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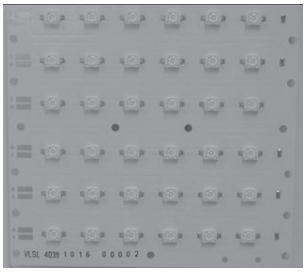
Vishay Semiconductor/Opto Division
VLSL4012A

For any questions, you can email us directly:
sales@integrated-circuit.com

VLSL4012A, VLSL4024A, VLSL4036A

High Brightness LED Power Module



22140

22139

FEATURES

- Metal core PCB: Al > 0.75 thickness
- Single side/single layer PCB
- Shiny white surface
- 12, 24, or 36 LEDs, 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

Pb-free
RoHS COMPLIANT
GREEN (5-2008)**

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

DESCRIPTION

The VLSL40xxA are metal core based high brightness LED power modules, assembled with 12, 24 or 36 HB white LEDs. The color temperature is cool white in the typical range of 5000 K to 7000 K. The modules are designed for flexible use due to the option for using special reflectors to adjust the emission characteristics.

APPLICATIONS

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

PRODUCT GROUP AND PACKAGE DATA

- Product group: LED
- Package: LED module
- Product series: power
- Angle of half intensity: ± 80°

PARTS TABLE

PART	COLOR	LUMINOUS FLUX (at I_F = 700 mA typ.)	COLOR TEMPERATURE K	TECHNOLOGY
VLSL4012A	Cool white	Φ_V = 2100 lm	5000 to 7000	InGaN
VLSL4024A	Cool white	Φ_V = 4200 lm	5000 to 7000	InGaN
VLSL4036A	Cool white	Φ_V = 6300 lm	5000 to 7000	InGaN

ABSOLUTE MAXIMUM RATINGS (T_{amb} = 25 °C, unless otherwise specified)
VLSL4012A, VLSL4024A, VLSL4036A

PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
Forward current	Per row	I_F	750	mA
Power dissipation VLSL4012A	Total (max.)	P_{tot}	35	W
Power dissipation VLSL4024A		P_{tot}	69	W
Power dissipation VLSL4036A		P_{tot}	104	W
Junction temperature		T_j	120	°C
Operating temperature range		T_{amb}	- 40 to + 85	°C
Storage temperature range		T_{stg}	- 40 to + 85	°C

OPTICAL AND ELECTRICAL CHARACTERISTICS (T_{amb} = 25 °C, unless otherwise specified)
VLSL4012A, COOL WHITE

PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Luminous flux per row (1)	I_F = 700 mA	Φ_V	860	1050	-	lm
Luminous flux total (1)	I_{board} = 2 x 700 mA	Φ_V	1720	2100	-	lm
Color temperature	I_F = 700 mA	TK	5000	-	7000	K
Forward voltage per row	I_F = 700 mA	V_F	19	21	23	V
Class A ($V_{Fmax.}$ - $V_{Fmin.}$) all rows (2)	I_F = 700 mA	ΔV_F	-	-	0.9	V
Temperature coefficient of V_F per row	I_F = 350 mA	TC_{VF}	-	- 20	-	mV/K
Temperature coefficient of Φ_V	I_F = 350 mA (per row)	$TC\Phi_V$	-	- 0.4	-	%/K

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.

OPTICAL AND ELECTRICAL CHARACTERISTICS (T_{amb} = 25 °C, unless otherwise specified)
VLSL4024A, COOL WHITE

PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Luminous flux per row (1)	I_F = 700 mA	Φ_V	860	1050	-	lm
Luminous flux total (1)	I_{board} = 4 x 700 mA	Φ_V	3440	4200	-	lm
Color temperature	I_F = 700 mA	TK	5000	-	7000	K
Forward voltage per row	I_F = 700 mA	V_F	19	21	23	V
Class A ($V_{Fmax.}$ - $V_{Fmin.}$) all rows (2)	I_F = 700 mA	ΔV_F	-	-	0.9	V
Temperature coefficient of V_F per row	I_F = 350 mA	TC_{VF}	-	- 20	-	mV/K
Temperature coefficient of Φ_V	I_F = 350 mA (per row)	$TC\Phi_V$	-	- 0.4	-	%/K

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.

