

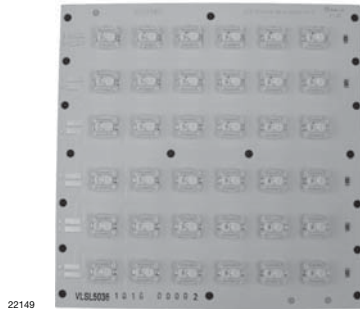
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High Brightness LED Power Module



FEATURES

- Metal core PCB: Al > 0.75 thickness
- Single side/single layer PCB
- Shiny white surface
- 12, 24 or 36 LED's minimum 61 lm at 350 mA per LED. Max. current per LED 1 A
- Conductive top layer: Cu (min. 18 μ m)
- Isolation layer prepreg > 63 μ m
- Luminous flux and colour binning
- ESD withstand voltage: up to 2 kV according to JESD22-A114-B
- LM80 certified LEDs
- Compliant to RoHS Directive 2002/95/EC



RoHS
COMPLIANT
GREEN
(5-2008)**

APPLICATIONS

- Streetlight
- Internal lighting in buildings
- Tunnel lights
- General lighting application

DESCRIPTION

The VLSL51xxA are metal core based high brightness LED power modules, assembled with 12, 24 or 36 HB white LEDs. The colour temperature is natural white. The typical color temperature is 4000 K. The LED's are designed with a clear silicone lens for a butterfly shaped radiation characteristic.

PRODUCT GROUP AND PACKAGE DATA

- Product group: LED
- Package: LED module
- Product series: power
- Angle of half intensity: vertical: $\pm 35^\circ$, horizontal: $\pm 60^\circ$

PARTS TABLE				
PART	COLOR	LUMINOUS FLUX (at $I_F = 700$ mA typ.)	COLOR TEMPERATURE K	TECHNOLOGY
VLSL5112A	Natural white	$\Phi_V = 1500$ lm	4000	InGaN
VLSL5124A	Natural white	$\Phi_V = 3000$ lm	4000	InGaN
VLSL5136A	Natural white	$\Phi_V = 4500$ lm	4000	InGaN

ABSOLUTE MAXIMUM RATINGS ($T_{amb} = 25^\circ\text{C}$, unless otherwise specified) VLSL5112A, VLSL5124A, VLSL5136A				
PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
Forward current	Per row	I_F	750	mA
Power dissipation VLSL5112A	Total (max.)	P_{tot}	35	W
Power dissipation VLSL5124A		P_{tot}	69	W
Power dissipation VLSL5136A		P_{tot}	104	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	$^\circ\text{C}$

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

OPTICAL AND ELECTRICAL CHARACTERISTICS ⁽¹⁾ ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified) VLSL5112A, NATURAL WHITE

PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Luminous flux per row ⁽²⁾	$I_F = 700\text{ mA}$	Φ_V	550	750	-	lm
Luminous flux total ⁽²⁾	$I_{board} = 2 \times 700\text{ mA}$	Φ_V	1100	1500	-	lm
Color temperature	$I_F = 700\text{ mA}$	TK	-	4000	-	K
Forward voltage per row	$I_F = 700\text{ mA}$	V_F	19	20	23	V
Temperature coefficient of V_F per row	$I_F = 350\text{ mA}$	TC_{V_F}	-	- 20	-	mV/K
Temperature coefficient of Φ_V per row	$I_F = 350\text{ mA}$	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) VLSL5124A, NATURAL WHITE

PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Luminous flux per row ⁽²⁾	$I_F = 700\text{ mA}$	Φ_V	550	750	-	lm
Luminous flux total ⁽²⁾	$I_{board} = 4 \times 700\text{ mA}$	Φ_V	2200	3000	-	lm
Color temperature	$I_F = 700\text{ mA}$	TK	-	4000	-	K
Forward voltage per row	$I_F = 700\text{ mA}$	V_F	19	20	23	V
Temperature coefficient of V_F per row	$I_F = 350\text{ mA}$	TC_{V_F}	-	- 20	-	mV/K
Temperature coefficient of Φ_V per row	$I_F = 350\text{ mA}$	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) VLSL5136A, NATURAL WHITE

PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Luminous flux per row ⁽²⁾	$I_F = 700\text{ mA}$	Φ_V	550	750	-	lm
Luminous flux total ⁽²⁾	$I_{board} = 6 \times 700\text{ mA}$	Φ_V	3300	4500	-	lm
Color temperature	$I_F = 700\text{ mA}$	TK	-	4000	-	K
Forward voltage per row	$I_F = 700\text{ mA}$	V_F	19	20	23	V
Temperature coefficient of V_F per row	$I_F = 350\text{ mA}$	TC_{V_F}	-	- 20	-	mV/K
Temperature coefficient of Φ_V per row	$I_F = 350\text{ mA}$	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

LUMINOUS FLUX CLASSIFICATION FOR THE SINGLE LED

GROUP	LUMINOUS FLUX Φ_V (mIm) CORRELATION TABLE	
	MIN.	MAX.
STANDARD		
JZ	61 000	71 000
KX	71 000	82 000
KY	82 000	97 000



COLOR RANGE AND COLOR BINNING

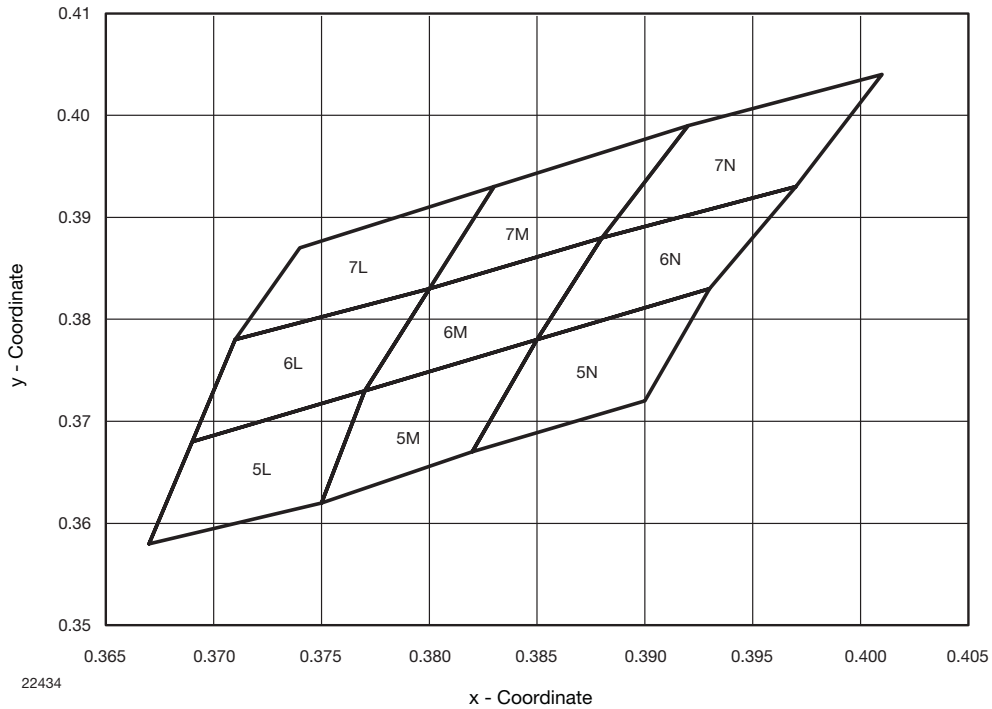


