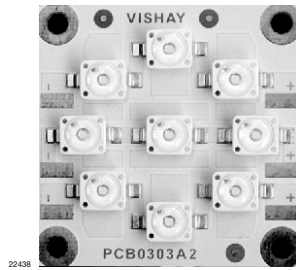




## High Brightness LED Power Module



### FEATURES

- Metal core PCB: Al > 1 thickness
- Single side/single layer PCB
- Shiny white surface
- 9 LEDs, max. current per LED 1 A
- 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



### Note

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

### DESCRIPTION

VLPC0303A2, and VLPW0303A2 are metal core based high brightness LED power modules assembled with 9 HB white LEDs. VLPC0303A2 is a cool white version in a color temperature range of 5000 K to 7000 K. VLPW0303A2 is warm white with a typical color temperature of 3500 K. Additional to the modules a suitable LED driver is available.

### 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 <sub>F</sub> = 700 mA typ.)	COLOR TEMPERATURE K	TECHNOLOGY
VLPC0303A2	Cool white	Φ <sub>V</sub> = 1590 lm	5000 to 7000	InGaN
VLPW0303A2	Warm white	Φ <sub>V</sub> = 840 lm	3500 typ.	InGaN

ABSOLUTE MAXIMUM RATINGS (T <sub>amb</sub> = 25 °C, unless otherwise specified) VLPC0303A2, VLPW0303A2				
PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
Forward current	Per row	I <sub>F</sub>	700	mA
Power dissipation	Total	P <sub>tot</sub>	25.2	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

**OPTICAL AND ELECTRICAL CHARACTERISTICS** ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)  
**VLPC0303A2, COOL WHITE**

PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Luminous flux per row <sup>(1)</sup>	$I_F = 700\text{ mA}$	$\Phi_V$	430	530	-	lm
Luminous flux total <sup>(1)</sup>	$I_{board} = 3 \times 700\text{ mA}$	$\Phi_V$	1290	1590	-	lm
Color temperature	$I_F = 350\text{ mA}$	TK	5000	-	7000	K
Forward voltage per row	$I_F = 700\text{ mA}$	$V_F$	9	10	12	V
Temperature coefficient of $V_F$ per row	$I_F = 350\text{ mA}$	$TC_{V_F}$	-	- 10	-	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.

**OPTICAL AND ELECTRICAL CHARACTERISTICS** ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)  
**VLPW0303A2, WARM WHITE**

PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Luminous flux per row <sup>(1)</sup>	$I_F = 700\text{ mA}$	$\Phi_V$	240	280	-	lm
Luminous flux total <sup>(1)</sup>	$I_{board} = 3 \times 700\text{ mA}$	$\Phi_V$	720	840	-	lm
Color temperature	$I_F = 350\text{ mA}$	TK	-	3500	-	K
Forward voltage per row	$I_F = 700\text{ mA}$	$V_F$	9	10	12	V
Temperature coefficient of $V_F$ per row	$I_F = 350\text{ mA}$	$TC_{V_F}$	-	- 10	-	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>(2)</sup> Calculated based on single LED unit.

