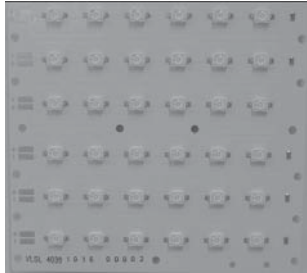


High Brightness LED Power Module



22140



22139

DESCRIPTION

The VLSL42xxA are metal core based high brightness LED power modules, assembled with 12, 24 or 36 HB white LEDs. The color temperature is typ. 3500 K warm white. The modules are designed for flexible use due to the option for using special reflectors to adjust the emission characteristics.

PRODUCT GROUP AND PACKAGE DATA

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

PARTS TABLE

PART	COLOR	LUMINOUS FLUX (at $I_F = 700$ mA typ.)	COLOR TEMPERATURE K	TECHNOLOGY
VLSL4212A	Warm white	$\Phi_V = 1500$ lm	3500 (typ.)	InGaN
VLSL4224A	Warm white	$\Phi_V = 3000$ lm	3500 (typ.)	InGaN
VLSL4236A	Warm white	$\Phi_V = 4500$ lm	3500 (typ.)	InGaN

ABSOLUTE MAXIMUM RATINGS ($T_{amb} = 25^\circ\text{C}$, unless otherwise specified) VLSL4212A, VLSL4224A, VLSL4236A

PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
Forward current	Per row	I_F	750	mA
Power dissipation VLSL4212A	Total (max.)	P_{tot}	35	W
Power dissipation VLSL4224A		P_{tot}	69	W
Power dissipation VLSL4236A		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

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 μm)
- Isolation layer prepreg > 63 μm
- Standard solder mask material
- 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

OPTICAL AND ELECTRICAL CHARACTERISTICS ⁽¹⁾ ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified) VLSL4212A, WARM 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	-	3500	-	K
Forward voltage per row	$I_F = 700\text{ mA}$	V_F	19	21	23	V
Class A ($V_{Fmax.} - V_{Fmin.}$) all rows ⁽³⁾	$I_F = 700\text{ mA}$	ΔV_F	-	-	0.9	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.
 (3) V_F classes are marked at the LED cluster and represent the technical classification only. The single groups cannot be specifically ordered.

OPTICAL AND ELECTRICAL CHARACTERISTICS ⁽¹⁾ ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified) VLSL4224A, WARM 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	-	3500	-	K
Forward voltage per row	$I_F = 700\text{ mA}$	V_F	19	21	23	V
Class A ($V_{Fmax.} - V_{Fmin.}$) all rows ⁽³⁾	$I_F = 700\text{ mA}$	ΔV_F	-	-	0.9	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.
 (3) V_F classes are marked at the LED cluster and represent the technical classification only. The single groups cannot be specifically ordered.

OPTICAL AND ELECTRICAL CHARACTERISTICS ⁽¹⁾ ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified) VLSL4236A, WARM 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	-	3500	-	K
Forward voltage per row	$I_F = 700\text{ mA}$	V_F	19	21	23	V
Class A ($V_{Fmax.} - V_{Fmin.}$) all rows ⁽³⁾	$I_F = 700\text{ mA}$	ΔV_F	-	-	0.9	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.
 (3) V_F classes are marked at the LED cluster and represent the technical classification only. The single groups cannot be specifically ordered.



SPECIFICATION OF SINGLE LEDs USED FOR THE MODULES

LUMINOUS FLUX CLASSIFICATION FOR THE SINGLE LED AT 350 mA		
GROUP STANDARD	LUMINOUS FLUX Φ_V (mIm) CORRELATION TABLE	
	MIN.	MAX.
JZ	61 000	71 000
KX	71 000	82 000
KY	82 000	97 000
KZ	97 000	112 000

