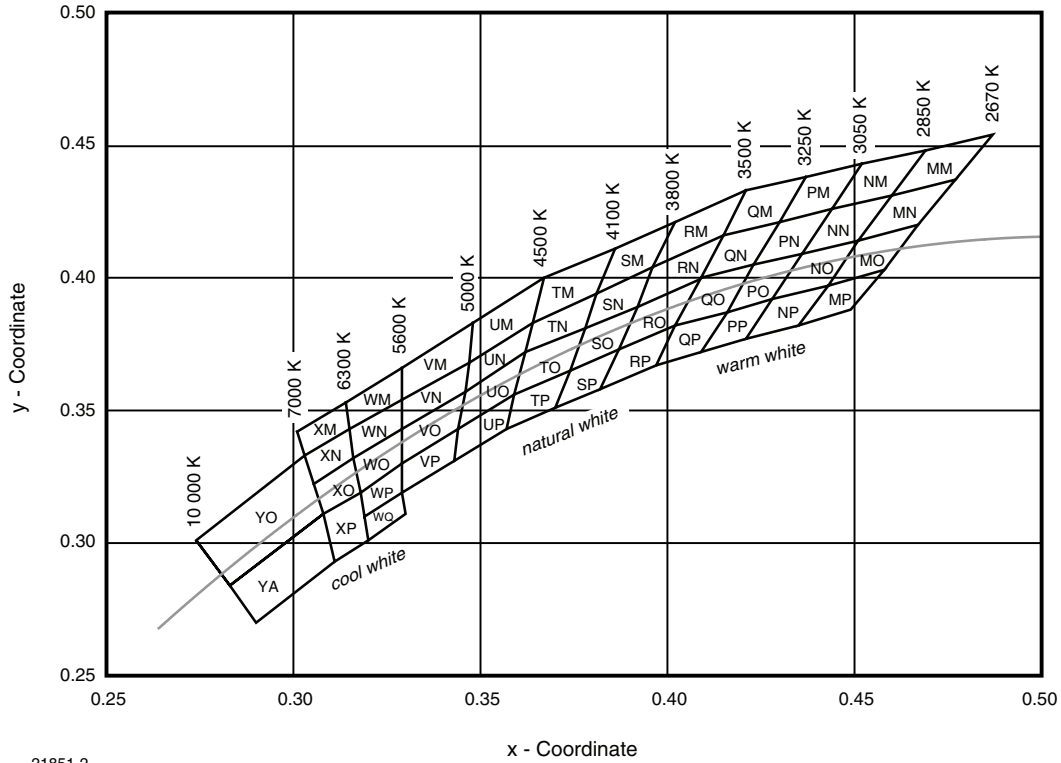


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## COLOR RANGE AND COLOR BINNING



21851-2

Fig. 1 - Chromaticity Coordinates of Colorgroups

CHROMATICITY COORDINATED GROUPS FOR COOL WHITE SMD LED																
GROUP	X	Y	GROUP	X	Y	GROUP	X	Y	GROUP	X	Y	GROUP	X	Y		
XM	0.301	0.342	XN	0.303	0.333	XO	0.305	0.322	XP	0.308	0.311	-	-	-		
	0.314	0.353		0.315	0.343		0.316	0.332		0.318	0.319		-	-		
	0.315	0.343		0.316	0.332		0.318	0.319		0.320	0.301		-	-		
	0.303	0.333		0.305	0.322		0.308	0.311		0.311	0.293		-	-		
WM	0.314	0.353	WN	0.315	0.343	WO	0.316	0.332	WP	0.318	0.319	WQ	0.319	0.310		
	0.329	0.366		0.329	0.354		0.329	0.343		0.329	0.330		0.329	0.319	0.329	0.319
	0.329	0.354		0.329	0.343		0.329	0.330		0.329	0.319		0.319	0.310	0.330	0.311
	0.315	0.343		0.316	0.332		0.318	0.319		0.319	0.310		0.319	0.310	0.320	0.301
VM	0.329	0.366	VN	0.329	0.354	VO	0.329	0.343	VP	0.329	0.330	-	-	-		
	0.348	0.383		0.347	0.368		0.346	0.357		0.344	0.343		0.344	0.343	-	-
	0.347	0.368		0.346	0.357		0.344	0.343		0.343	0.331		0.343	0.331	-	-
	0.329	0.354		0.329	0.343		0.329	0.330		0.329	0.319		0.329	0.319	-	-

