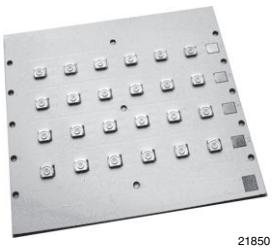
High Brightness LED Power Module



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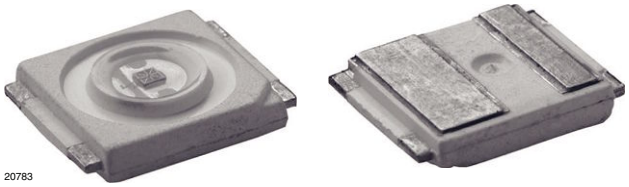

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FEATURES

- Metal core PCB: Cu based
- Single side/single layer PCB
- Shiny white surface
- 24 LEDs 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

Pb-free

RoHS COMPLIANT

GREEN (5-2008)**

Note

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

DESCRIPTION

VLSL30 is a metal core based high brightness LED power module, assembled with 24 HB white LEDs. VLSL30 is a cool 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.

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

PRODUCT GROUP AND PACKAGE DATA

- Product group: LED
- Package: LED module
- Product series: power
- Angle of half intensity: ± 60°

PARTS TABLE

PART	COLOR	LUMINOUS FLUX (at I_F = 350 mA typ.)	COLOR TEMPERATURE K	TECHNOLOGY
VLSL30	Cool white	Φ_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

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

Notes

- Forward voltages are tested at a current pulse duration of 1 ms and a tolerance of ± 0.1 V. Luminous flux is measured at a current pulse duration of 25 ms and an accuracy of ± 11 %.

(1) Calculated based on single LED unit.

(2) V_F classes are marked at the LED cluster and represent the technical classification only. The single groups cannot be specifically ordered.

(3) Based on theoretical calculation.

COLOR RANGE AND COLOR BINNING

VLSL30: 5000 K to 7000 K group X to V

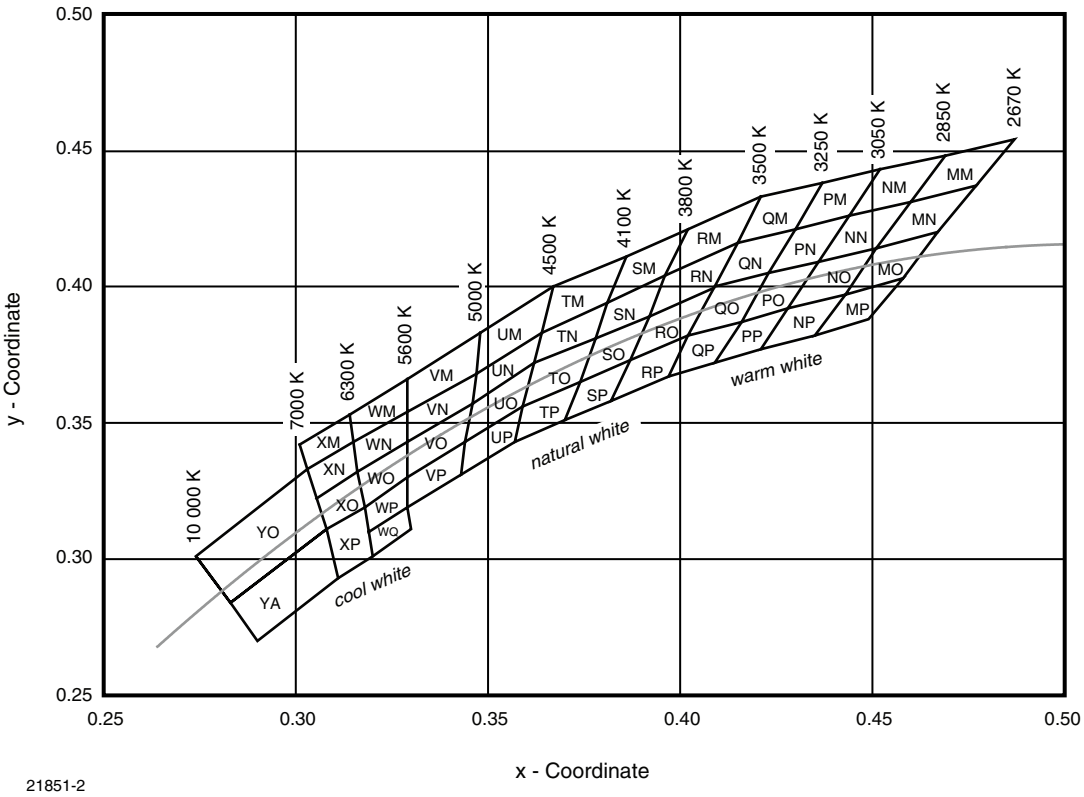
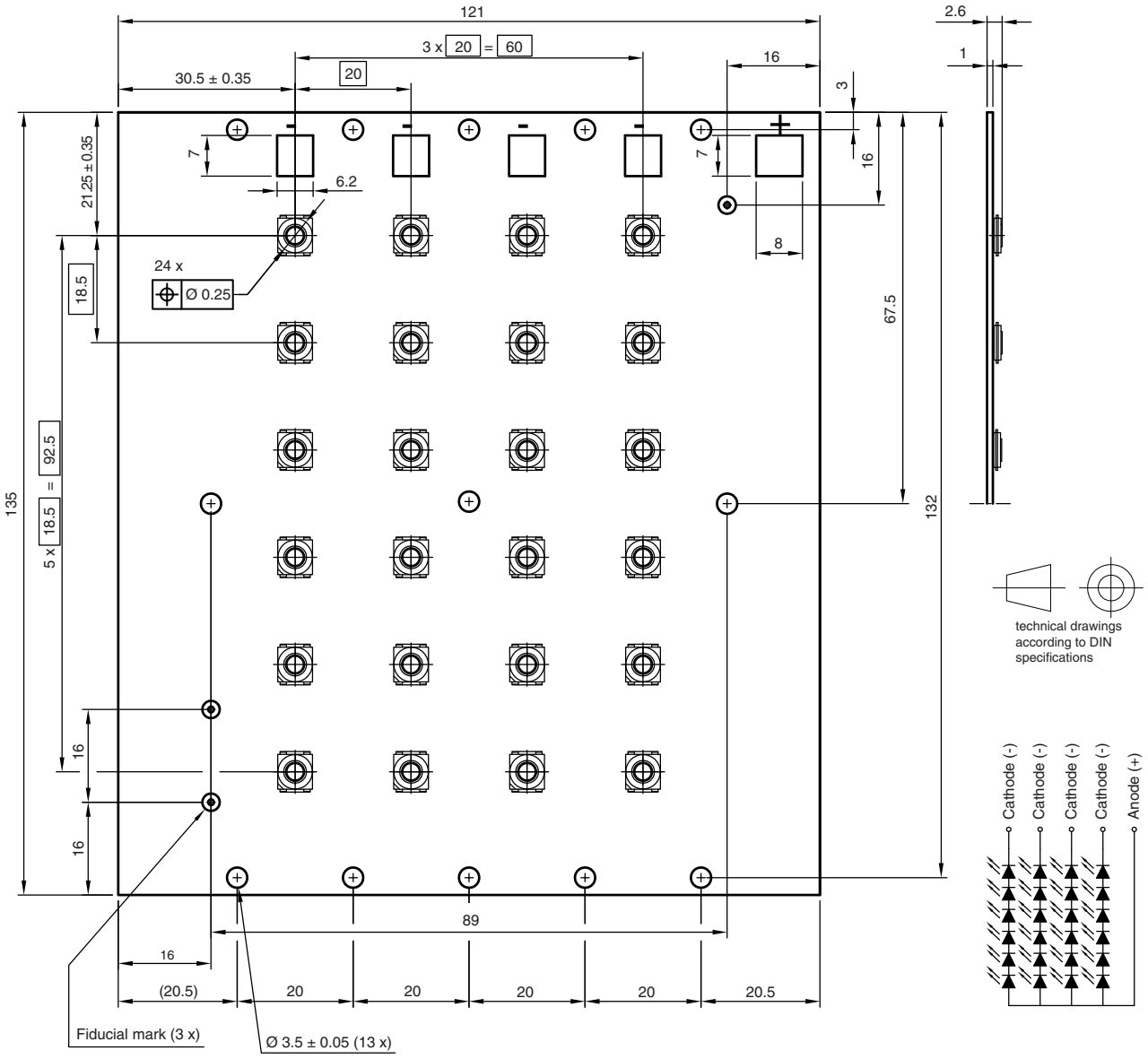