COLOR RANGE AND COLOR BINNING

VLSL4212A, VLSL4224A, VLSL4236A; color groups

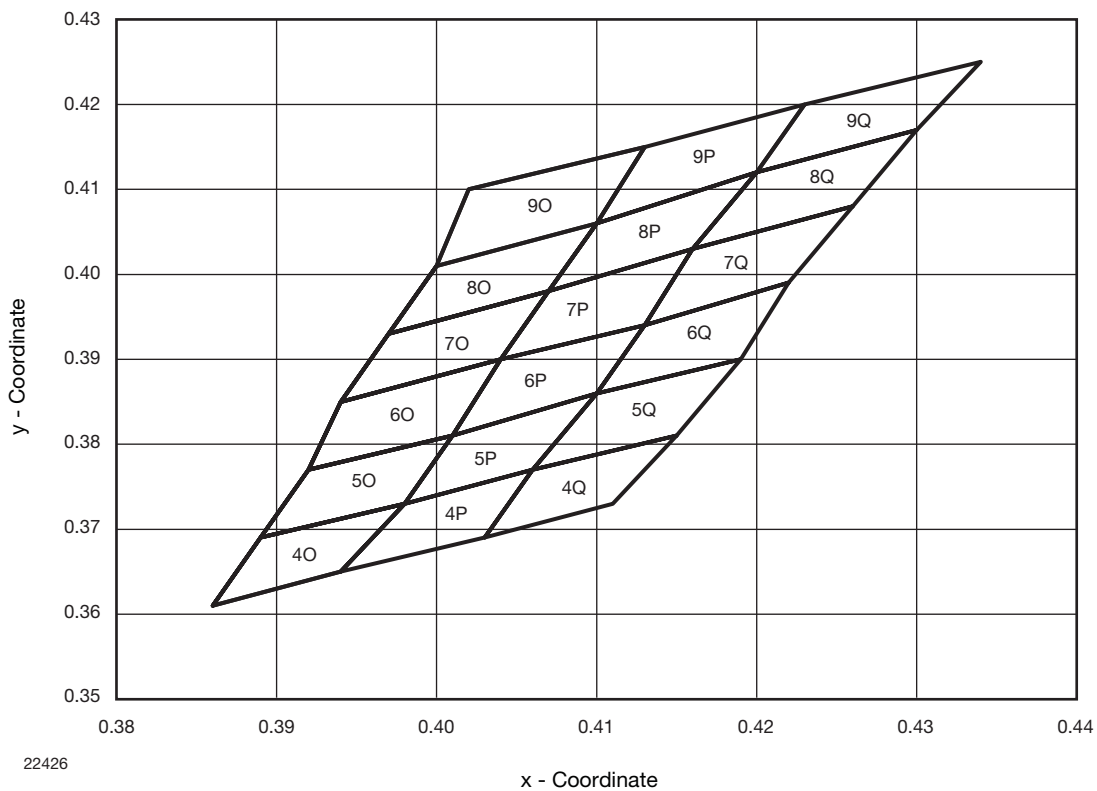


Fig. 1 - Chromaticity Coordinates of Colorgroups



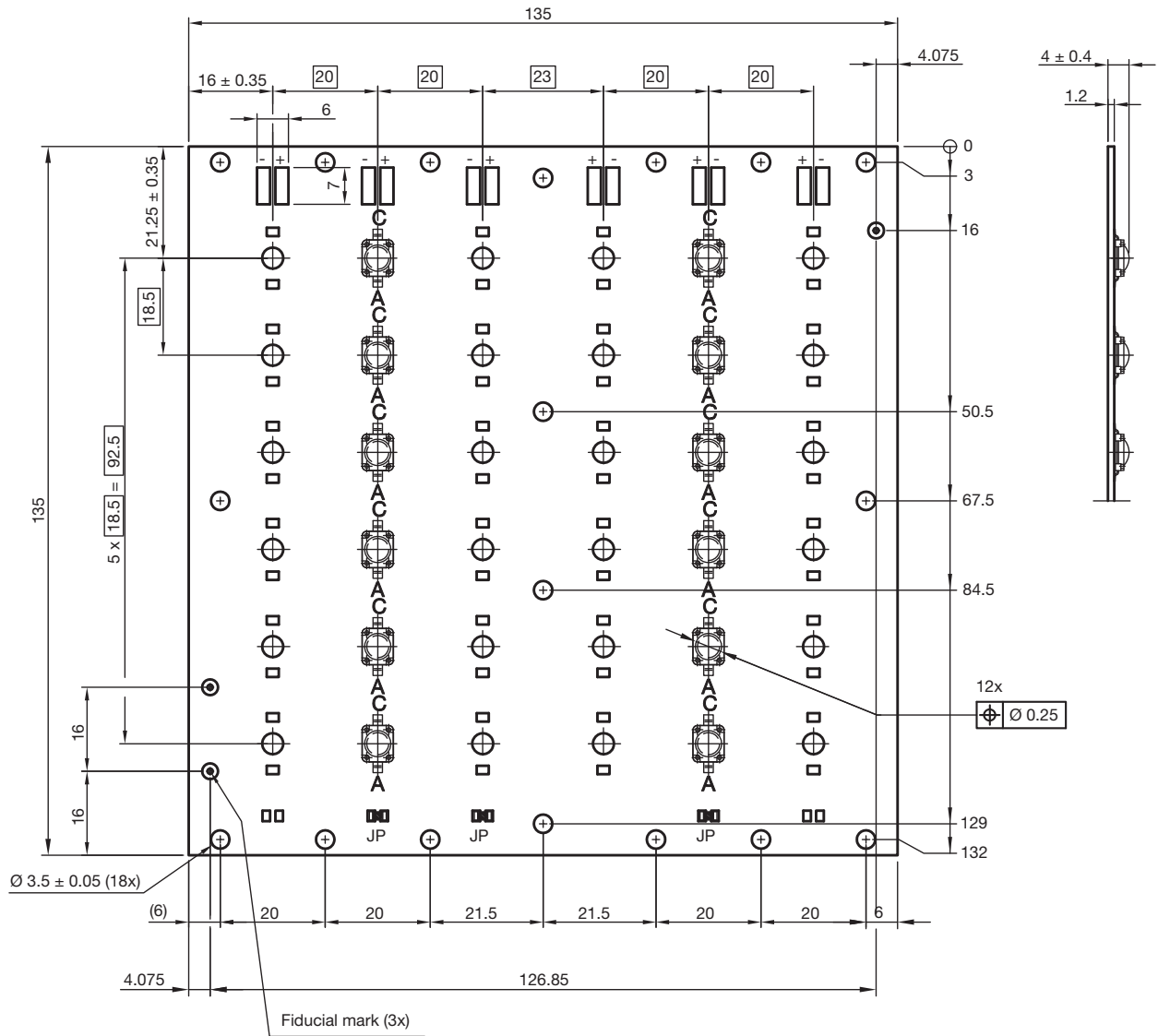
CHROMATICITY COORDINATED GROUPS FOR WHITE SMD LED										
GROUP	X	Y		GROUP	X	Y		GROUP	X	Y
4O	0.386	0.361		4P	0.394	0.365		4Q	0.403	0.369
	0.389	0.369			0.398	0.373			0.406	0.377
	0.398	0.373			0.406	0.377			0.415	0.381
	0.394	0.365			0.403	0.369			0.411	0.373
5O	0.389	0.369		5P	0.398	0.373		5Q	0.406	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



