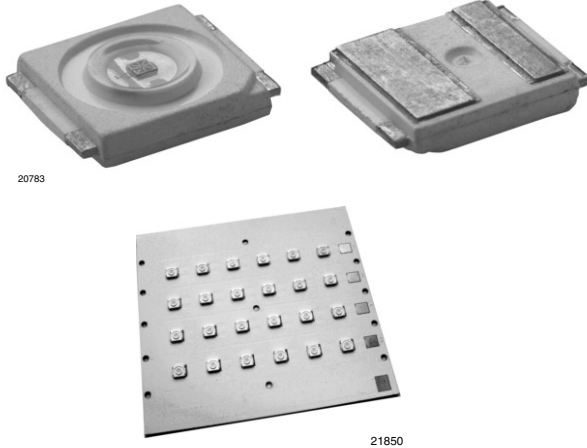


## High Brightness LED Power Module



### DESCRIPTION

VLSL30 is a metal core based high brightness LED power module, assembled with 24 HB white LEDs. VLSL30 is a cold white version in a color temperature range of 5000 K to 7000 K. The module is 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:  $\pm 60^\circ$

### FEATURES

- Metal core PCB: Cu based
- Single side/single layer PCB
- Shiny white surface
- 24 LED's minimum 87 lm at 350 mA
- Conductive top layer: Cu
- Isolation layer prepreg type R1566
- ESD withstand voltage: up to 2 kV according to JESD22-A114-B
- Compliant to RoHS directive 2002/95/EC



**RoHS**  
COMPLIANT

**GREEN**  
(5-2008)\*\*

### APPLICATIONS

- Indoor and outdoor applications
- Internal lighting in buildings
- Tunnel lights
- General lighting application
- Backlighting clusters for advertising boards
- Spotlight illumination for off-road vehicles

### PARTS TABLE

PART	COLOR	LUMINOUS FLUX (at $I_F = 350$ mA typ.)	COLOR TEMPERATURE K	TECHNOLOGY
VLSL30	Cold white	$\Phi_V = 2160$ lm	5000 to 7000	InGaN

### ABSOLUTE MAXIMUM RATINGS ( $T_{amb} = 25$ °C, unless otherwise specified) VLSL30

PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
Forward current	Per row	$I_F$	350	mA
Power dissipation	Total	$P_{tot}$	33 600	mW
Junction temperature		$T_j$	120	°C
Operating temperature range		$T_{amb}$	- 40 to + 85	°C
Storage temperature range		$T_{stg}$	- 40 to + 85	°C
Decomposition temperature of PCB (for cable assembly)	3 x 10 s	$T_D$	350	°C

\*\* Please see document "Vishay Material Category Policy": [www.vishay.com/doc?99902](http://www.vishay.com/doc?99902)

<b>OPTICAL AND ELECTRICAL CHARACTERISTICS (1)</b> ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)						
<b>VLSL30, COLD WHITE</b>						
PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Luminous flux per row (2)	$I_F = 350\text{ mA}$	$\Phi_V$	480	540	-	lm
Luminous flux total (2)	$I_{board} = 4 \times 350\text{ mA}$	$\Phi_V$	1920	2160	-	lm
Color temperature	$I_F = 350\text{ mA}$	TK	5000	-	7000	K
Forward voltage per row	$I_F = 350\text{ mA}$	$V_F$	18	20	24	V
Class A ( $V_{Fmax.} - V_{Fmin.}$ ) all rows (3)	$I_F = 350\text{ mA}$	$\Delta V_F$	0	-	0.2	V
Class B ( $V_{Fmax.} - V_{Fmin.}$ ) all rows (3)	$I_F = 350\text{ mA}$	$\Delta V_F$	0.2	-	0.4	V
Class C ( $V_{Fmax.} - V_{Fmin.}$ ) all rows (3)	$I_F = 350\text{ mA}$	$\Delta V_F$	0.4	-	0.6	V
Temperature coefficient of $V_F$ per row	$I_F = 350\text{ mA}$	$TC_{VF}$	-	- 108	-	mV/K
Temperature coefficient of $\Phi_V$	$I_F = 350\text{ mA}$	$TC_{\Phi_V}$	-	- 0.4	-	%/K
Temperature coefficient of color temperature	$I_F = 350\text{ mA}$	$TC_{TK}$	-	17	-	K/K
Thermal resistance junction-to-board (4)		$R_{thJB\ total}$	-	1	-	K/W
Isolation voltage		$V_{AC}$	1000	-	-	V
		$V_{DC}$	1500	-	-	V