Fig. 1 - Chromaticity Coordinates of Colorgroups

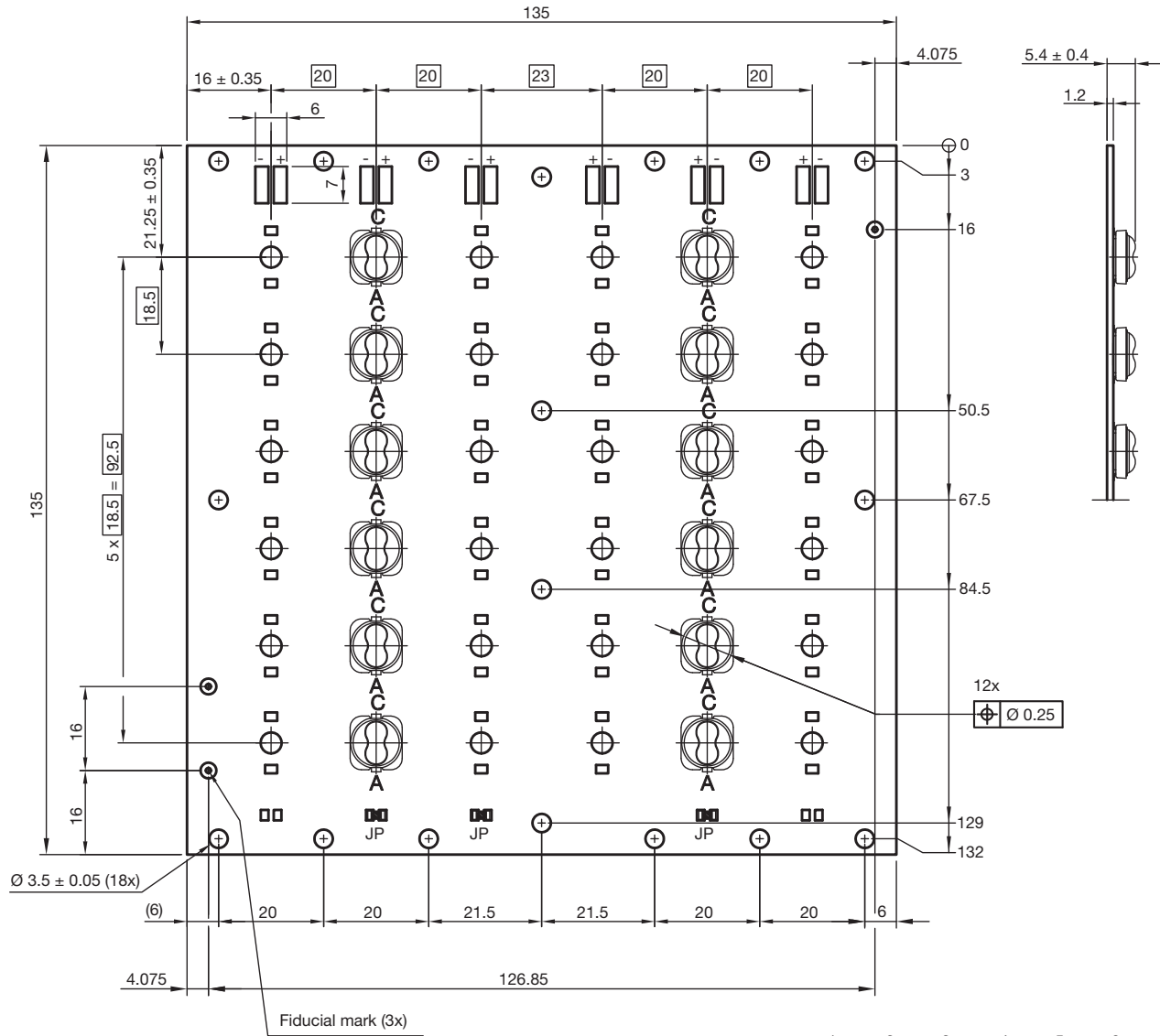
CHROMATICITY COORDINATED GROUPS FOR WHITE SMD LED									
GROUP	X	Y	GROUP	X	Y	GROUP	X	Y	
5L	0.367	0.358	5M	0.375	0.362	5N	0.382	0.367	
	0.369	0.368		0.377	0.373		0.385	0.378	
	0.377	0.373		0.385	0.378		0.393	0.383	
	0.375	0.362		0.382	0.367		0.390	0.372	
6L	0.369	0.368		0.377	0.373		6N	0.385	0.378
	0.371	0.378	0.380	0.383	0.388	0.388			
	0.380	0.383	0.388	0.388	0.397	0.393			
	0.377	0.373	0.385	0.378	0.393	0.383			
7L	0.371	0.378	7M	0.380	0.383	7N		0.388	0.388
	0.374	0.387		0.383	0.393		0.392	0.399	
	0.383	0.393		0.392	0.399		0.401	0.404	
	0.380	0.383		0.388	0.388		0.397	0.393	

VLSL5112A, VLSL5124A, VLSL5136A

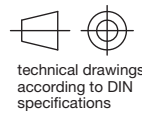
Vishay Semiconductors High Brightness LED Power Module