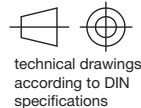
VLSL4212A, VLSL4224A, VLSL4236A

High Brightness LED Power Module Vishay Semiconductors

PCB BASIC DESIGN VLSL4212A Dimensions in millimeters

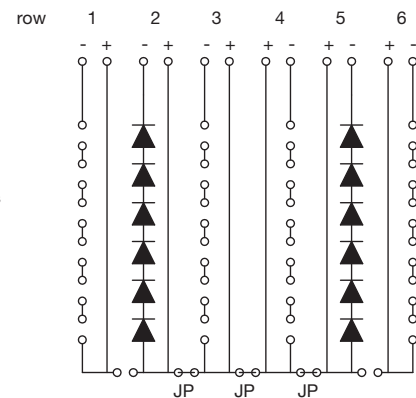


Not indicated tolerances ± 0.15



technical drawings according to DIN specifications

Drawing-No.: 9.920-6726.03-4
Issue:1; 11.05.10
22137



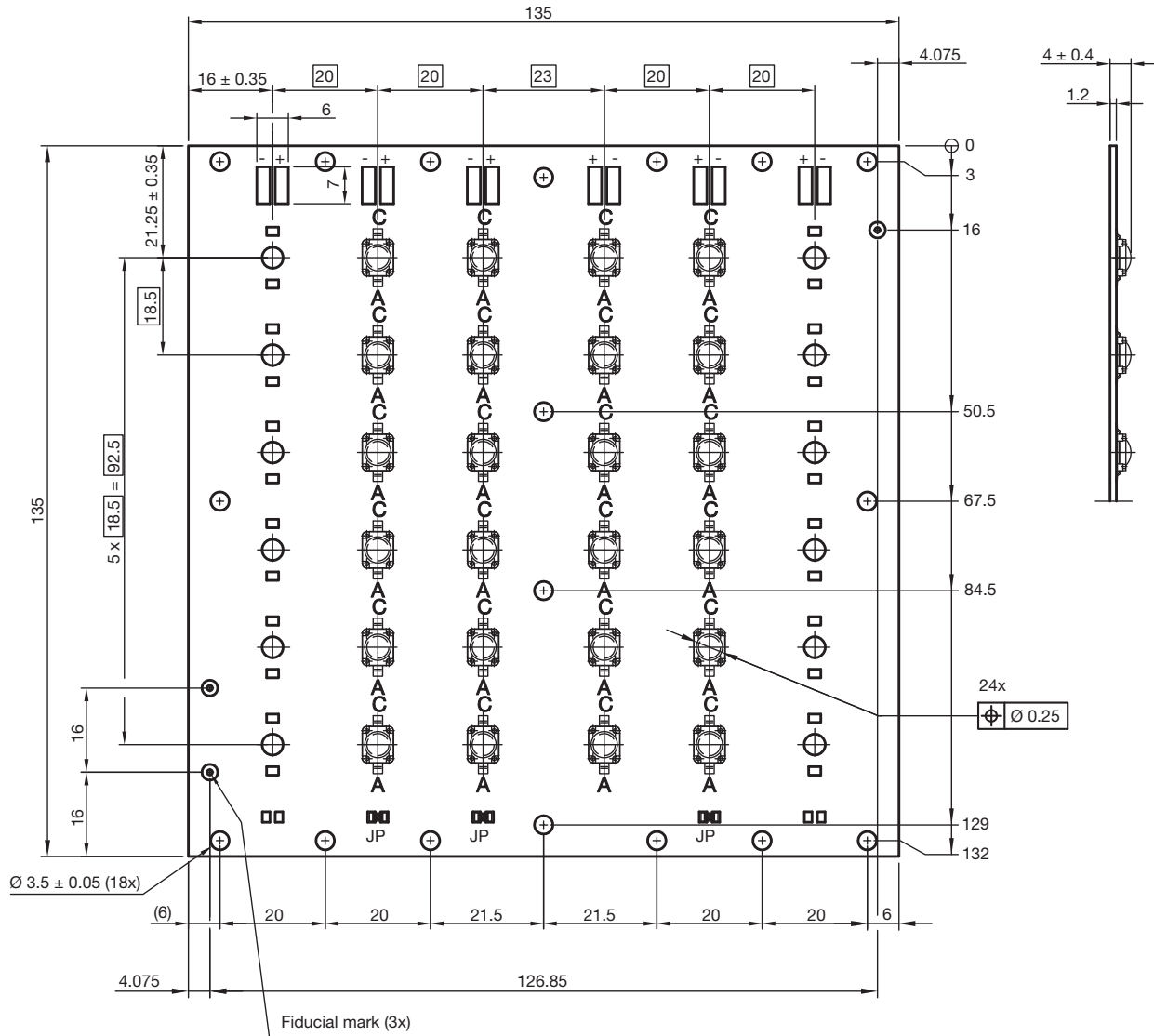
Assembled with all jumpers. Jumpers can be removed according driver design

VLSL4212A, VLSL4224A, VLSL4236A

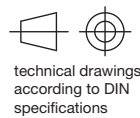


Vishay Semiconductors High Brightness LED Power Module

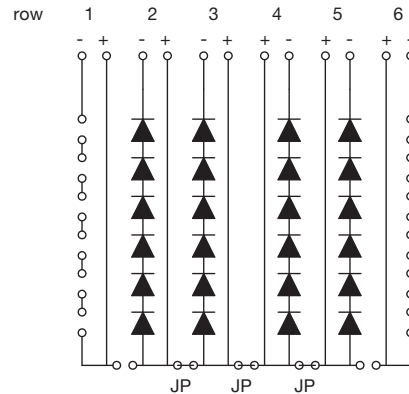
PCB BASIC DESIGN VLSL4224A Dimensions in millimeters



