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High Brightness LED Power Module



DESCRIPTION

VLPC0101C6, VLPN0101C6, and VLPW0101C6 are high brightness LED modules. The 4.55 W multichip power LED is soldered on a Cu plate. The Cu plate with a thickness of 1.2 mm guarantees best heat removal and distribution. VLPC0101C6 is the cool white version in a color temperature range of 5000 K to 6650 K. VLPN0101C6 is natural white with a color temperature of 3680 K to 4350 K and VLPW0101C6 is warm white in a color temperature range of 2670 K to 3120 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: $\pm 65^\circ$
- CRI: 80

FEATURES

- Cu based PCB, 1.2 mm thickness
- Shiny white surface
- 4.55 W multichip LED, minimum 390 lm for cool white, 330 lm for natural white, and 290 lm for warm white at 700 mA each
- ESD withstand voltage: Up to 1 kV according to JESD22-A114-B
- CRI: 80
- Color temperature binning
- Material categorization: For definitions of compliance please see www.vishay.com/doc?99912



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APPLICATIONS

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

PARTS TABLE						
PART	COLOR	LUMINOUS FLUX (lm) (at $I_F = 700$ mA typ.)			COLOR TEMPERATURE K	TECHNOLOGY
		MIN.	TYP.	MAX.		
VLPC0101C6	Cool white	390	430	-	5000 to 6650	InGaN
VLPN0101C6	Natural white	330	410	-	3710 to 4260	InGaN
VLPW0101C6	Warm white	290	320	-	2670 to 3120	InGaN

ABSOLUTE MAXIMUM RATINGS ($T_{amb} = 25^\circ\text{C}$, unless otherwise specified) VLPC0101C6, VLPN0101C6, VLPW0101C6					
PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT	
Forward current	$T_{amb} < 80^\circ\text{C}$	I_F	1400	mA	
Power dissipation	$T_{amb} < 80^\circ\text{C}$	P_{tot}	10	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	$^\circ\text{C}$	
Thermal resistance		R_{thJS}	3	K/W	
Pad soldering temperature	10 s	T_{SD}	260	$^\circ\text{C}$	

**OPTICAL AND ELECTRICAL CHARACTERISTICS** ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified)
VLPC0101C6, COOL WHITE

PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Luminous flux	$I_F = 700\text{ mA}$	Φ_V	390	430	-	lm
	$I_F = 1000\text{ mA}$	Φ_V	-	570	-	lm
	$I_F = 1400\text{ mA}$	Φ_V	-	700	-	lm
Color temperature	$I_F = 700\text{ mA}$	CCT	5000	5700	6650	K
Chromaticity coordinates	$I_F = 700\text{ mA}$	x	-	0.3287	-	
	$I_F = 700\text{ mA}$	y	-	0.3417	-	
Full angle of half intensity	$I_F = 700\text{ mA}$	$2\phi_{1/2}$	-	130	-	$^{\circ}$
Forward voltage	$I_F = 700\text{ mA}$	V_F	6.0	6.5	6.8	V
Temperature coefficient of V_F	$I_F = 700\text{ mA}$	TCV_F	-	2.0	-	mV/K
Temperature coefficient of Φ_V	$I_F = 700\text{ mA}$	$TC\Phi_V$	-	0.21	-	%/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 $\pm 11\%$.
- CRI: 80

OPTICAL AND ELECTRICAL CHARACTERISTICS ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified)
VLPN0101C6, NATURAL WHITE

PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Luminous flux	$I_F = 700\text{ mA}$	Φ_V	330	410	-	lm
	$I_F = 1000\text{ mA}$	Φ_V	-	560	-	lm
	$I_F = 1400\text{ mA}$	Φ_V	-	680	-	lm
Color temperature	$I_F = 700\text{ mA}$	CCT	3710	4000	4260	K
Chromaticity coordinates	$I_F = 700\text{ mA}$	x	-	0.3818	-	
	$I_F = 700\text{ mA}$	y	-	0.3797	-	
Full angle of half intensity	$I_F = 700\text{ mA}$	$2\phi_{1/2}$	-	130	-	$^{\circ}$
Forward voltage	$I_F = 700\text{ mA}$	V_F	6.0	6.5	6.8	V
Temperature coefficient of V_F	$I_F = 700\text{ mA}$	TCV_F	-	2.0	-	mV/K
Temperature coefficient of Φ_V	$I_F = 700\text{ mA}$	$TC\Phi_V$	-	0.21	-	%/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 $\pm 11\%$.
- CRI: 80

