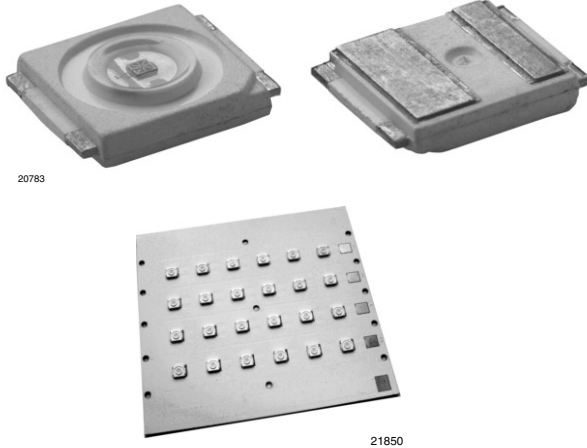


High Brightness LED Power Module



DESCRIPTION

VLSL31 is a metal core based high brightness LED power module, assembled with 24 HB white LEDs. VLSL31 is natural white with a color temperature of 3800 K to 5000 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 76 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



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
VLSL31	Natural white	$\Phi_V = 1900$ lm	3800 to 5000	InGaN

ABSOLUTE MAXIMUM RATINGS ⁽¹⁾ ($T_{amb} = 25$ °C, unless otherwise specified) VLSL31

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

OPTICAL AND ELECTRICAL CHARACTERISTICS ⁽¹⁾ ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified) VL31, NATURAL WHITE

PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Luminous flux per row ⁽²⁾	$I_F = 350\text{ mA}$	Φ_V	400	450	-	lm
Luminous flux total ⁽²⁾	$I_{board} = 4 \times 350\text{ mA}$	Φ_V	1600	1900	-	lm
Color temperature	$I_F = 350\text{ mA}$	TK	3800	-	5000	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⁾	$I_F = 350\text{ mA}$	ΔV_F	0	-	0.2	V
Class B ($V_{Fmax.} - V_{Fmin.}$) all rows ⁽³⁾	$I_F = 350\text{ mA}$	ΔV_F	0.2	-	0.4	V
Class C ($V_{Fmax.} - V_{Fmin.}$) all rows ⁽³⁾	$I_F = 350\text{ mA}$	ΔV_F	0.4	-	0.6	V
Temperature coefficient of V_F per row	$I_F = 350\text{ mA}$	TC_{V_F}	-	- 108	-	mV/K
Temperature coefficient of Φ_V	$I_F = 350\text{ mA}$	TC_{Φ_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

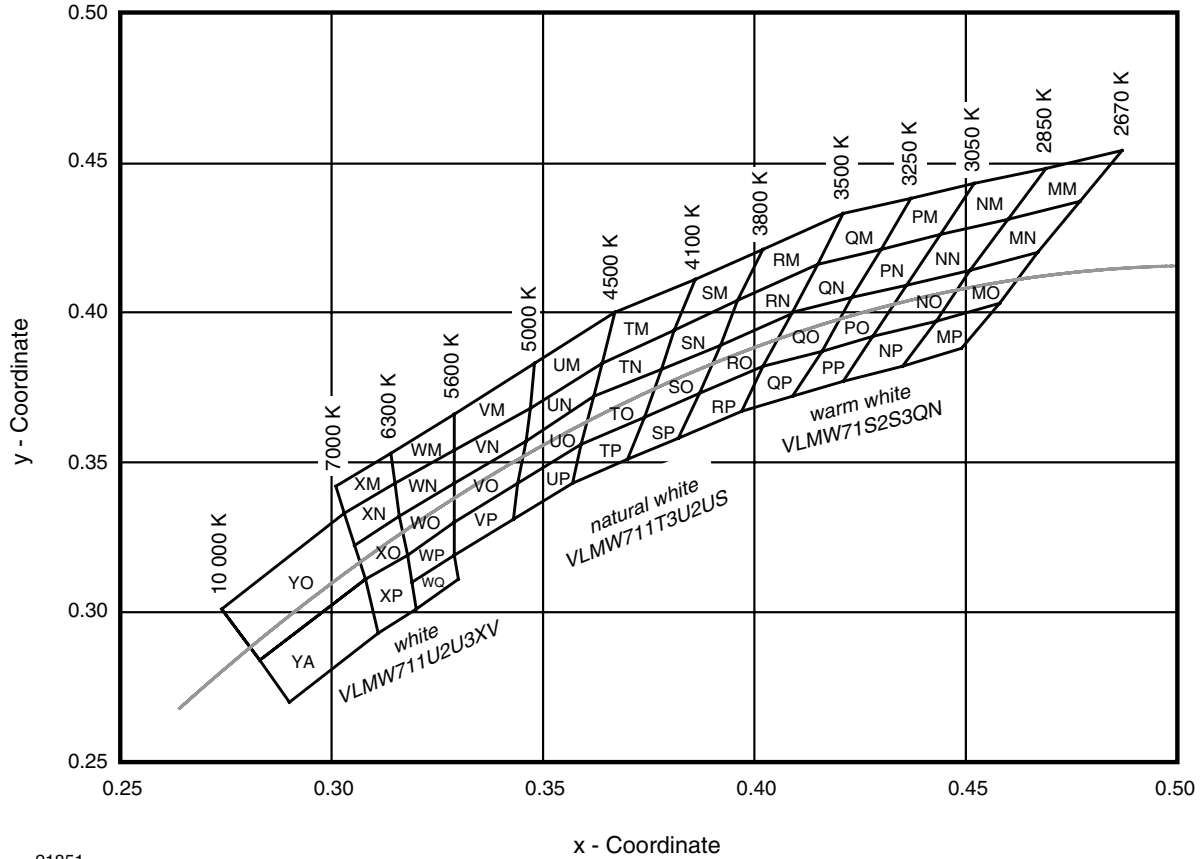
- VL31: LED: VLMW711T3U2US (81161 rev. 1; 03/26/2009)

