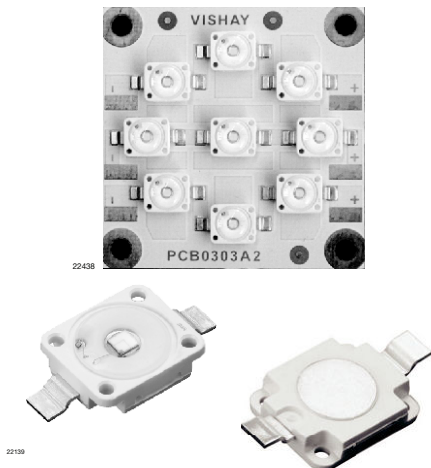


High Brightness LED Power Module



RoHS
COMPLIANT
GREEN
(5-2008)**

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 μ m)
- Isolation layer prepreg (100 μ m)
- 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

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.

PRODUCT GROUP AND PACKAGE DATA

- Product group: LED
- Package: LED module
- Product series: power
- Angle of half intensity: $\pm 80^\circ$

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
VLPC0303A2	Cool white	$\Phi_V = 1590$ lm	5000 to 7000	InGaN
VLPW0303A2	Warm white	$\Phi_V = 840$ lm	3500 typ.	InGaN

ABSOLUTE MAXIMUM RATINGS ($T_{amb} = 25^\circ\text{C}$, unless otherwise specified) VLPC0303A2, VLPW0303A2

PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
Forward current	Per row	I_F	700	mA
Power dissipation	Total	P_{tot}	25.2	W
Junction temperature		T_j	120	$^\circ\text{C}$
Operating temperature range		T_{amb}	- 40 to + 85	$^\circ\text{C}$
Storage temperature range		T_{stg}	- 40 to + 85	$^\circ\text{C}$
Decomposition temperature of PCB (for cable assembly)	3 x 10 s	T_D	350	$^\circ\text{C}$

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

PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Luminous flux per row ⁽¹⁾	$I_F = 700\text{ mA}$	Φ_V	430	530	-	lm
Luminous flux total ⁽¹⁾	$I_{board} = 3 \times 700\text{ mA}$	Φ_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 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 $\pm 11\%$.
- ⁽¹⁾ Calculated based on single LED unit.

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

PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Luminous flux per row ⁽¹⁾	$I_F = 700\text{ mA}$	Φ_V	240	280	-	lm
Luminous flux total ⁽¹⁾	$I_{board} = 3 \times 700\text{ mA}$	Φ_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 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 $\pm 11\%$.
- ⁽²⁾ Calculated based on single LED unit.