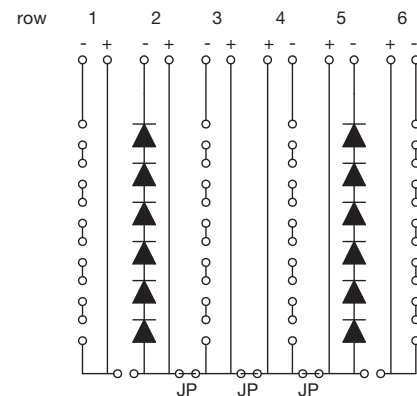
PCB BASIC DESIGN VLSL5112A Dimensions in millimeters



Not indicated tolerances ± 0.15



Drawing-No.: 9.920-6727.03-4
 Issue:1; 11.05.10
 22150



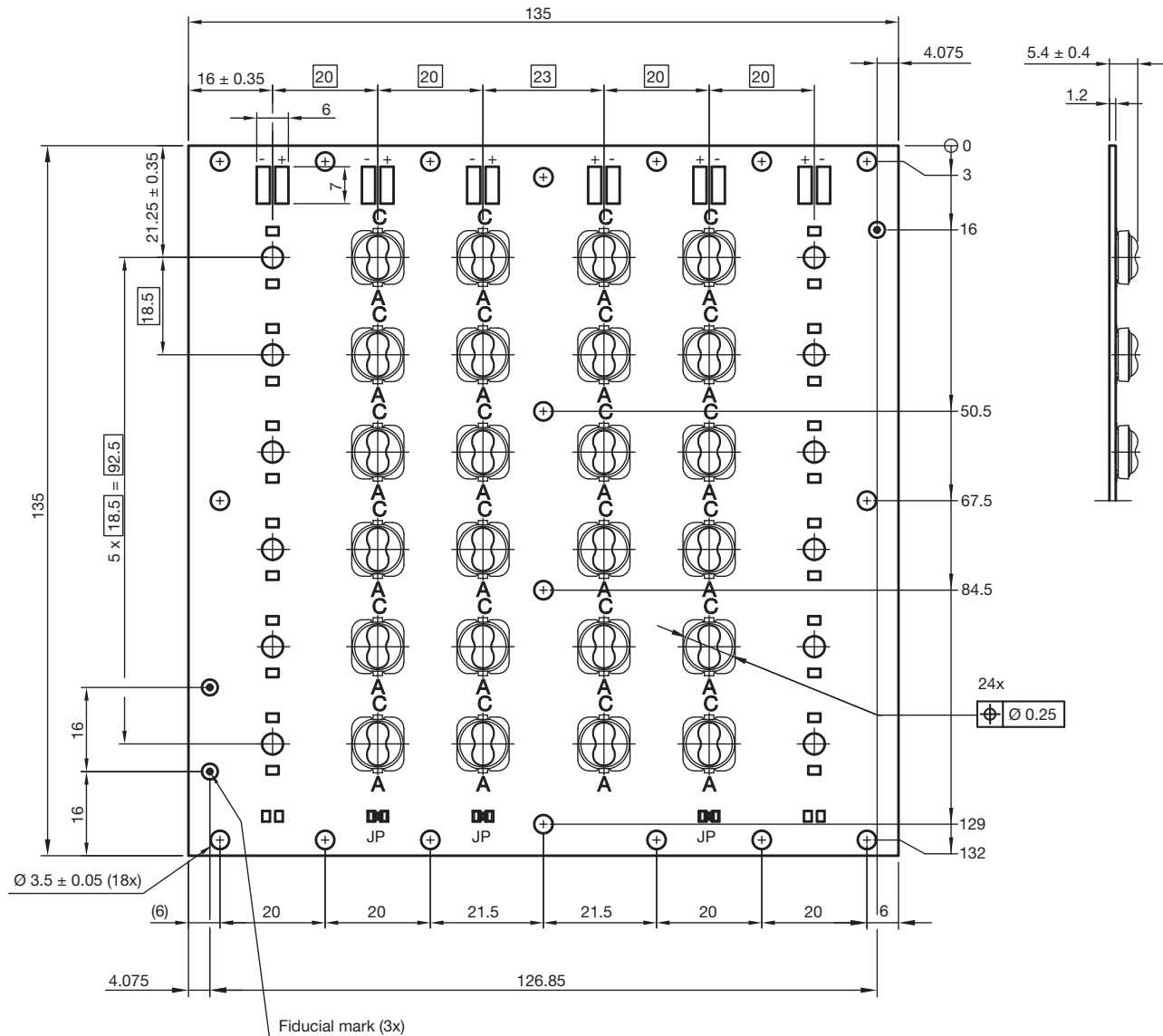
Assembled with all jumpers. Jumpers can be removed according driver design