**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.
- (4) Based on theoretical calculation.

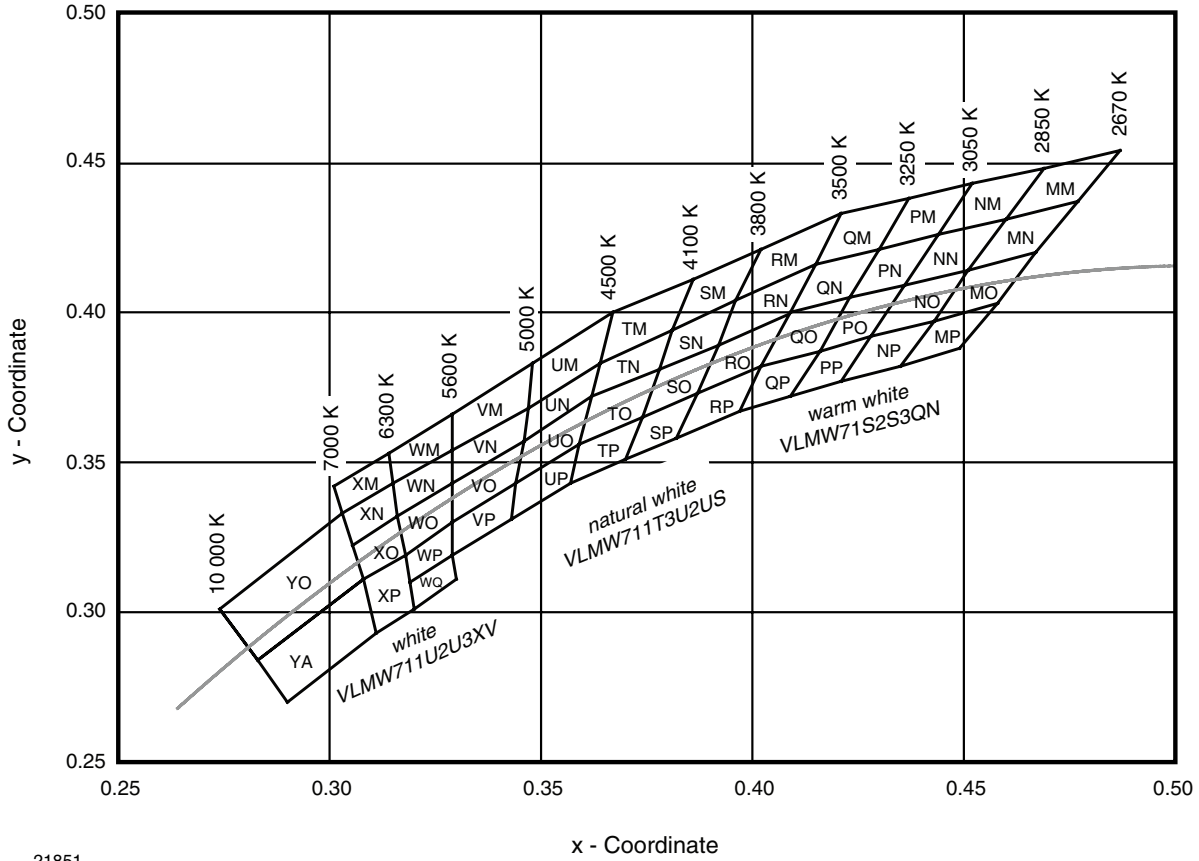
**SPECIFICATION OF SINGLE LEDs USED FOR THE MODULES**

- VLSL30: LED: VLMW711U2U3XV (83229 rev. 1; 02/24/2009)

<b>LUMINOUS FLUX CLASSIFICATION FOR THE SINGLE LED</b>		
GROUP STANDARD	LUMINOUS FLUX $\Phi_V$ (lm) CORRELATION TABLE	
	MIN.	MAX.
T3	76.5	87.4
U2	87.4	99.4
U3	99.4	113.6