OPTICAL AND ELECTRICAL CHARACTERISTICS (T_{amb} = 25 °C, unless otherwise specified)
VLSL4036A, COOL WHITE

PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Luminous flux per row (1)	I_F = 700 mA	Φ_V	860	1050	-	lm
Luminous flux total (1)	I_{board} = 6 x 700 mA	Φ_V	5160	6300	-	lm
Color temperature	I_F = 700 mA	TK	5000	-	7000	K
Forward voltage per row	I_F = 700 mA	V_F	19	21	23	V
Class A ($V_{Fmax.}$ - $V_{Fmin.}$) all rows (2)	I_F = 700 mA	ΔV_F	-	-	0.9	V
Temperature coefficient of V_F per row	I_F = 350 mA	TC_{VF}	-	- 20	-	mV/K
Temperature coefficient of Φ_V	I_F = 350 mA (per row)	$TC\Phi_V$	-	- 0.4	-	%/K

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 %.

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COLOR RANGE AND COLOR BINNING

VLSL4012A, VLSL4024A, VLSL4036A: 5000 K to 7000 K group 6P to7R

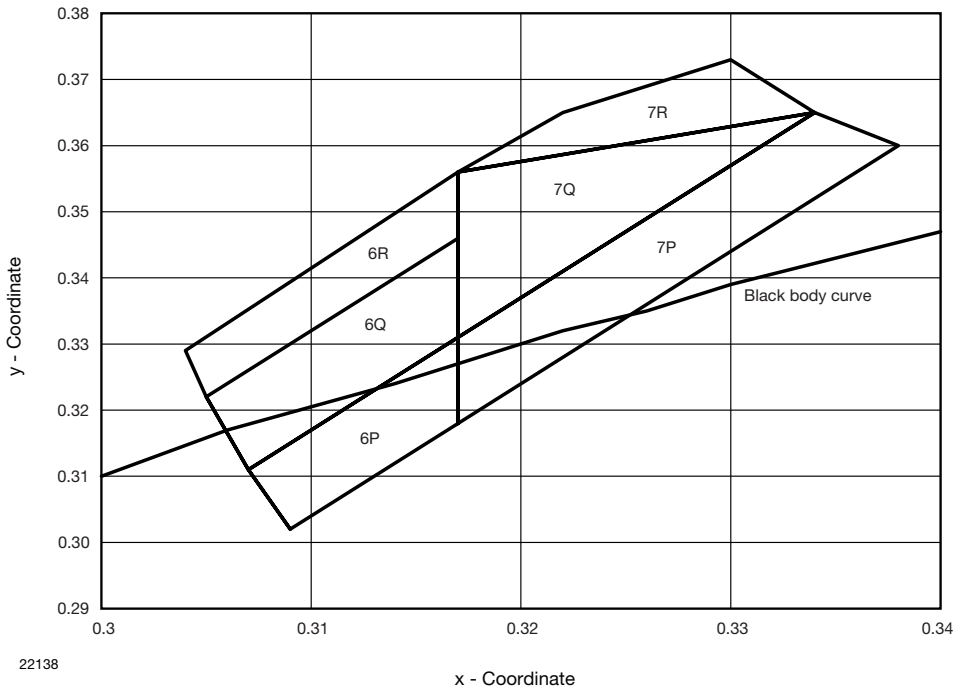
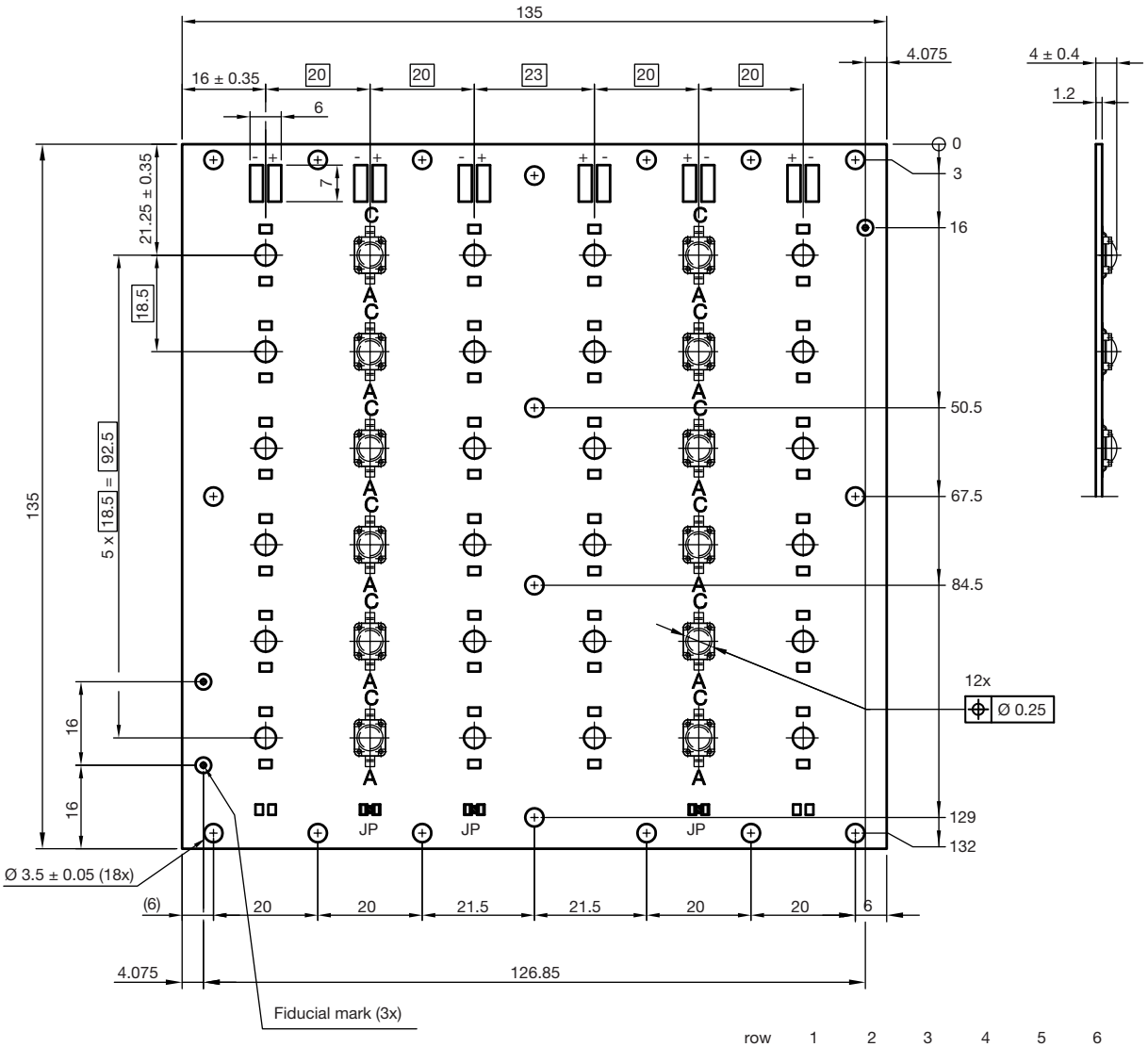
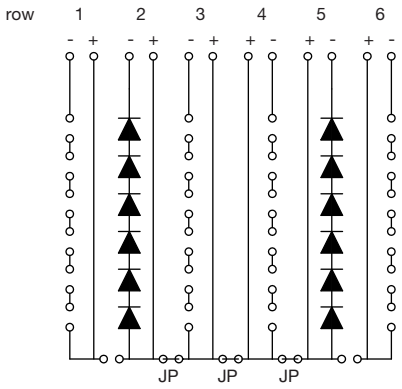