Not indicated tolerances ± 0.15



Drawing-No.: 9.920-6726.02-4
 Issue:1; 11.05.10
 22136



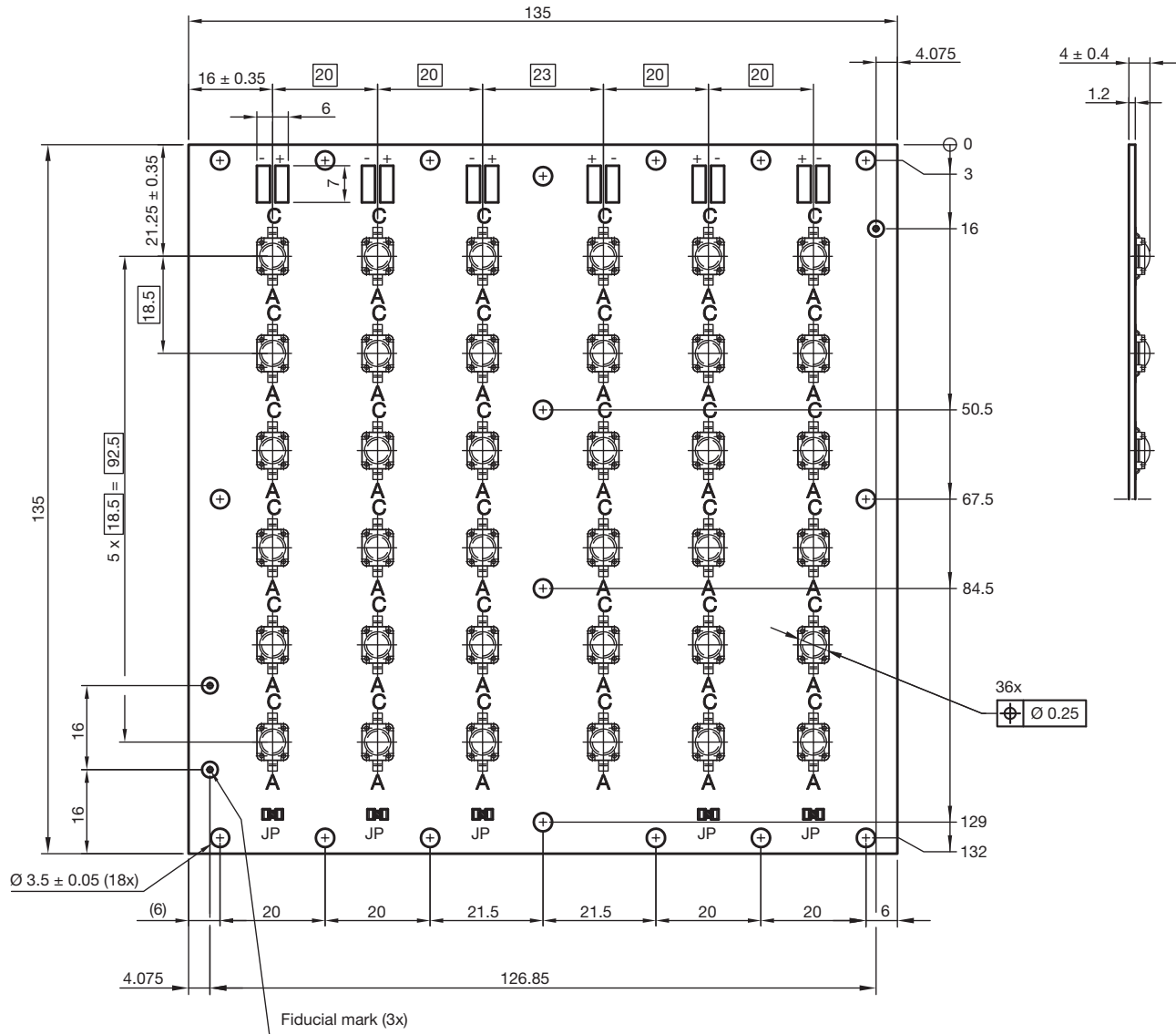
Assembled with all jumpers. Jumpers can be removed according driver design



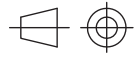
VLSL4212A, VLSL4224A, VLSL4236A

High Brightness LED Power Module Vishay Semiconductors

PCB BASIC DESIGN VLSL4236A Dimensions in millimeters



Not indicated tolerances ± 0.15

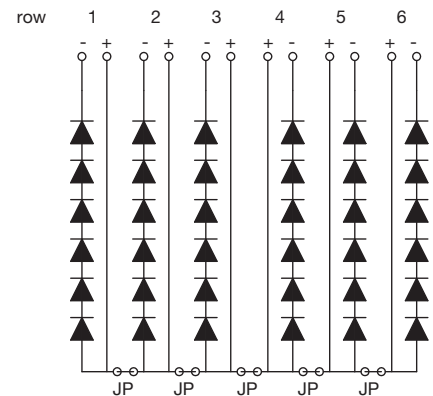


technical drawings according to DIN specifications

Drawing-No.: 9.920-6726.01-4

Issue:1; 11.05.10

22135



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 VLMW91xxx LED's. LED position accuracy \pm 0.125 mm from middle axis, horizontal tilt max. 2°