OPTICAL AND ELECTRICAL CHARACTERISTICS ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified)
VLPW0101C6, WARM WHITE

PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Luminous flux	$I_F = 700\text{ mA}$	Φ_V	290	320	-	lm
	$I_F = 1000\text{ mA}$	Φ_V	-	400	-	lm
	$I_F = 1400\text{ mA}$	Φ_V	-	480	-	lm
Color temperature	$I_F = 700\text{ mA}$	CCT	2670	2870	3120	K
Chromaticity coordinates	$I_F = 700\text{ mA}$	x	-	0.4450	-	
	$I_F = 700\text{ mA}$	y	-	0.4060	-	
Full angle of half intensity	$I_F = 700\text{ mA}$	$2\phi_{1/2}$	-	130	-	$^{\circ}$
Forward voltage	$I_F = 700\text{ mA}$	V_F	6.0	6.5	6.8	V
Temperature coefficient of V_F	$I_F = 700\text{ mA}$	TCV_F	-	2.0	-	mV/K
Temperature coefficient of Φ_V	$I_F = 700\text{ mA}$	$TC\Phi_V$	-	0.21	-	%/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 $\pm 11\%$.
- CRI: 80

COLOR BINNING (I _F at 700 mA)		
PART	BIN CODE	CCT (K)
VLPC0101C6	1B	6020 to 6530
	2A	5665 to 6020
	2B	5310 to 5665
	3A	5028 to 5310
VLPN0101C6	5A	3985 to 4260
	5B	3710 to 3985
VLPW0101C6	7B	2870 to 3045
	8A	2725 to 2870

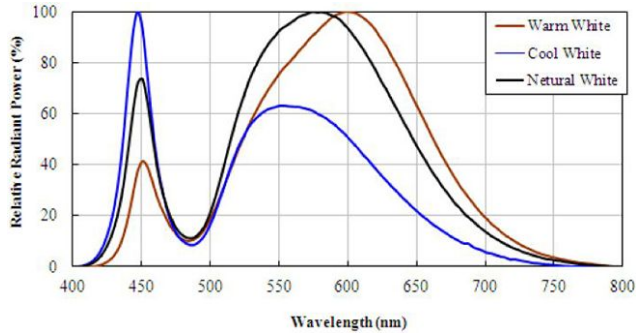


Fig. 1 - Relative Spectrale Emission

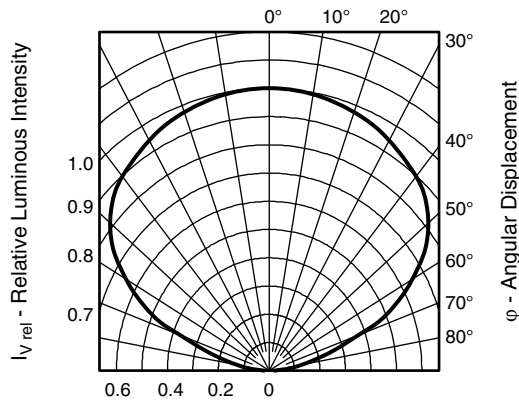


Fig. 2 - Relative Intensity vs. Angular Displacement

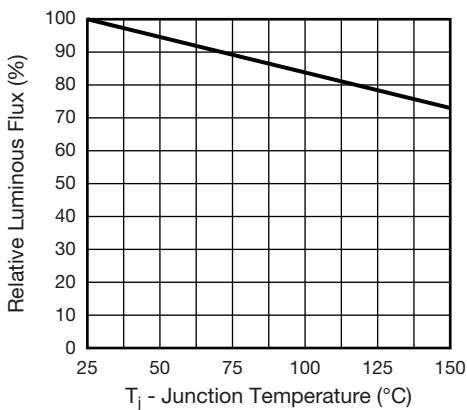
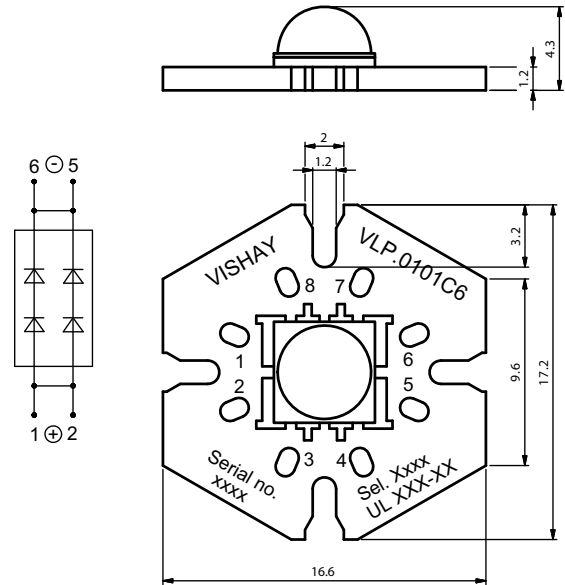