COLOR RANGE AND COLOR BINNING

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

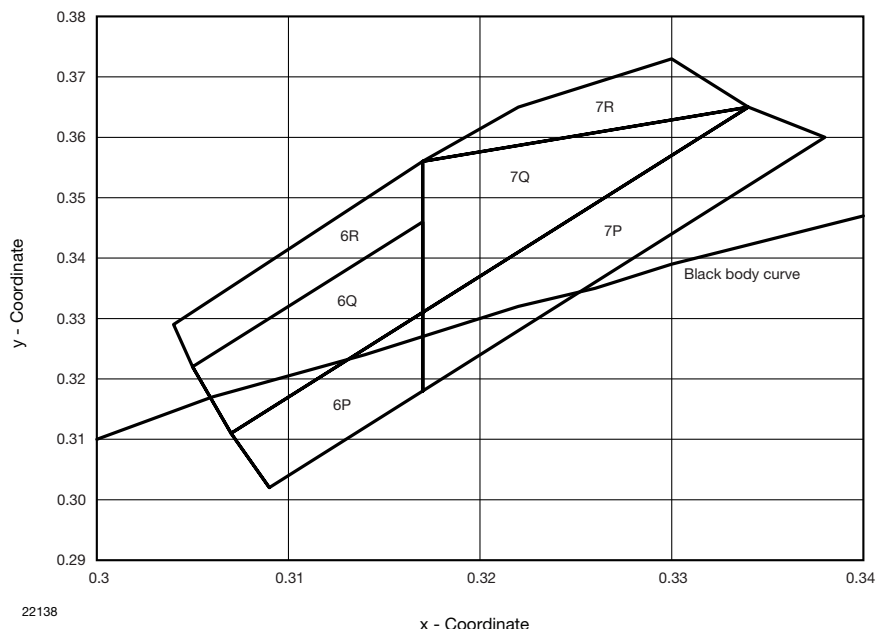


Fig. 1 - Chromaticity Coordinates of Colorgroups for Cool White



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

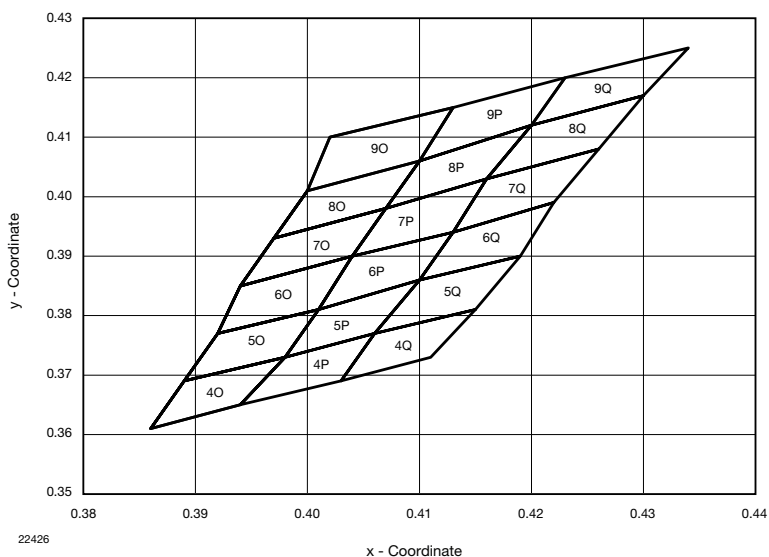
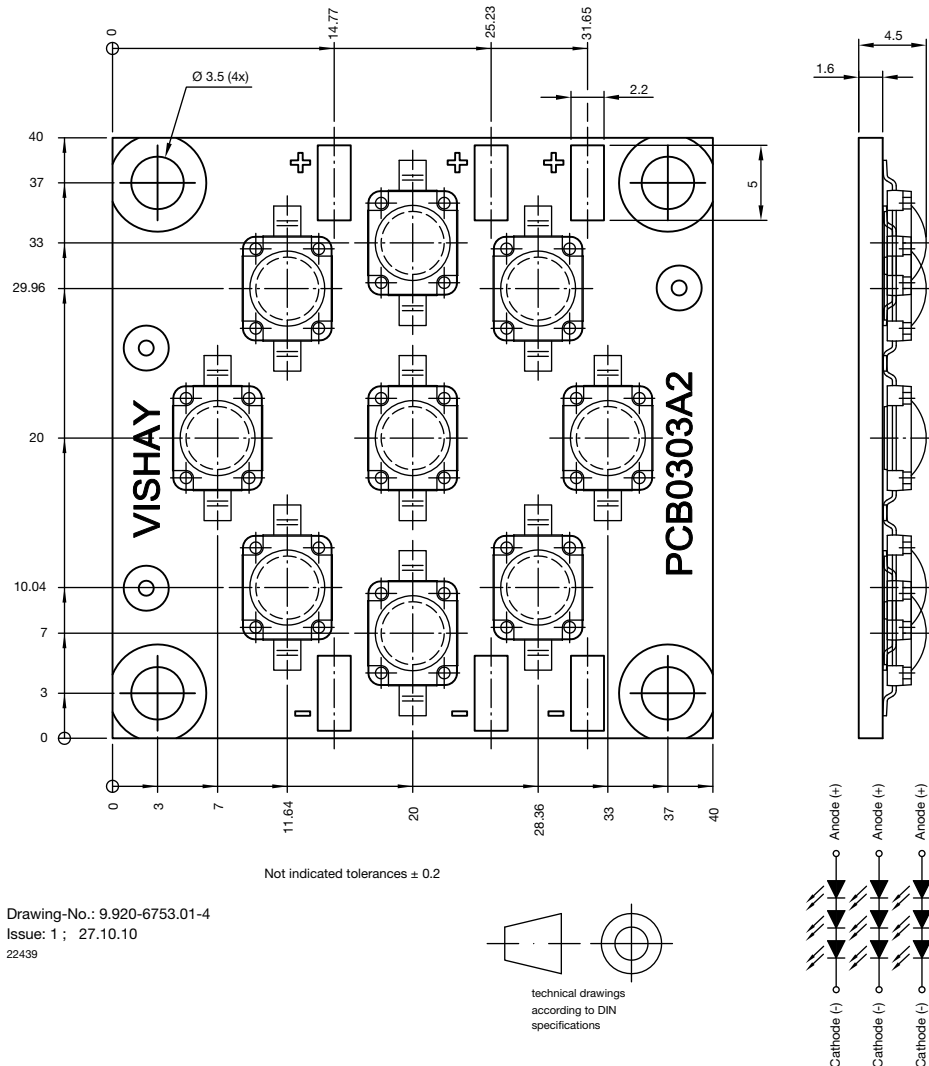


Fig. 2 - Chromaticity Coordinates of Colorgroups for Warm White

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


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

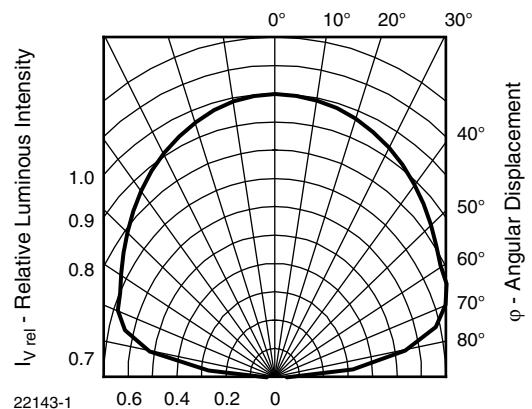
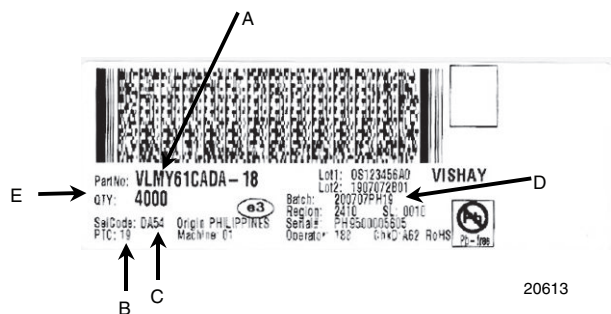
EMISSION CHARACTERISTIC


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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