EMISSION CHARACTERISTIC

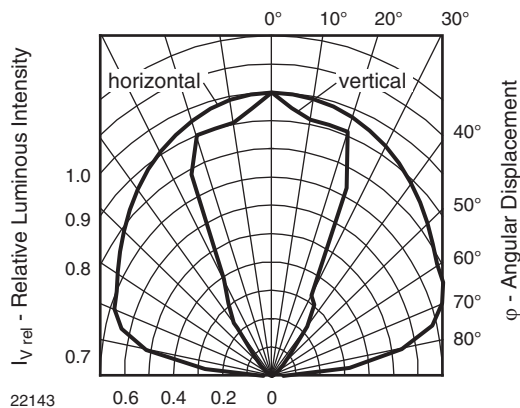


Fig. 2 - Rel. Luminous Intensity vs. Angular Displacement

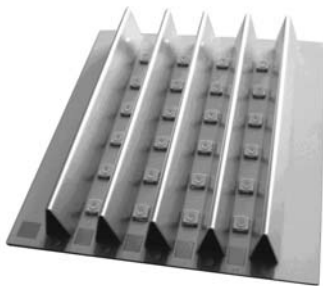
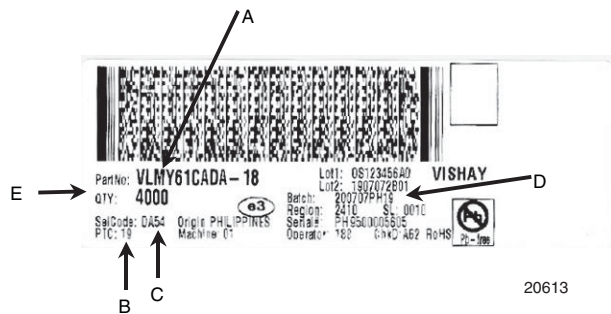


Fig. 3 - Sample Board with Reflectors (for Info only)

BAR CODE PRODUCT LABEL



- 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



Disclaimer

ALL PRODUCT, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE TO IMPROVE RELIABILITY, FUNCTION OR DESIGN OR OTHERWISE.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "Vishay"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained in any datasheet or in any other disclosure relating to any product.

Vishay makes no warranty, representation or guarantee regarding the suitability of the products for any particular purpose or the continuing production of any product. To the maximum extent permitted by applicable law, Vishay disclaims (i) any and all liability arising out of the application or use of any product, (ii) any and all liability, including without limitation special, consequential or incidental damages, and (iii) any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.

Statements regarding the suitability of products for certain types of applications are based on Vishay's knowledge of typical requirements that are often placed on Vishay products in generic applications. Such statements are not binding statements about the suitability of products for a particular application. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Parameters provided in datasheets and/or specifications may vary in different applications and performance may vary over time. All operating parameters, including typical parameters, must be validated for each customer application by the customer's technical experts. Product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein.

Except as expressly indicated in writing, Vishay products are not designed for use in medical, life-saving, or life-sustaining applications or for any other application in which the failure of the Vishay product could result in personal injury or death. Customers using or selling Vishay products not expressly indicated for use in such applications do so at their own risk. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay. Product names and markings noted herein may be trademarks of their respective owners.

Material Category Policy

Vishay Intertechnology, Inc. hereby certifies that all its products that are identified as RoHS-Compliant fulfill the definitions and restrictions defined under Directive 2011/65/EU of The European Parliament and of the Council of June 8, 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment (EEE) - recast, unless otherwise specified as non-compliant.

Please note that some Vishay documentation may still make reference to RoHS Directive 2002/95/EC. We confirm that all the products identified as being compliant to Directive 2002/95/EC conform to Directive 2011/65/EU.

Vishay Intertechnology, Inc. hereby certifies that all its products that are identified as Halogen-Free follow Halogen-Free requirements as per JEDEC JS709A standards. Please note that some Vishay documentation may still make reference to the IEC 61249-2-21 definition. We confirm that all the products identified as being compliant to IEC 61249-2-21 conform to JEDEC JS709A standards.

单击下面可查看定价，库存，交付和生命周期等信息

[>>Vishay\(威世\)](#)