Fig. 1 - Chromaticity Coordinates of Colorgroups

PCB BASIC DESIGN VLSL4012A DIMENSIONS in millimeters





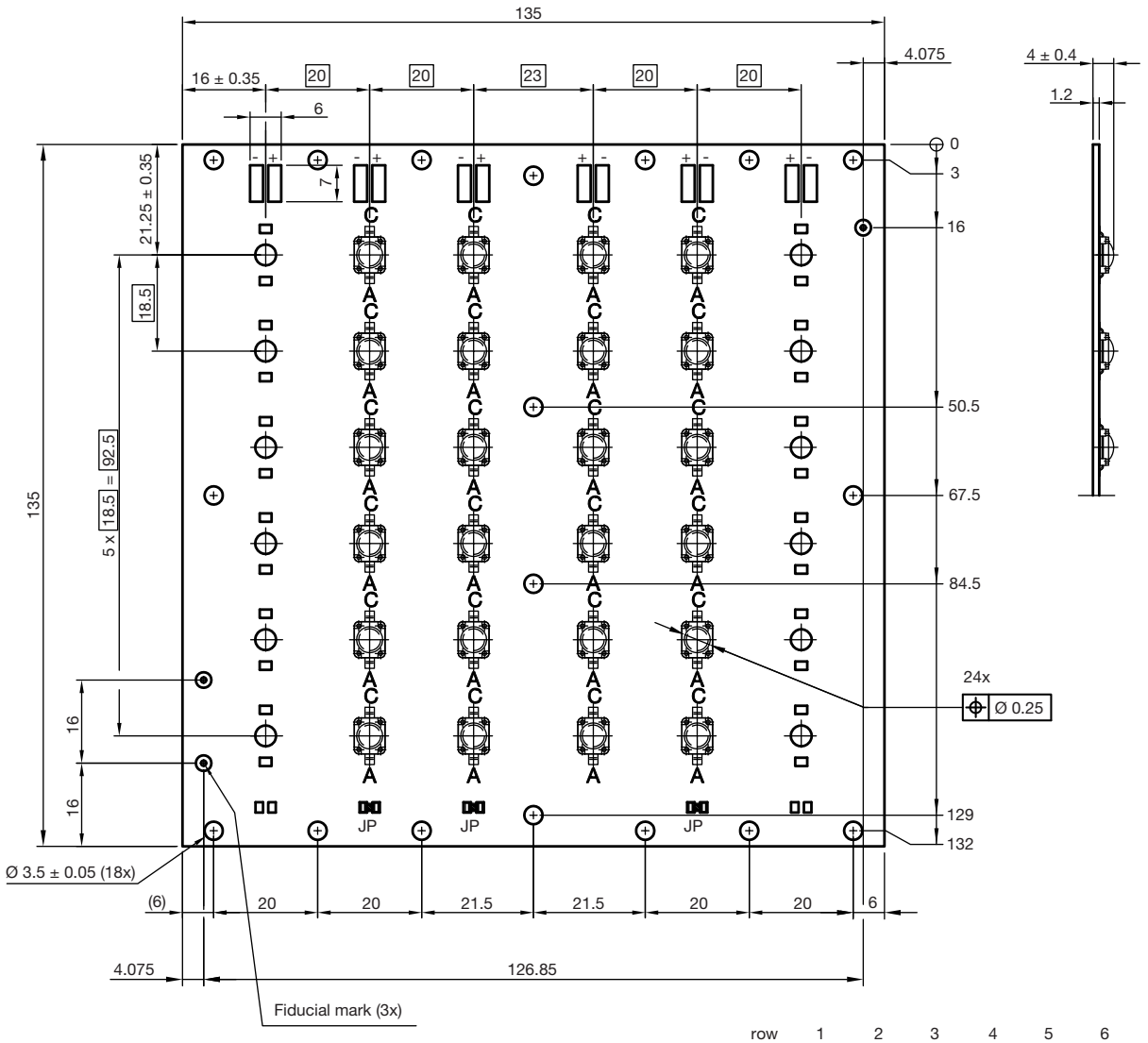
Not indicated tolerances ± 0.15

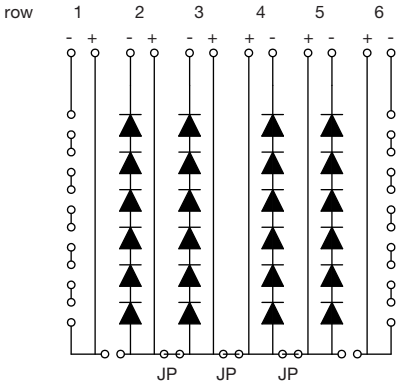
technical drawings according to DIN specifications