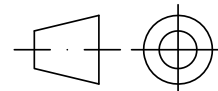
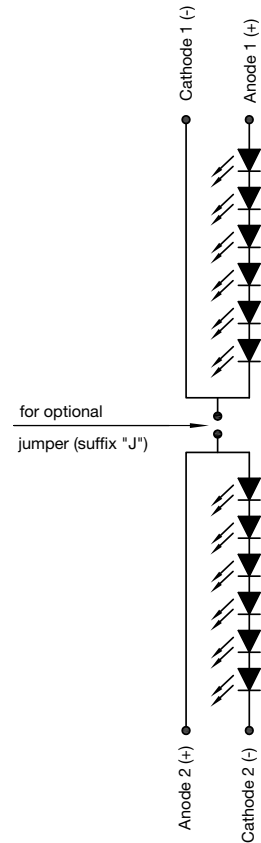
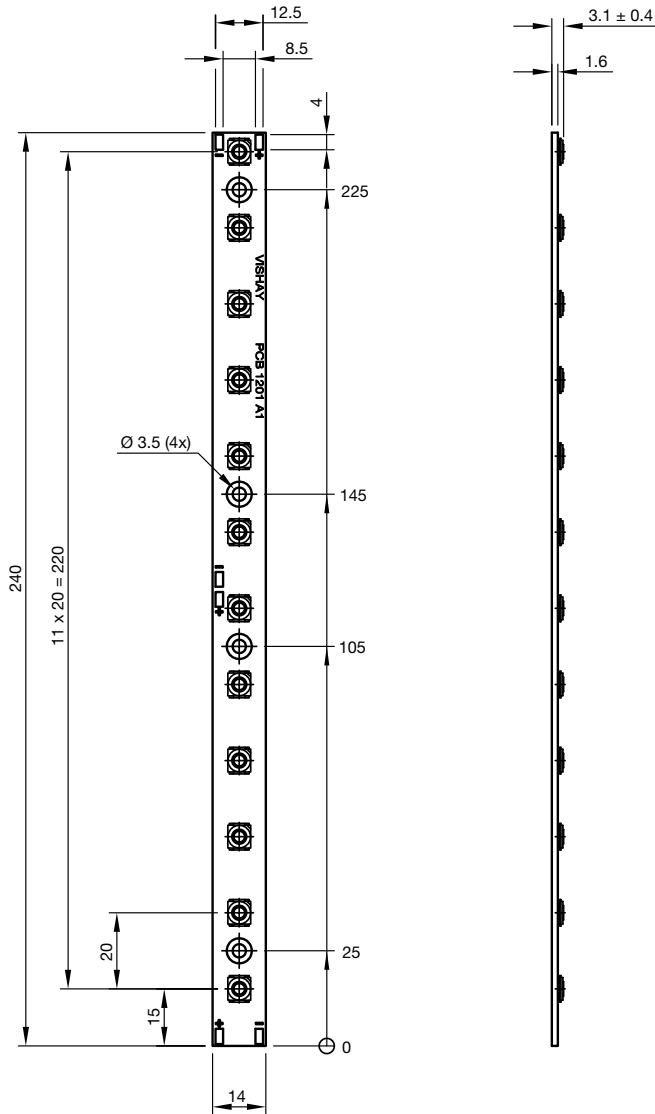


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**PCB BASIC DESIGN DIMENSIONS** in millimeters



