

High Brightness LED Power Module



FEATURES

- Metal core PCB: Al > 1 thickness
- Single side/single layer PCB
- Shiny white surface
- 6 or 12 LED's minimum 82 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
- LM80 certified LEDs
- Compliant to RoHS Directive 2002/95/EC



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.

PRODUCT GROUP AND PACKAGE DATA

- Product group: LED
- Package: LED module
- Product series: power
- Angle of half intensity: ± 80°

APPLICATIONS

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

PARTS TABLE

PART	COLOR	LUMINOUS FLUX (at I _F = 700 mA typ.)	COLOR TEMPERATURE K	TECHNOLOGY
VLPC0601A2	Cool white	Φ _V = 870 lm	5000 to 7000	InGaN
VLPC1201A2	Cool white	Φ _V = 2 x 870 lm	5000 to 7000	InGaN
VLPC1201A2J	Cool white	Φ _V = 1740 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

** Please see document "Vishay Material Category Policy": www.vishay.com/doc?99902

VLPC0601A2, VLPC1201A2, VLPC1201A2J



Vishay Semiconductors High Brightness LED Power Module

OPTICAL AND ELECTRICAL CHARACTERISTICS ⁽¹⁾ ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified) VLPC0601A2, COOL WHITE

PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Luminous flux total ⁽²⁾	$I_F = 700\text{ mA}$	Φ_V	760	870	-	lm
Color temperature	$I_F = 700\text{ mA}$	TK	5000	-	7000	K
Forward voltage	$I_F = 700\text{ mA}$	V_F	19	20	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_{Φ_V}	-	- 0.4	-	%/K

Notes

- (1) 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 $\pm 11\%$.
 (2) Calculated based on single LED unit.

OPTICAL AND ELECTRICAL CHARACTERISTICS ⁽¹⁾ ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified) VLPC1201A2J, COOL WHITE

PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Luminous flux total ⁽²⁾	$I_F = 700\text{ mA}$	Φ_V	1520	1740	-	lm
Color temperature	$I_F = 700\text{ mA}$	TK	5000	-	7000	K
Forward voltage	$I_F = 700\text{ mA}$	V_F	-	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_{Φ_V}	-	- 0.4	-	%/K

Notes

- (1) 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 $\pm 11\%$.
 (2) Calculated based on single LED unit.

OPTICAL AND ELECTRICAL CHARACTERISTICS ⁽¹⁾ ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified) VLPC1201A2, COOL WHITE

PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Luminous flux total ⁽²⁾	$I_F = 700\text{ mA}$	Φ_V	2 x 760	2 x 870	-	lm
Color temperature	$I_F = 700\text{ mA}$	TK	5000	-	7000	K
Forward voltage per 6 LEDs	$I_F = 700\text{ mA}$	V_F	-	20	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_{Φ_V}	-	- 0.4	-	%/K

Notes

- (1) 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 $\pm 11\%$.
 (2) Calculated based on single LED unit.

SPECIFICATION OF SINGLE LEDs USED FOR THE MODULES

- VLPC0601A2: LED:
- VLPC1201A2: LED: VLMW911KYKZ6P7R
- VLPC1201A2J: LED:

LUMINOUS FLUX CLASSIFICATION FOR THE SINGLE LED

GROUP	LUMINOUS FLUX Φ_V (lm) CORRELATION TABLE	
	MIN.	MAX.
STANDARD		
KY	82 000	97 000
KZ	97 000	112 000



COLOR RANGE AND COLOR BINNING

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

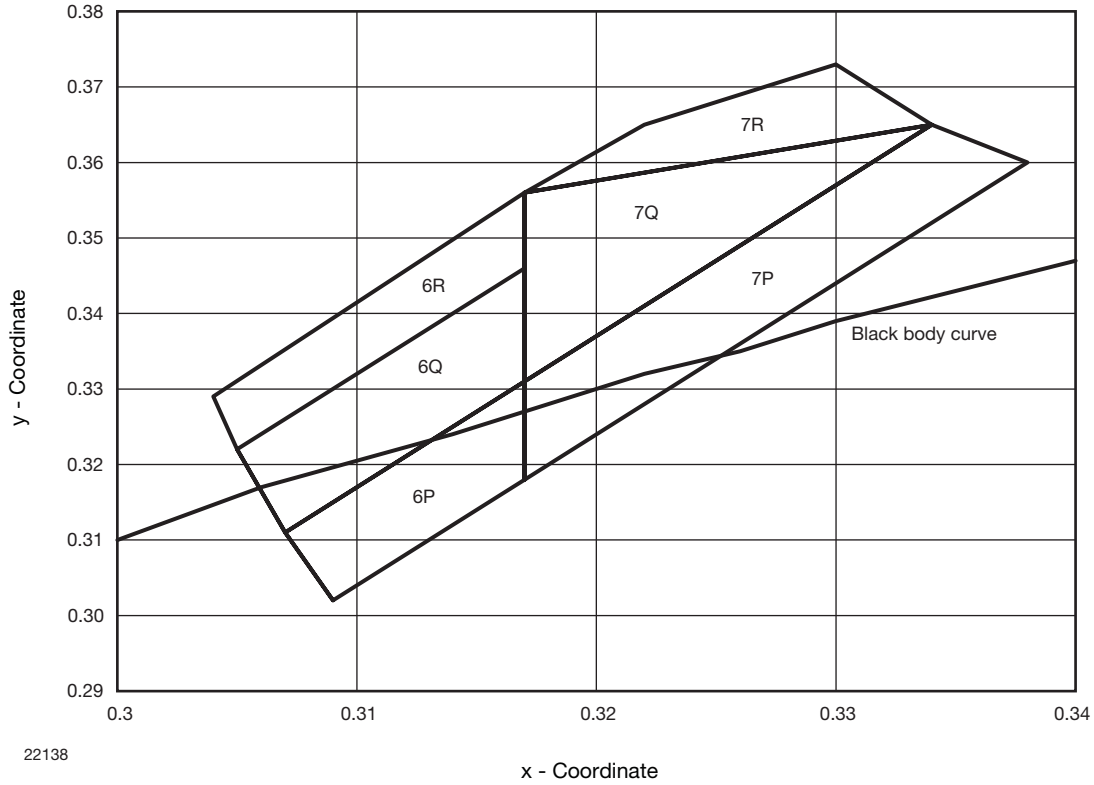


Fig. 1 - Chromaticity Coordinates of Colorgroups

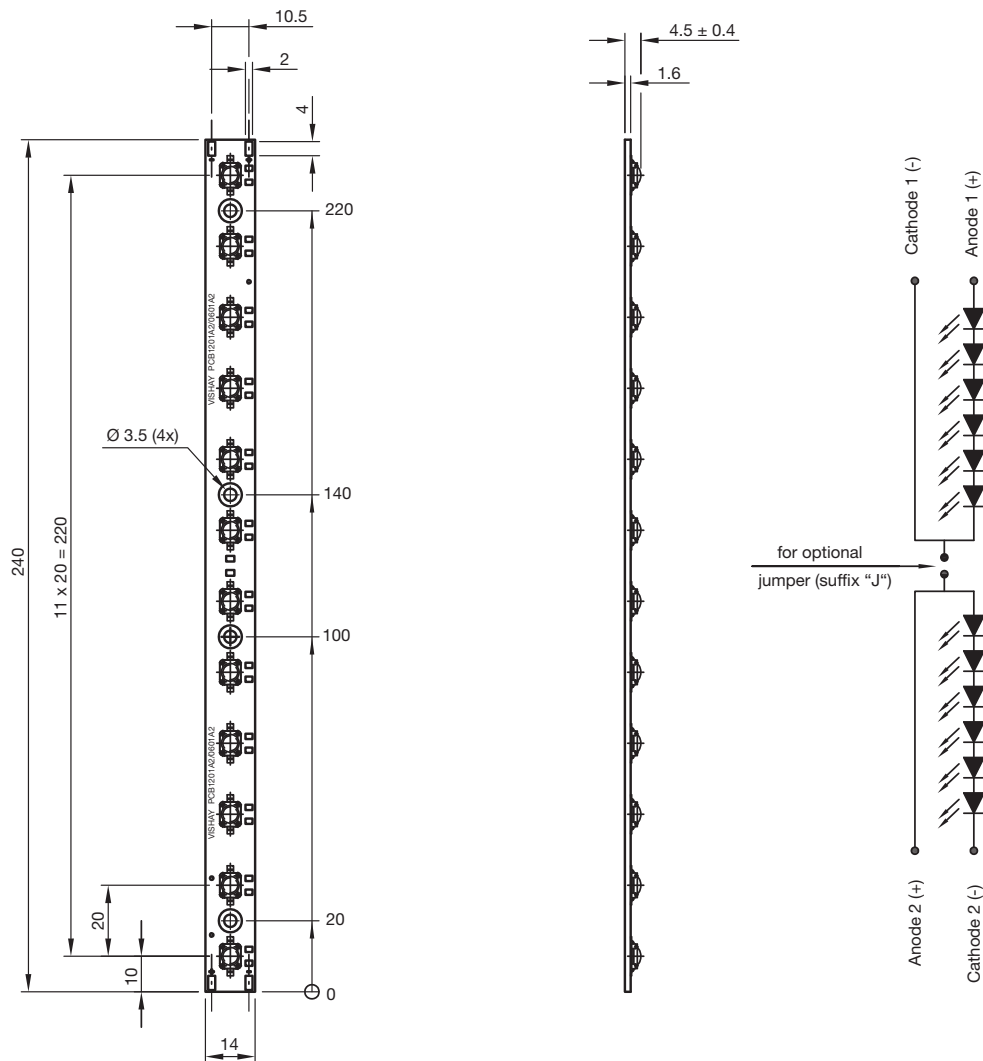
CHROMATICITY COORDINATED GROUPS FOR COOL WHITE SMD LED									
GROUP	X	Y	GROUP	X	Y	GROUP	X	Y	
6P	0.309	0.302	6Q	0.307	0.311	6R	0.305	0.322	
	0.307	0.311		0.305	0.322		0.304	0.329	
	0.317	0.331		0.317	0.346		0.317	0.356	
	0.317	0.318		0.317	0.331		0.317	0.346	
7P	0.317	0.318	7Q	0.317	0.331	7R	0.317	0.356	
	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	