LUMINOUS FLUX CLASSIFICATION FOR THE SINGLE LED

GROUP STANDARD	LUMINOUS FLUX Φ_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

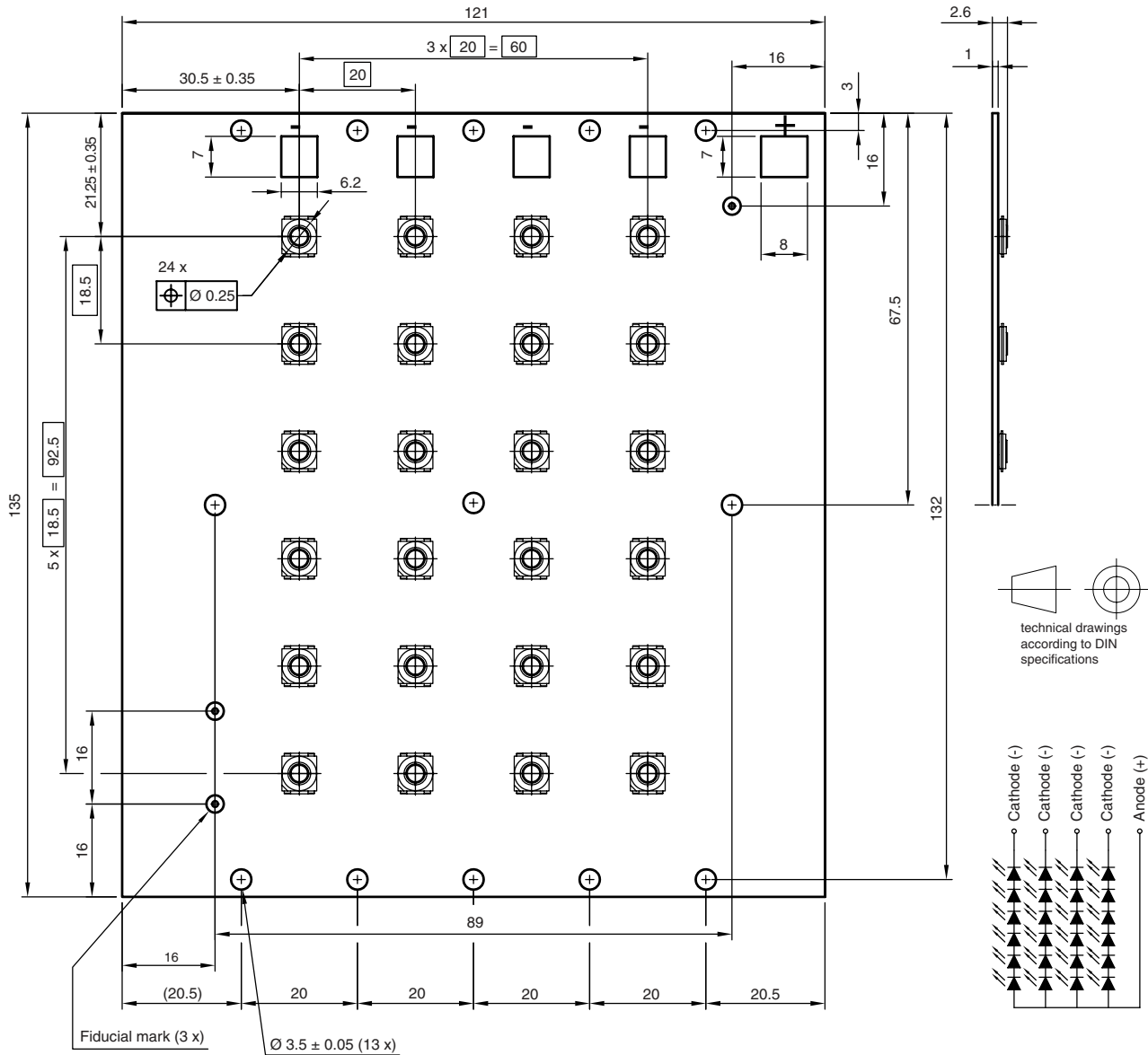
VLSL31: 3800 K to 5000 K group U to S



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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

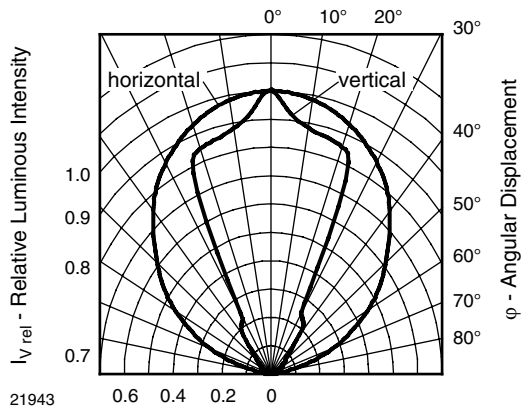