technical drawings  
according to DIN  
specifications

Not indicated tolerances ± 0.2

Drawing-No.: 9.920-6757.01-4  
 Issue: 1 ; 15.11.10  
 22457

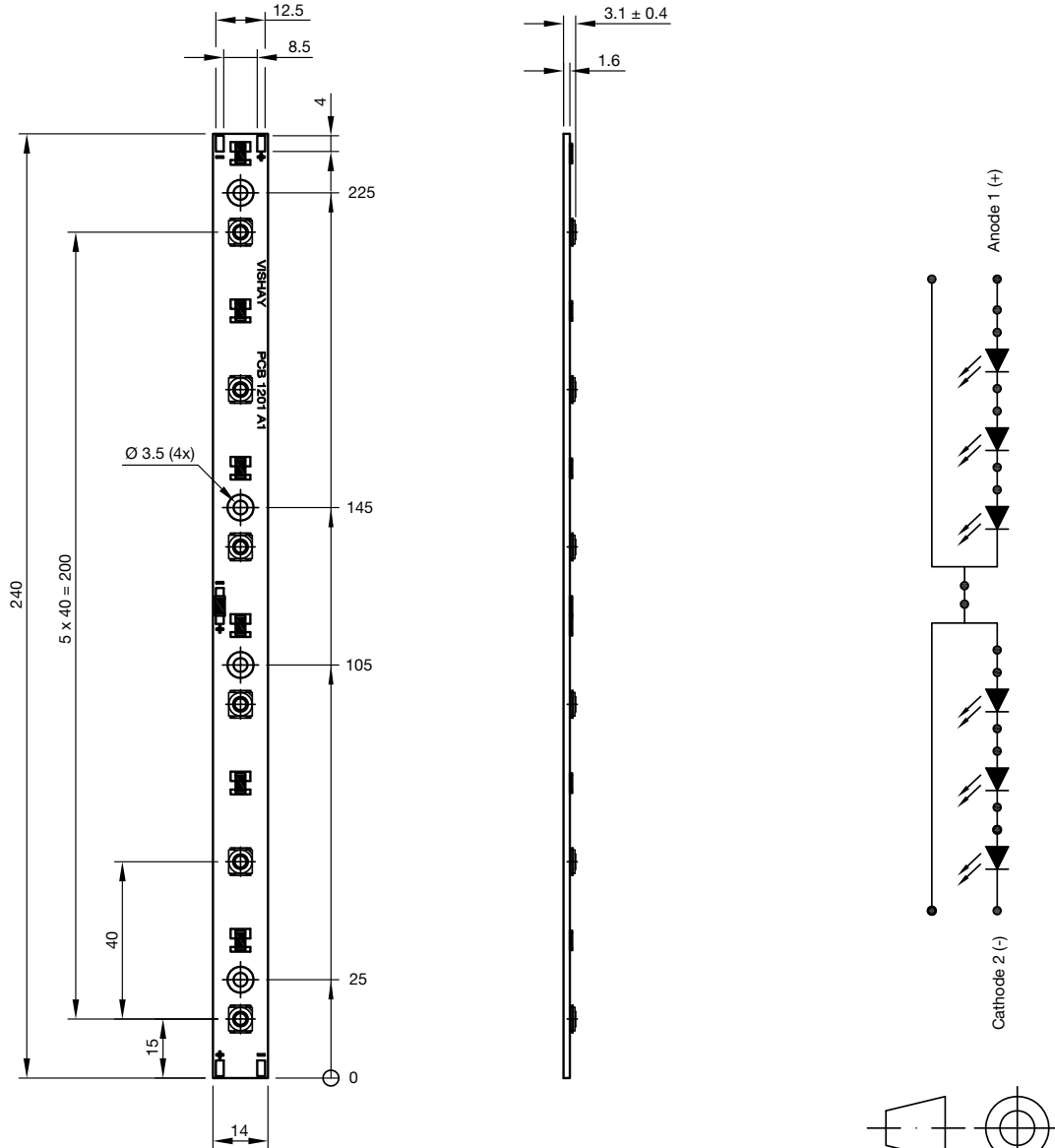


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**VLPC0601A1, VLPC1201A1, VLPC1201A1J**

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**PCB BASIC DESIGN DIMENSIONS** in millimeters



Drawing-No.: 9.920-6758.01-4  
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 22458

Not indicated tolerances ± 0.2

technical drawings  
 according to DIN  
 specifications



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## 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

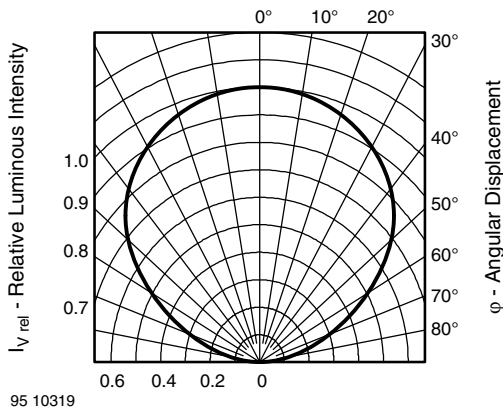
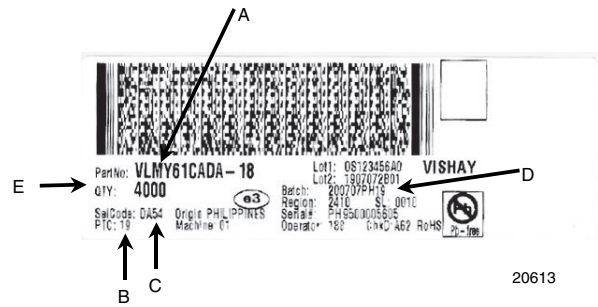


Fig. 2 - Rel. Luminous Intensity vs. Angular Displacement

## 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

- 24 PCB's per box, minimum order quantity 24



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