Fig. 3 - Relative Luminous Flux vs. Junction Temperature (I_F = 3200 mA)

PACKAGE DIMENSIONS in millimeters



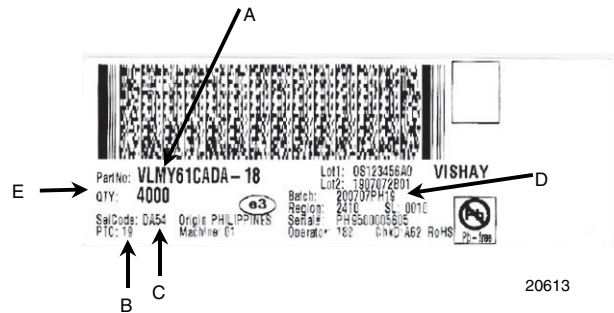
Not indicated tolerances ± 0.2

Drawing refers to following types: VLP.0101C6

Drawing-No.: 9.920-6807.02-4
Issue: 2; 20.11.2012

Technical drawings according to DIN specification.

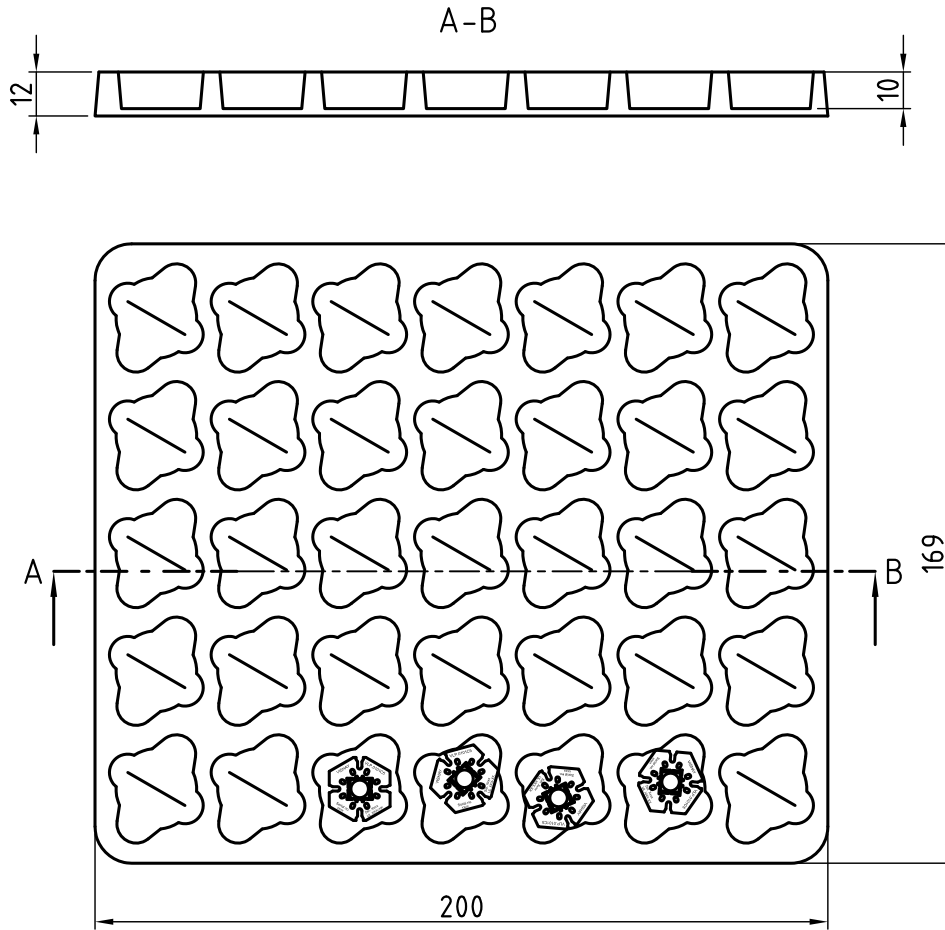
BAR CODE PRODUCT LABEL

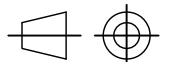


- A. Type of component
- B. Manufacturing plant
- C. SEL - selection code (bin):
X = color group
- D. Batch:
200707 = year 2007, week 07
PH19 = plant code
- E. Total quantity