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

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

PCB BASIC DESIGN VLSL4024A DIMENSIONS in millimeters





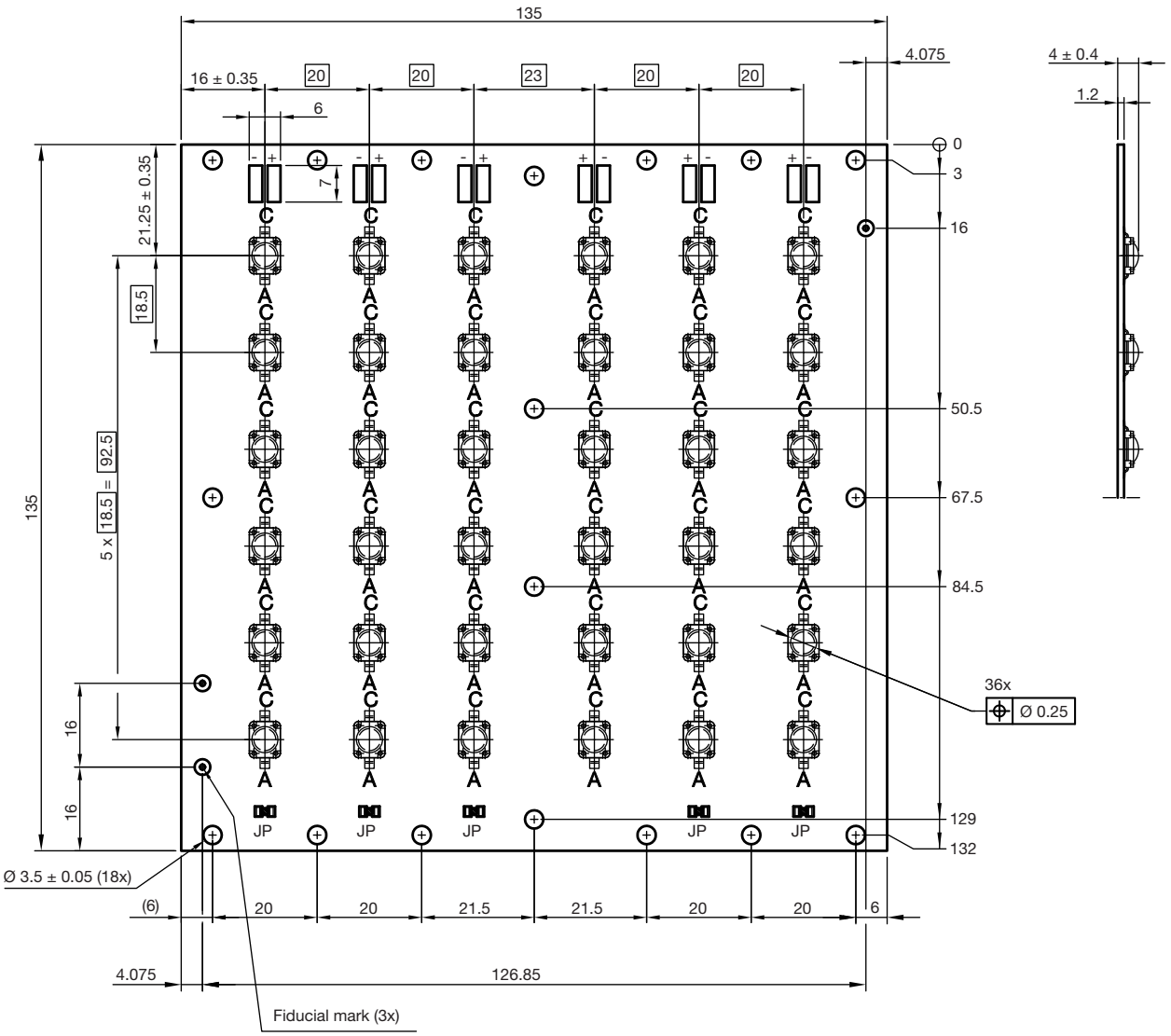
Not indicated tolerances ± 0.15

technical drawings according to DIN specifications

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

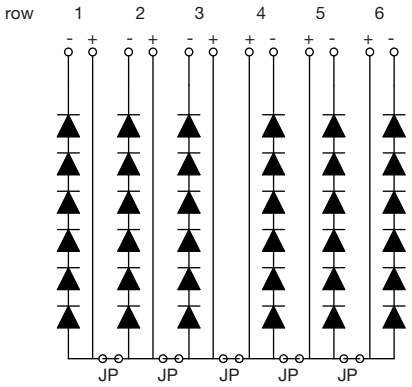
Assembled with all jumpers. Jumpers can be removed according driver design

PCB BASIC DESIGN VLSL4036A 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 ± 15 %
- Warpage max. 0.75 % of board dimension
- Solder resist on top side
