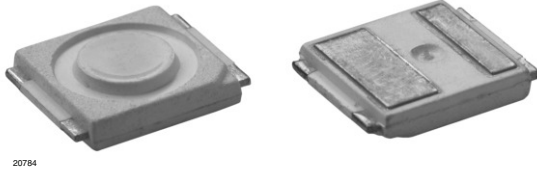


Little Star[®] 1 Watt Power SMD LED Warm White


FEATURES

- Super high brightness surface mount LED
- High flux output; typical 38 lm
- 120° viewing angle
- Compact package outline (L x W x H) of 6 x 6 x 1.5 mm
- Ultra low height profile - 1.5 mm
- Designed for high current drive; up to 350 mA
- Low thermal resistance; $R_{thJP} = 18 \text{ K/W}$
- Qualified according to JEDEC moisture sensitivity level 2a
- Compatible to IR reflow soldering
- Little Star[®] are class 1M LED products. Do not view directly with optical instrument
- Compliant to RoHS directive 2002/95/EC and in accordance to WEEE 2002/96/EC
- Automotive qualified AEC-Q101
- ESD-withstand voltage: up to 2 kV according to JESD22-A114-B


RoHS
COMPLIANT

DESCRIPTION

The VLMW71.. is one of the most robust and light efficient LEDs in the market. With its extremely high level of brightness and the ultra low high profile, which is only 1.5 mm are highly suitable for both conventional lighting and specialized application such as automotive signal lights, traffic lights, channel lights, tube lights and garden lights among others.

PRODUCT GROUP AND PACKAGE DATA

- Product group: LED
- Package: SMD Little Star
- Product series: power
- Angle of half intensity: $\pm 60^\circ$

APPLICATIONS

- Automotive: exterior applications, e.g.: fog-lamp, rear mirror lighting, etc.
- Communication: flashLED
- Industry: white goods (e.g.: oven, microwave, etc.)
- Lighting: garden light, architecture lighting, general lighting, etc.

PARTS TABLE

PART	COLOR, LUMINOUS INTENSITY (at $I_F = 350 \text{ mA}$)	LUMINOUS FLUX CORRELATION BETWEEN LUM. FLUX/LUM. INTENSITY (at $I_F = 350 \text{ mA}$)	TECHNOLOGY
VLMW71ACAE-GS08	Warm white, $I_V = (11\ 250 \text{ to } 22\ 400) \text{ mcd}$	33 000 to 71 000 mlm	InGaN
VLMW71AC-GS08	Warm white, $I_V = (11\ 250 \text{ to } 14\ 000) \text{ mcd}$	33 000 to 39 000 mlm	InGaN
VLMW71AD-GS08	Warm white, $I_V = (14\ 000 \text{ to } 18\ 000) \text{ mcd}$	39 000 to 52 000 mlm	InGaN

ABSOLUTE MAXIMUM RATINGS ¹⁾ VLMW71..				
PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
Forward current		I_F	350	mA
Power dissipation		P_{tot}	1.4	W
Junction temperature		T_j	+ 120	°C
Surge current $t < 10 \mu s, d = 0.1$		I_{FM}	1000	mA
Operating temperature range		T_{amb}	- 40 to + 100	°C
Storage temperature range		T_{stg}	- 40 to + 100	°C
Thermal resistance junction/pin		R_{thJP}	18	K/W

Note:

Not designed for reverse operation

¹⁾ $T_{amb} = 25 \text{ °C}$, unless otherwise specified

OPTICAL AND ELECTRICAL CHARACTERISTICS ¹⁾ VLMW71.., WARM WHITE							
PARAMETER	TEST CONDITION	PART	SYMBOL	MIN.	TYP.	MAX.	UNIT
Luminous intensity	$I_F = 350 \text{ mA}$	VLMW71ACAE	I_V	11 250		22 400	mcd
		VLMW71AC	I_V	11 250		14 000	mcd
		VLMW71AD	I_V	14 000		18 000	mcd
Chromaticity coordinate x acc. to CIE 1931	$I_F = 350 \text{ mA}$		x		0.42		
Chromaticity coordinate y acc. to CIE 1931	$I_F = 350 \text{ mA}$		y		0.40		
Angle of half intensity	$I_F = 350 \text{ mA}$		ϕ		± 60		deg
Forward voltage ²⁾	$I_F = 350 \text{ mA}$		V_F		3.6	4.0	V
Temperature coefficient of V_F	$I_F = 350 \text{ mA}$		TC_{VF}		- 3		mV/K
Temperature coefficient of I_V	$I_F = 350 \text{ mA}$		TC_{IV}		- 0.4		%/K