Note

- Delivery on reel Ø 330 mm, 1500 pieces per reel

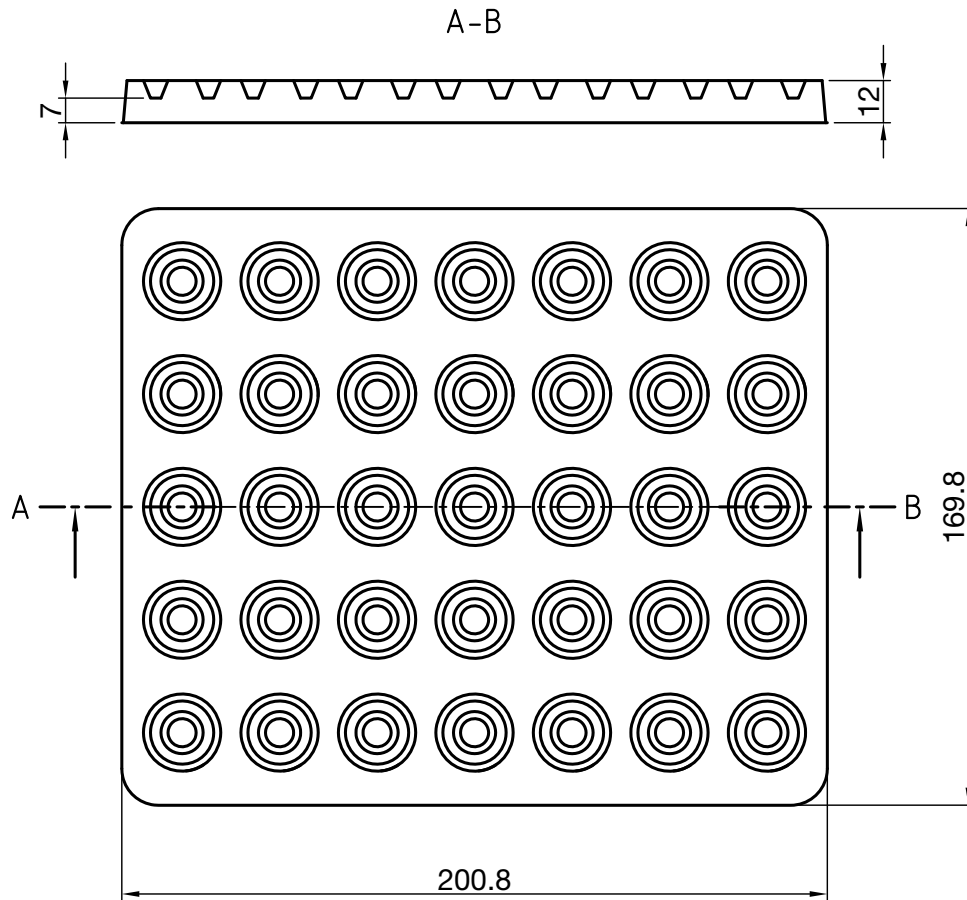



technical drawings
according to DIN
specifications

Drawing-No.: 9.700-5389.01-4

Issue: prel; 18.07.12

Fig. 4 - Tray with 7 x 5 Pieces



technical drawings
according to DIN
specifications

Drawing-No.: 9.700-5390.01-4

Issue: prel; 18.07.12

Fig. 5 - Tray Cover

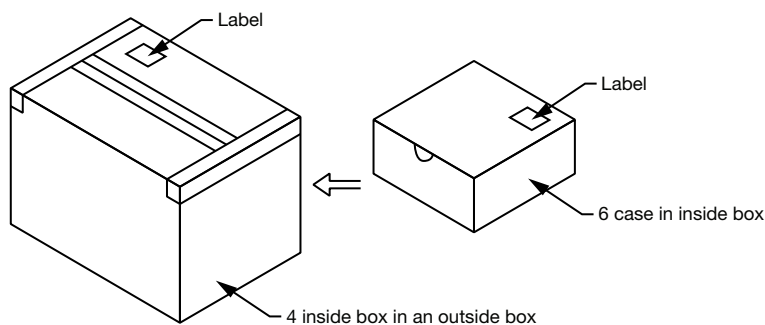


Fig. 6 - Box



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