- Shiny white surface
- Galvanic of solder pads pure matte Sn (≥ 0.8 µm), immersion plated
- Assembled with 12, 24 or 36 high brightness power LEDs. LED position accuracy ± 0.125 mm from middle axis, horizontal tilt max. 2°

EMISSION CHARACTERISTICS

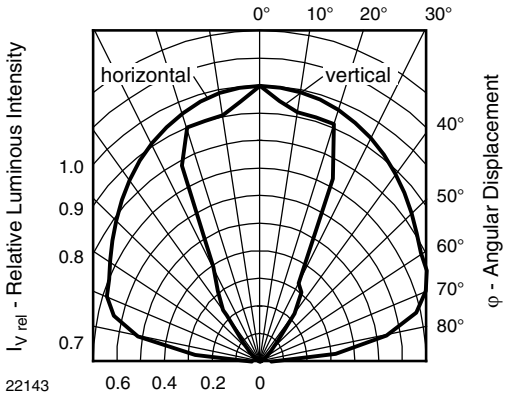


Fig. 2 - Rel. Luminous Intensity vs. Angular Displacement

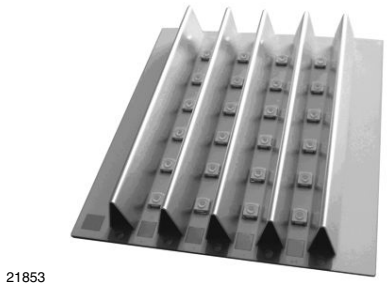
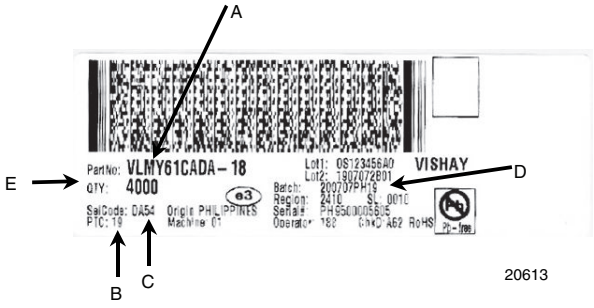


Fig. 3 - Sample Board with Reflectors (for Info only)

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

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