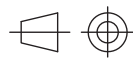
VLSL5112A, VLSL5124A, VLSL5136A

High Brightness LED Power Module Vishay Semiconductors

PCB BASIC DESIGN VLSL5124A Dimensions in millimeters



Not indicated tolerances ± 0.15

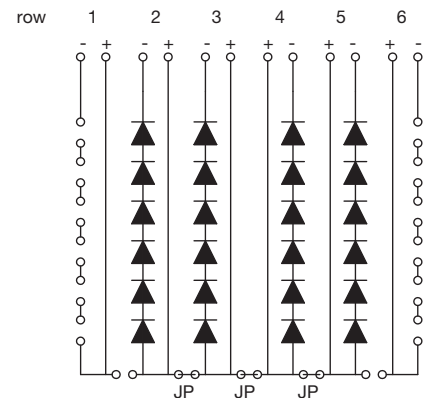


technical drawings according to DIN specifications

Drawing-No.: 9.920-6727.02-4

Issue:1; 11.05.10

22151



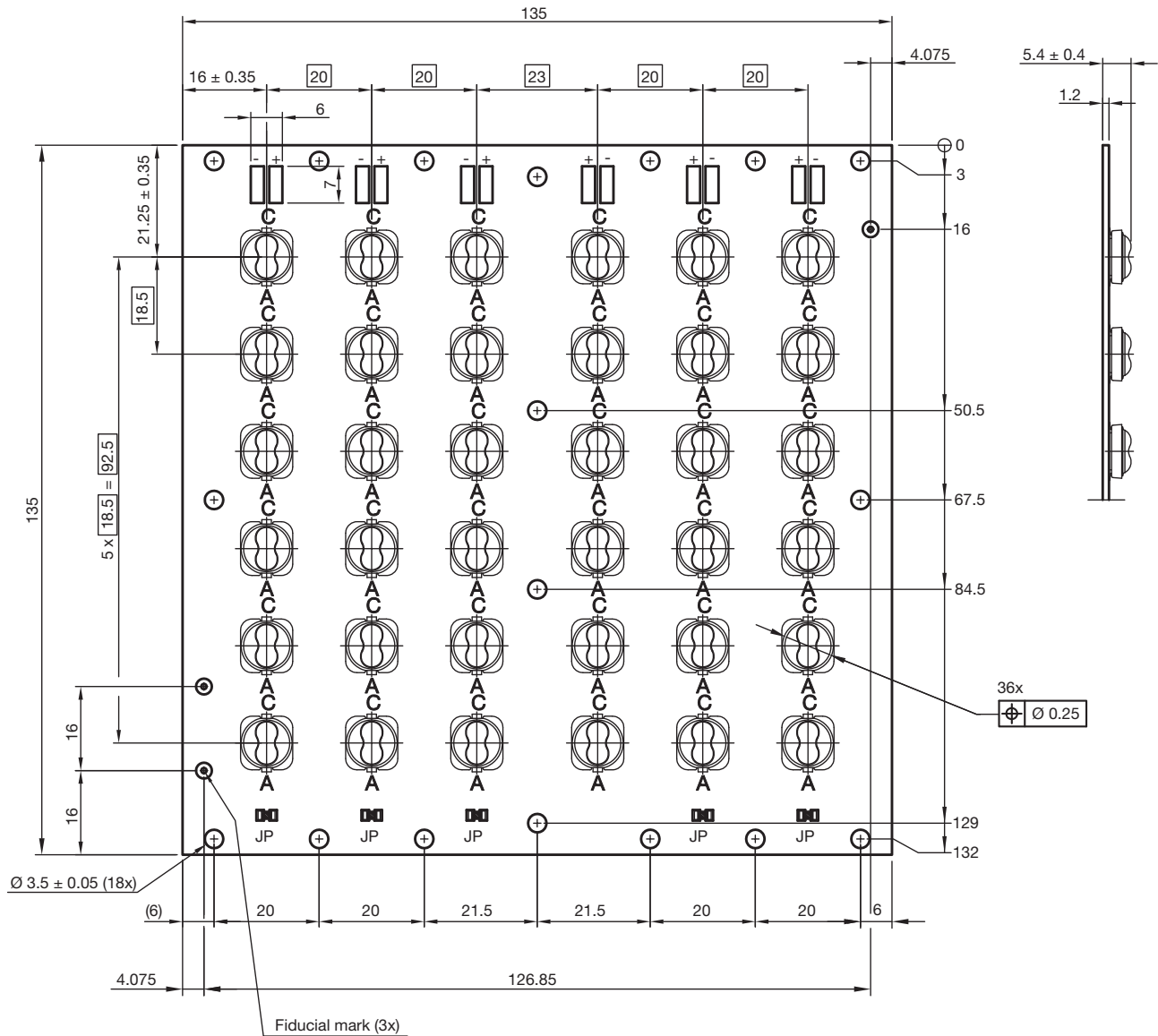
Assembled with all jumpers. Jumpers can be removed according driver design

