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High Brightness LED Power Module



DESCRIPTION

VCLPC0303C5, VLPN0303C5 and VLPW0303C5 are high brightness LED modules. Totally 9 pieces 4.4 W multichip power LEDs are soldered on a Cu plate. The Cu plate with a thickness of 2 mm guarantees best heat removal and distribution. VLPC0303C5 is the cool white version in a color temperature range of 5000K to 7000K. VLPN0303C5 is natural white with a color temperature of 3640K to 4240K and VLPW0303C5 is warm white in a color temperature range of 2700K to 3300K. 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: $\pm 65^\circ$



FEATURES

- Cu based PCB, 2 mm thickness
- Shiny white surface
- 44 W multichip LED, minimum 2900 lm for cool white, 2600 lm for natural white, and 2100 lm for warm white at 2100 mA each
- ESD withstand voltage: up to 1 kV according to JESD22-A114-B
- Color temperature binning
- Material categorization: For definitions of compliance please see www.vishay.com/doc?99912

APPLICATIONS

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

PARTS TABLE

PART	COLOR	LUMINOUS FLUX (at $I_F = 2100$ mA typ.)	COLOR TEMPERATURE K	TECHNOLOGY
VLPC0303C5	Cool white	$\Phi_V = 3200$ lm	5000 to 7000	InGaN
VLPN0303C5	Natural white	$\Phi_V = 2950$ lm	3640 to 4240	InGaN
VLPW0303C5	Warm white	$\Phi_V = 2500$ lm	2580 to 3220	InGaN

ABSOLUTE MAXIMUM RATINGS ($T_{amb} = 25^\circ\text{C}$, unless otherwise specified) VLPC0303C5, VLPN0303C5, VLPW0303C5

PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
Forward current	$T_{amb} < 80^\circ\text{C}$	I_F	2100	mA
Power dissipation	$T_{amb} < 80^\circ\text{C}$	P_{tot}	44	W
Junction temperature		T_j	115	$^\circ\text{C}$
Operating temperature range		T_{amb}	- 40 to + 80	$^\circ\text{C}$
Storage temperature range		T_{stg}	- 40 to + 100	$^\circ\text{C}$
Decomposition temperature of PCB (for cable assembly)		T_D		$^\circ\text{C}$

OPTICAL AND ELECTRICAL CHARACTERISTICS ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified)
VLPC0303C5, COOL WHITE

PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Luminous flux	$I_F = 2100\text{ mA}$	Φ_V	2900	3200	-	lm
Color temperature	$I_F = 2100\text{ mA}$	CCT	5000	5700	7000	K
Forward voltage	$I_F = 2100\text{ mA}$	V_F	18.0	19.0	21.0	V
Temperature coefficient of V_F	$I_F = 2100\text{ mA}$	TCV_F	-	6.0	-	mV/K
Temperature coefficient of Φ_V	$I_F = 2100\text{ mA}$	$TC\Phi_V$	-	0.18	-	%/K

Note

- 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 $\pm 11\%$.

OPTICAL AND ELECTRICAL CHARACTERISTICS ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified)
VLPN0303C5, NATURAL WHITE

PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Luminous flux	$I_F = 2100\text{ mA}$	Φ_V	2600	2950	-	lm
Color temperature	$I_F = 2100\text{ mA}$	CCT	3640	4000	4240	K
Forward voltage	$I_F = 2100\text{ mA}$	V_F	18.0	19.0	21.0	V
Temperature coefficient of V_F	$I_F = 2100\text{ mA}$	TCV_F	-	6.0	-	mV/K
Temperature coefficient of Φ_V	$I_F = 2100\text{ mA}$	$TC\Phi_V$	-	0.18	-	%/K

Note

- 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 $\pm 11\%$.

OPTICAL AND ELECTRICAL CHARACTERISTICS ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified)
VLPW0303C5, WARM WHITE

PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Luminous flux	$I_F = 2100\text{ mA}$	Φ_V	2100	2500	-	lm
Color temperature	$I_F = 2100\text{ mA}$	CCT	2580	3000	3220	K
Forward voltage	$I_F = 2100\text{ mA}$	V_F	18.0	19.0	21.0	V
Temperature coefficient of V_F	$I_F = 2100\text{ mA}$	TCV_F	-	6.0	-	mV/K
Temperature coefficient of Φ_V	$I_F = 2100\text{ mA}$	$TC\Phi_V$	-	0.18	-	%/K

Note

- 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 $\pm 11\%$.

COLOR BINNING (I_F at 2100 mA)

PART	BIN CODE	CCT (K)
VLPC0303C5	A	5000 to 5500
	B	5500 to 6000
	C	6000 to 6500
	D	6500 to 7000
VLPN0303C5	N	3640 to 3920
	M	3920 to 4240
VLPW0303C5	J	2580 to 2870
	K	2870 to 3220