**COLOR RANGE AND COLOR BINNING**

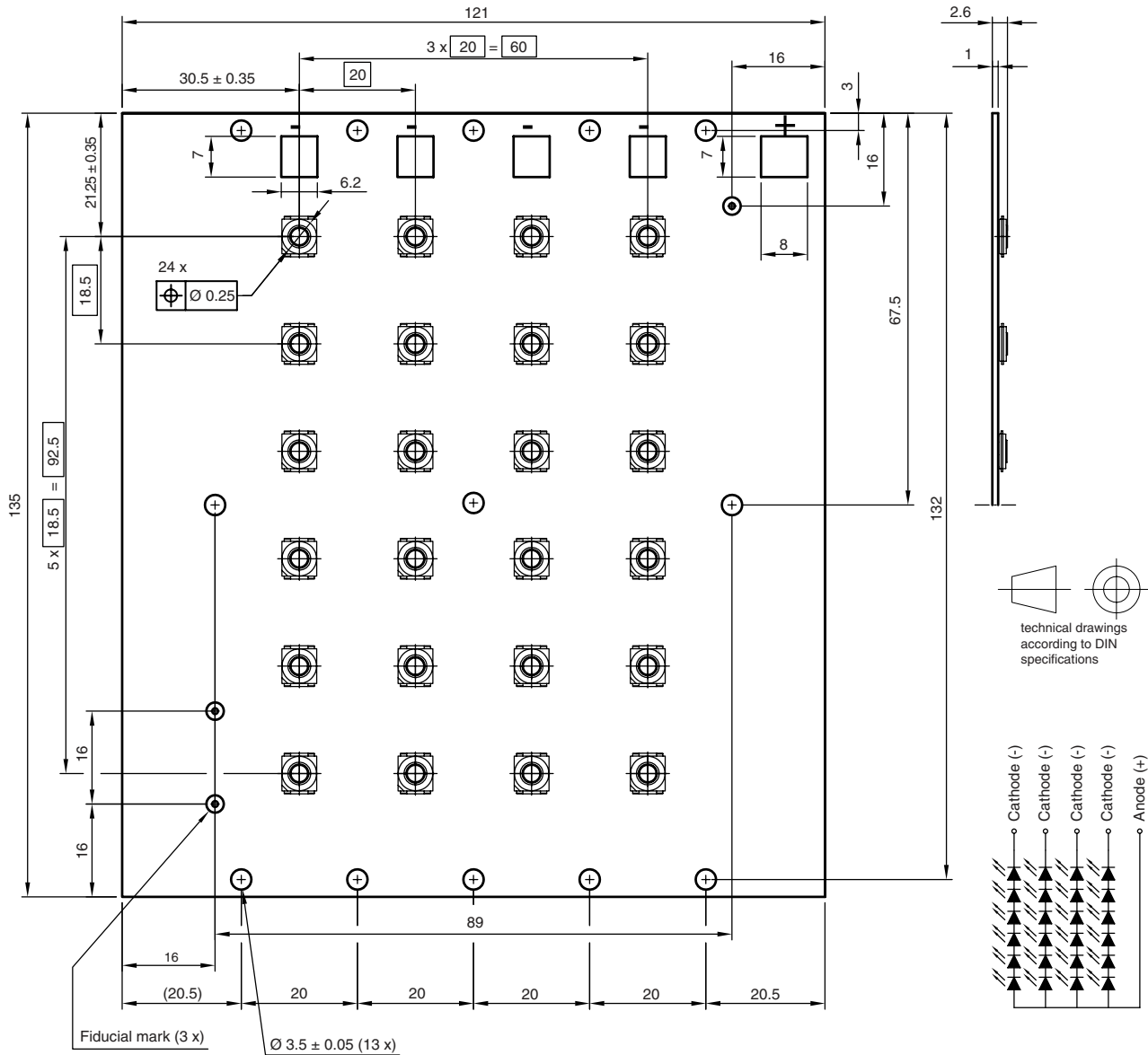
VLSL30: 5000 K to 7000 K group X to V



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Fig. 1 - Chromaticity Coordinates of Colorgroups