**COLOR RANGE AND COLOR BINNING**

VLPC3030A2: 5000 K to 7000 K group 6P to 7R

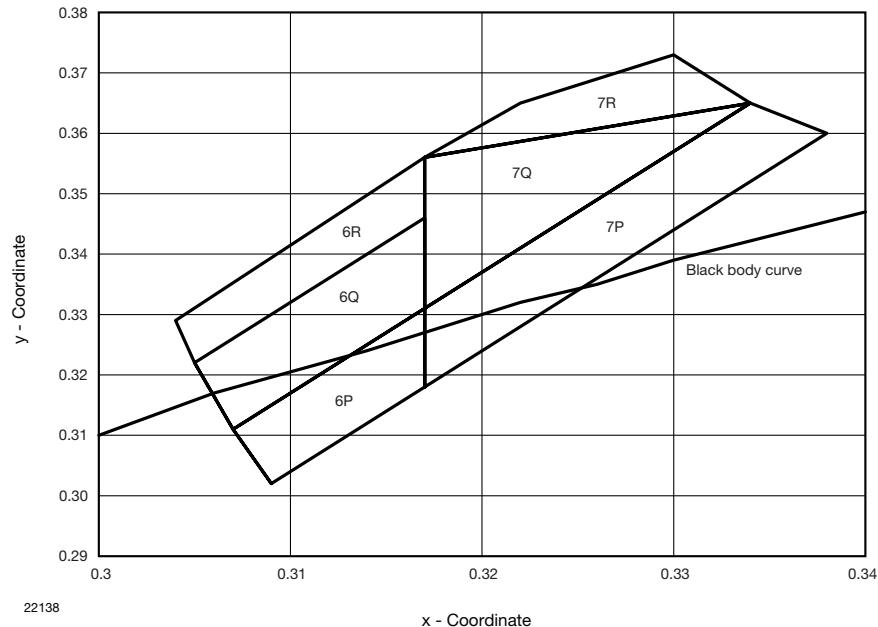


Fig. 1 - Chromaticity Coordinates of Colorgroups for Cool White



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

**COLOR RANGE AND COLOR BINNING**

VLPW3030A2: typ. 3500 K group 4O to 9Q

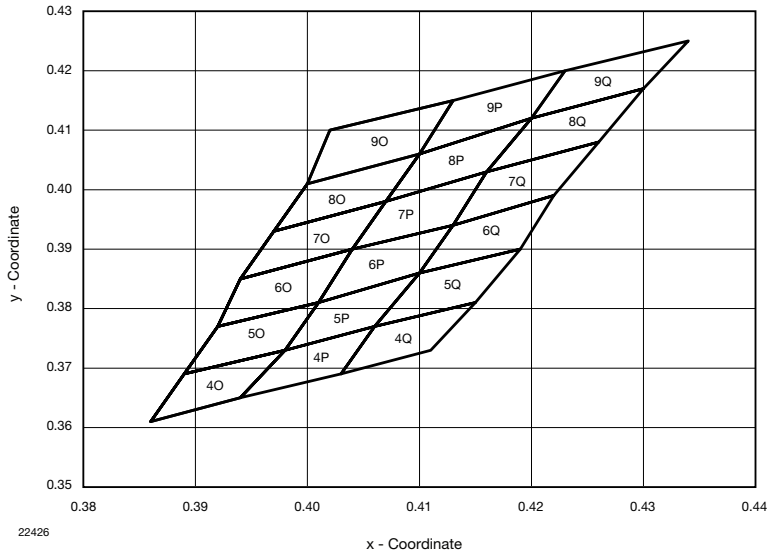
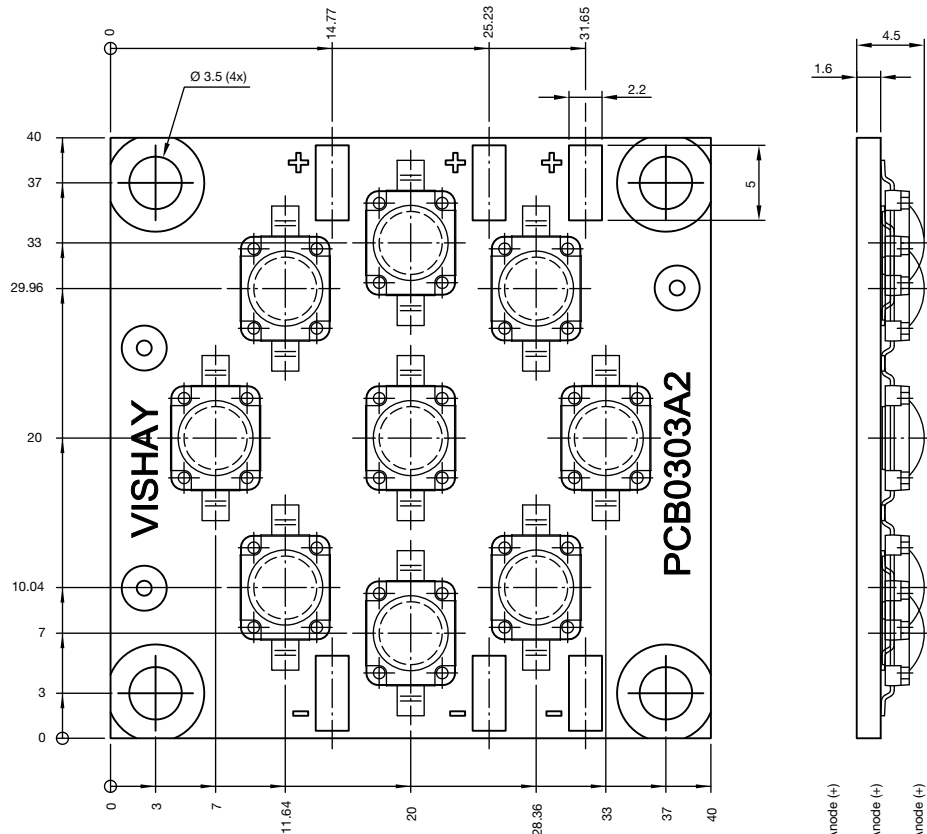