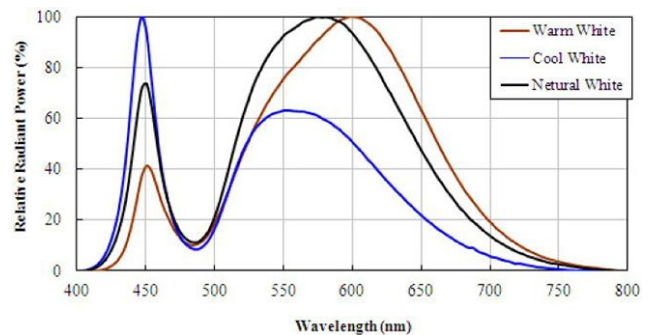


Fig. 1 - Relative Spectrale Emission

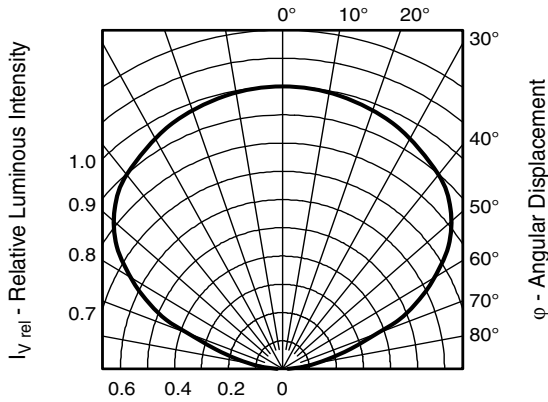


Fig. 2 - Relative Intensity vs. Angular Displacement

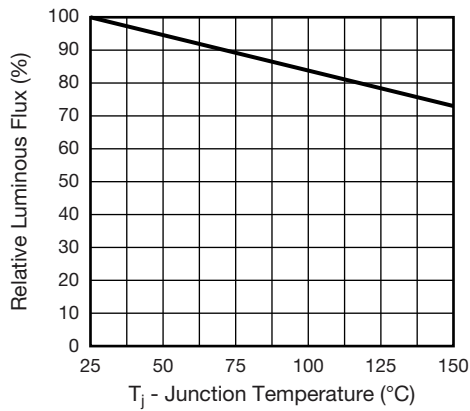


Fig. 3 - Relative Luminous Flux vs. Junction Temperature ($I_F = 3200 \text{ mA}$)

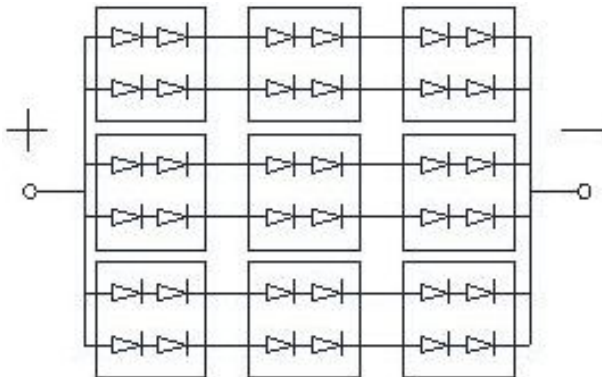
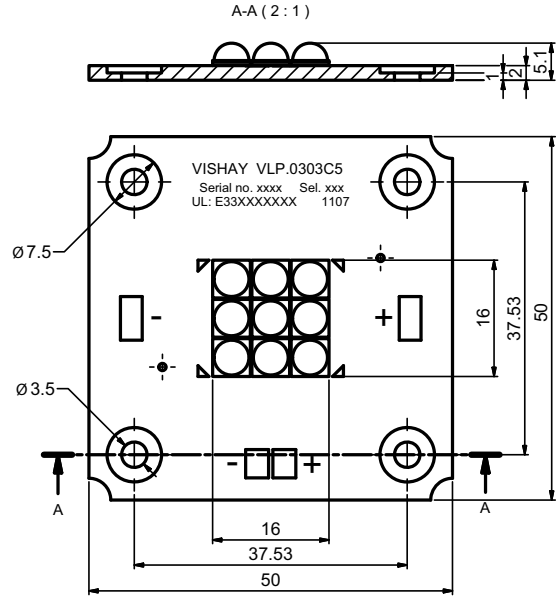
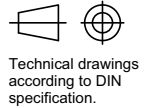


Fig. 4 - Array Circuit Type

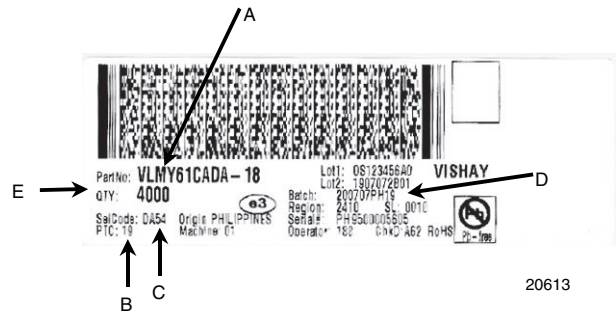
PACKAGE DIMENSIONS in millimeters



Not indicated tolerances ± 0.2
 All dimensions in mm
 Drawing refers to following types: VLP.0303C5
 Drawing-No.: 9.920-6809.01-4
 Issue: prel; 23.04.2012



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

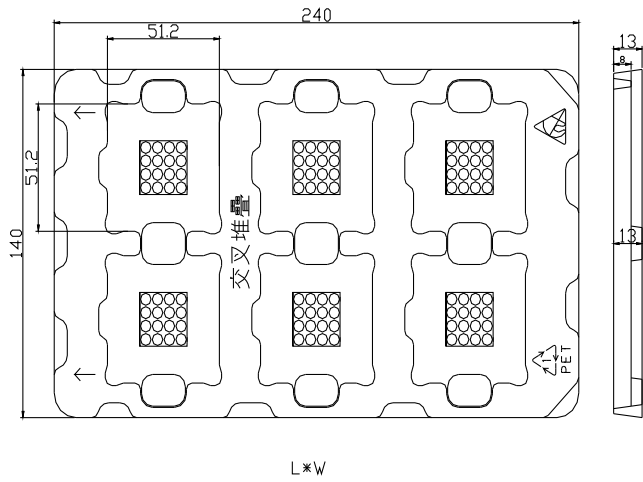


Fig. 5 - 6 Pieces LED Array in One Tray



Fig. 6 - Tray and Box
5 Trays in One Anti-Static Bag, 2 Bags in One Carton,
Contains 60 Pieces LED



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