Fig. 2 - Rel. Luminous Intensity vs. Angular Displacement

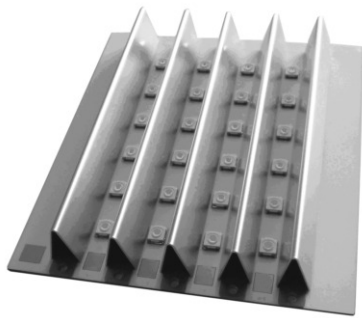


Fig. 3 - Emission characteristic with reflectors (for info only)

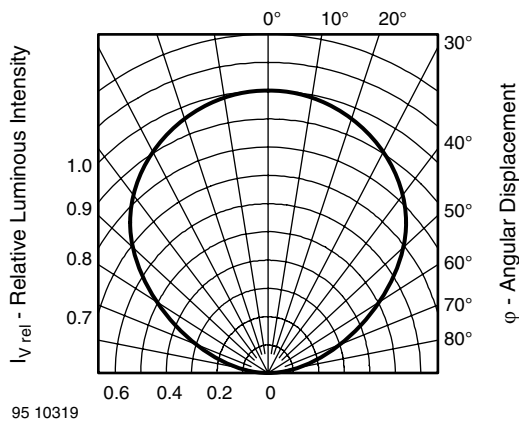
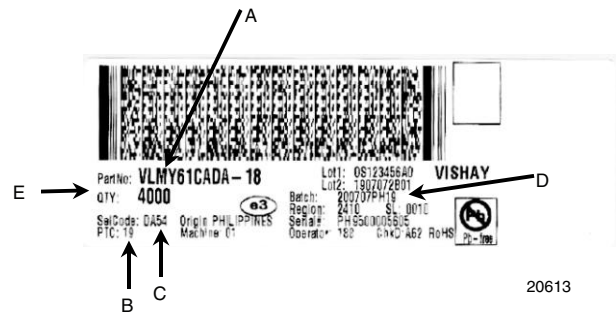


Fig. 4 - Rel. Luminous Intensity vs. Angular Displacement

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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