Fig. 2 - Chromaticity Coordinates of Colorgroups for Warm White

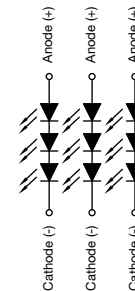
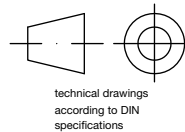
CHROMATICITY COORDINATED GROUPS FOR WARM WHITE SMD LED										
GROUP	X	Y		GROUP	X	Y		GROUP	X	Y
4O	0.386	0.361		4P	0.394	0.365		4Q	0.403	0.369
	0.389	0.369			0.398	0.373			0.406	0.377
	0.398	0.373			0.406	0.377			0.415	0.381
	0.394	0.365			0.403	0.369			0.411	0.373
5O	0.389	0.369		5P	0.398	0.373		5Q	0.406	0.377
	0.392	0.377			0.401	0.381			0.410	0.386
	0.401	0.381			0.410	0.386			0.419	0.390
	0.398	0.373			0.406	0.377			0.415	0.381
6O	0.392	0.377		6P	0.401	0.381		6Q	0.410	0.386
	0.394	0.385			0.404	0.390			0.413	0.394
	0.404	0.390			0.413	0.394			0.422	0.399
	0.401	0.381			0.410	0.386			0.419	0.390
7O	0.394	0.385		7P	0.404	0.390		7Q	0.413	0.394
	0.397	0.393			0.407	0.398			0.416	0.403
	0.407	0.398			0.416	0.403			0.426	0.408
	0.404	0.390			0.413	0.394			0.422	0.399
8O	0.397	0.393		8P	0.407	0.398		8Q	0.416	0.403
	0.400	0.401			0.410	0.406			0.420	0.412
	0.410	0.406			0.420	0.412			0.430	0.417
	0.407	0.398			0.416	0.403			0.426	0.408
9O	0.400	0.401		9P	0.410	0.406		9Q	0.420	0.412
	0.402	0.410			0.413	0.415			0.423	0.420
	0.413	0.415			0.423	0.420			0.434	0.425
	0.410	0.406			0.420	0.412			0.430	0.417

**PCB BASIC DESIGN DIMENSIONS** in millimeters



Not indicated tolerances ± 0.2

Drawing-No.: 9.920-6753.01-4  
Issue: 1; 27.10.10  
22439



**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 9 high brightness power LEDs. LED position accuracy ± 0.3

**EMISSION CHARACTERISTIC**

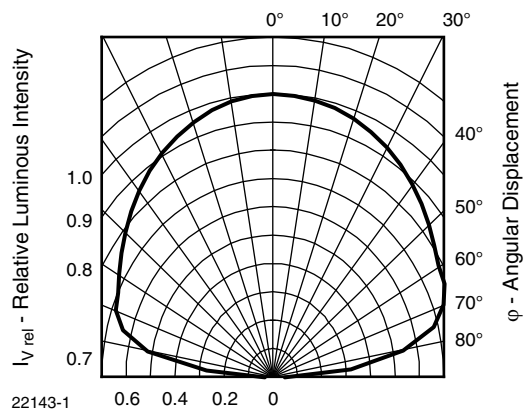
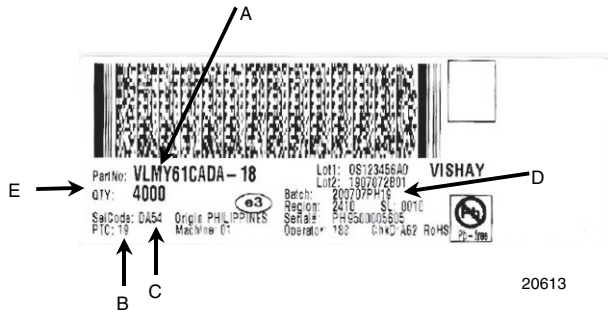


Fig. 3 - Rel. Luminous Intensity vs. Angular Displacement



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

- 48 PCB's per box, minimum order quantity 48



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