VLSL5112A, VLSL5124A, VLSL5136A

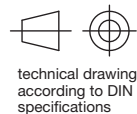
Vishay Semiconductors High Brightness LED Power Module



PCB BASIC DESIGN VLSL5136A Dimensions in millimeters



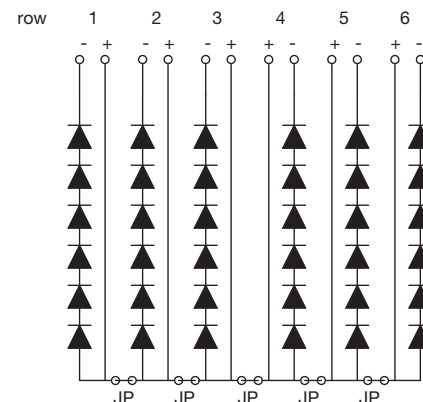
Not indicated tolerances ±0.15



Drawing-No.: 9.920-6727.01-4

Issue: 1; 11.05.10

22152

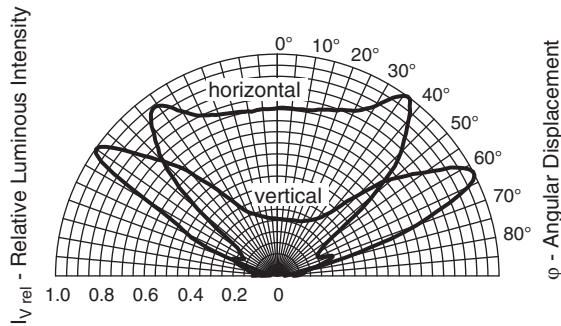


Assembled with all jumpers. Jumpers can be removed according driver design

PCB CHARACTERISTICS

- Metal core PCB with typical Al thickness of 800 μm
- Prepreg thickness typical 127 μm
- Conductive pattern Cu typical 25 μm
- Total board thickness: 1 mm \pm 15 %
- Warpage max. 0.75 % of board dimension
- Solder resist on top side
- Shiny white surface
- Galvanic of solder pads pure matte Sn (\geq 0.8 μm), immersion plated
- Assembled with 12, 24 or 36 LED's.
LED position accuracy \pm 0.125 mm from middle axis,
horizontal tilt max. 2°

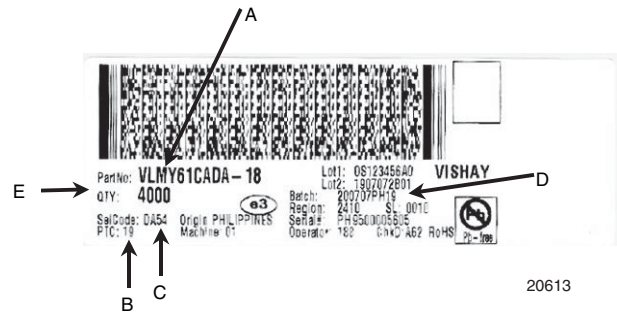
EMISSION CHARACTERISTIC



22153

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

BAR CODE PRODUCT LABEL



20613

- A. Type of component
- B. Manufacturing plant
- C. SEL - selection code (bin):
e.g.: code for V_F class (A, B, C)
- D. Batch:
200707 = year 2007, week 07
PH19 = plant code
- E. Total quantity



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