VLPC0601A2, VLPC1201A2, VLPC1201A2J

Vishay Semiconductors High Brightness LED Power Module

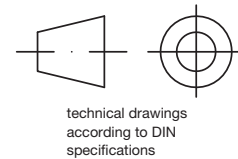


PCB BASIC DESIGN Dimensions in millimeters



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

Not indicated tolerances ± 0.2

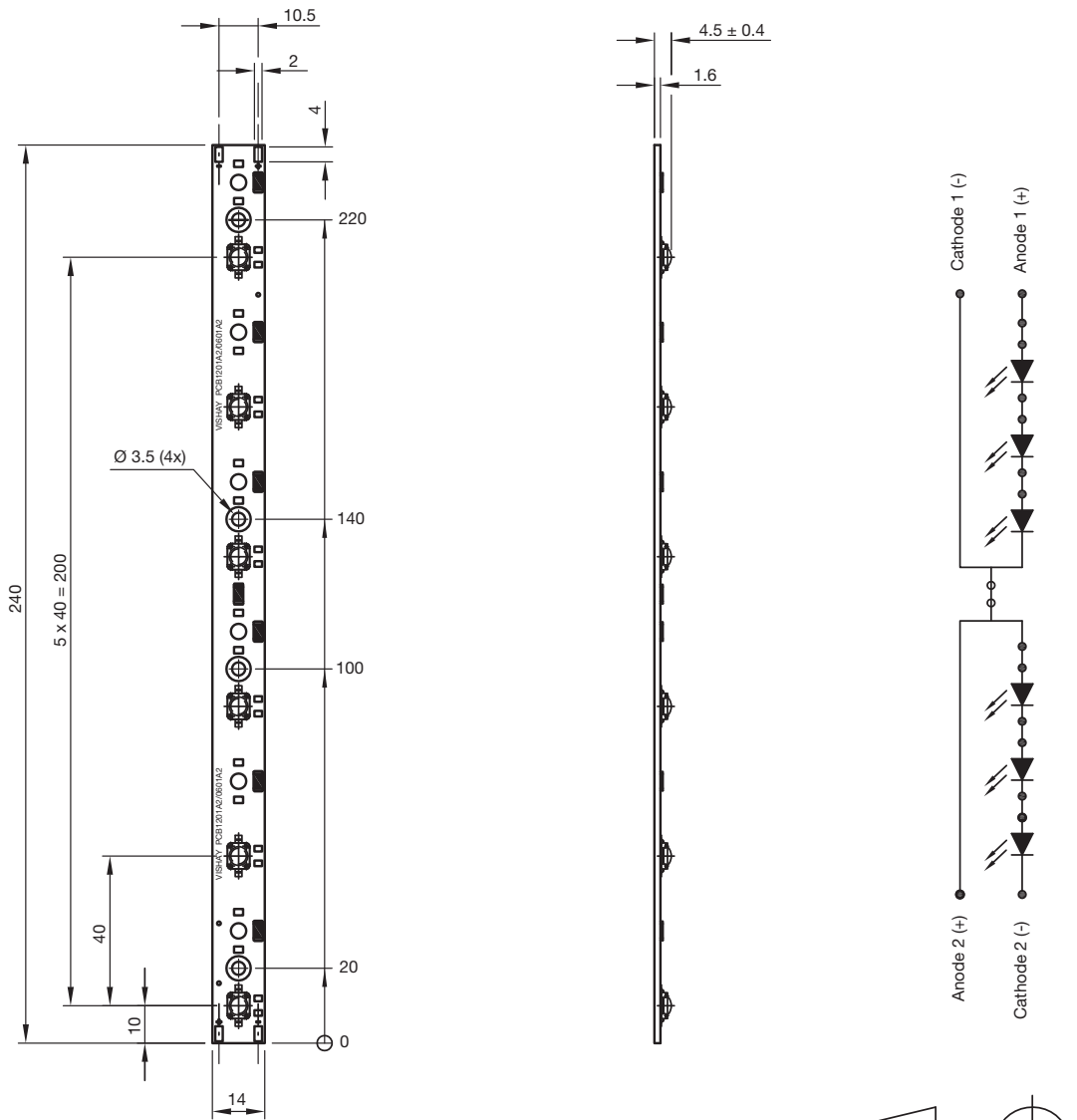




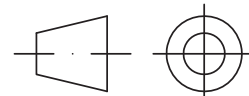
VLPC0601A2, VLPC1201A2, VLPC1201A2J

High Brightness LED Power Module Vishay Semiconductors

PCB BASIC DESIGN Dimensions in millimeters



Not indicated tolerances ± 0.2



technical drawings
according to DIN
specifications

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 VLMW911xxx LED's. LED position accuracy ± 0.3

EMISSION CHARACTERISTIC

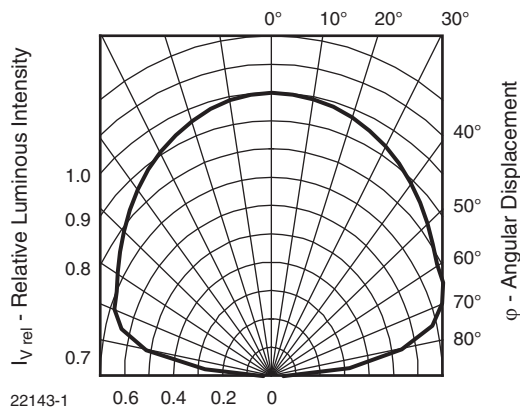
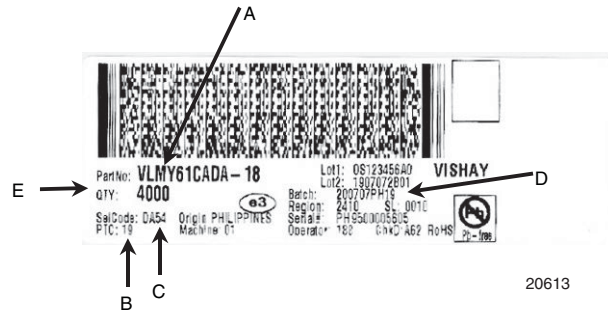


Fig. 2 - Rel. Luminous Intensity vs. Angular Displacement

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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