**PCB BASIC DESIGN** Dimensions in millimeters



Not indicated tolerances ± 0.15 mm

Drawing-No.: 9.920-6715.01-4

Issue: 1; 28.09.09

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Board design with 4 parallel LED rows (4 cathode pads and common anode pad)

**PCB CHARACTERISTICS**

- Metal core PCB with typical Cu thickness of 800 µm
- Prepreg type R1566 typical 127 µm
- Conductive pattern Cu typical 25 µm
- Total board thickness: 1 mm ± 15 %
- Warpage max. 0.75 % of board dimension
- Solder resist on top side
- Shiny white surface
- Galvanic of solder pads and backside pure matte Sn (≥ 0.8 µm), board edges and hole walls immersion plated
- Assembled with 24 VLMW711xxx LED's. LED position accuracy ± 0.125 mm from middle axis, horizontal tilt max. 2°

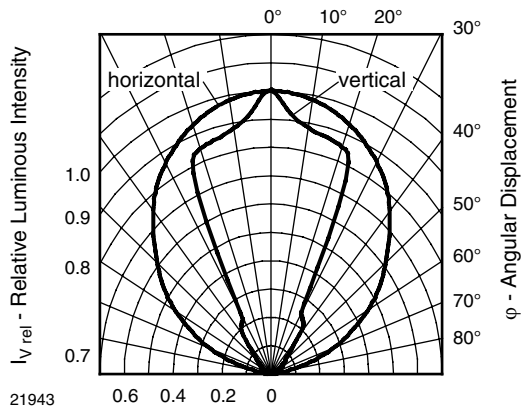
**EMISSION CHARACTERISTIC**


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

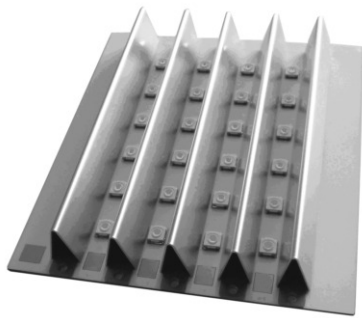


Fig. 3 - Emission characteristic with reflectors (for info only)

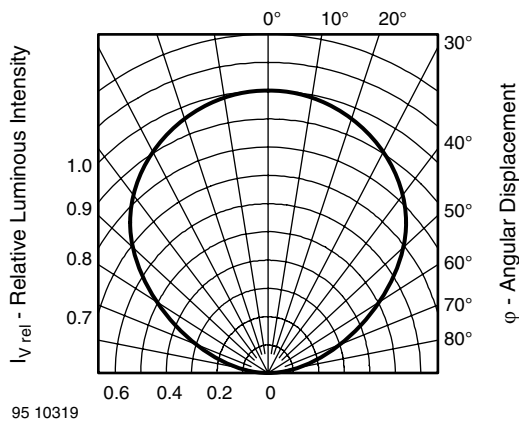
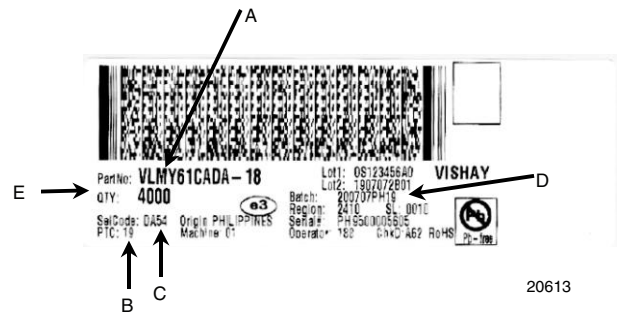


Fig. 4 - Rel. Luminous Intensity vs. Angular Displacement

**BAR CODE PRODUCT LABEL**


- A. Type of component
  - B. Manufacturing plant
  - C. SEL - selection code (bin):  
e.g.: X = code for  $V_F$  class (A, B, C)
  - D. Batch:  
200707 = year 2007, week 07  
PH19 = plant code
  - E. Total quantity
- Note**
- 4 PCB's per box, minimum order quantity 24



## Disclaimer

All product specifications and data are subject to change without notice.

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