Fig. 1 - Chromaticity Coordinates of Colorgroups

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 high brightness power LEDs. LED position accuracy ± 0.125 mm from middle axis, horizontal tilt max. 2°

EMISSION CHARACTERISTIC

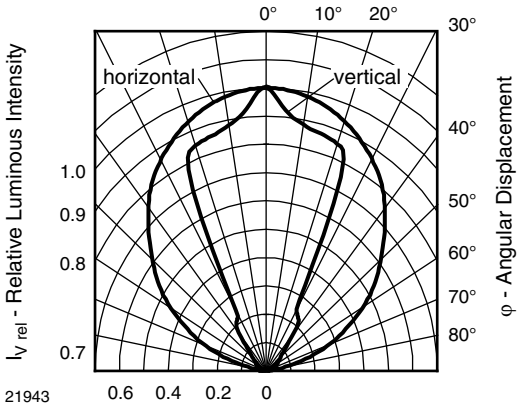


Fig. 2 - Rel. Luminous Intensity vs. Angular Displacement

Fig. 3 - Emission characteristic with Reflectors (for Info only)

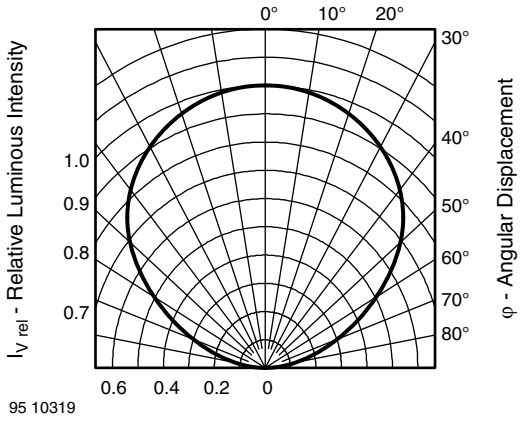
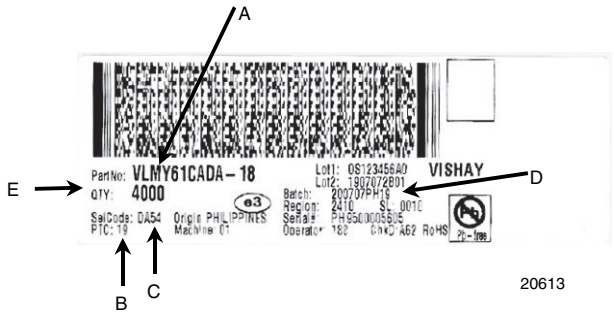


Fig. 4 - Rel. Luminous Intensity vs. Angular Displacement

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

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