Note:

¹⁾ $T_{amb} = 25 \text{ °C}$, unless otherwise specified

²⁾ Forward voltages are tested at a current pulse duration of 1 ms and a tolerance of $\pm 0.05 \text{ V}$

LUMINOUS INTENSITY/FLUX CLASSIFICATION WARM WHITE				
GROUP	LUMINOUS INTENSITY I_V (mcd)		LUMINOUS FLUX ϕ_V (lm)	
	MIN.	MAX.	MIN.	MAX.
AC	11 250	14 000	33 000	39 000
AD	14 000	18 000	39 000	52 000
AE	18 000	22 400	52 000	71 000

Note:

Luminous intensity is tested at a current pulse duration of 25 ms and an accuracy of $\pm 11 \%$.

The above type numbers represent the order groups which include only a few brightness groups. Only one group will be shipped on each reel (there will be no mixing of two groups on each reel).

In order to ensure availability, single brightness groups will not be orderable.

In a similar manner for colors where wavelength groups are measured and binned, single wavelength groups will be shipped in any one reel.

In order to ensure availability, single wavelength groups will not be orderable.

CHROMATICITY COORDINATED GROUPS FOR WARM WHITE SMD LED		
	X	Y
A	0.400	0.340
	0.420	0.362
	0.420	0.408
	0.400	0.387
B	0.420	0.362
	0.440	0.383
	0.440	0.430
	0.420	0.408
C	0.440	0.383
	0.460	0.405
	0.460	0.452
	0.440	0.430

Note:

Chromaticity coordinate groups are tested at a current pulse duration of 25 ms and a tolerance of ± 0.01 .

TYPICAL CHARACTERISTICS

$T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified

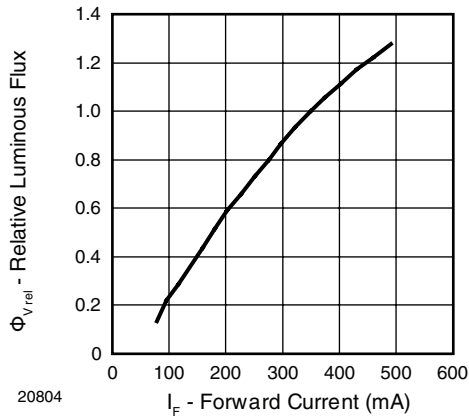


Figure 1. Relative Luminous Flux vs. Forward Current

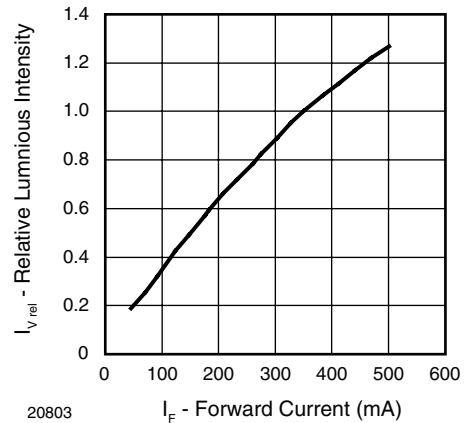


Figure 2. Relative Luminous Intensity vs. Forward Current

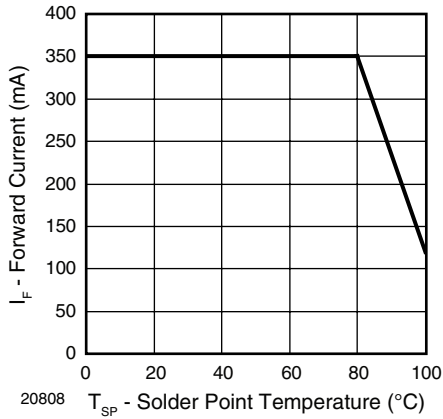


Figure 3. Forward Current vs. Solder Point Temperature

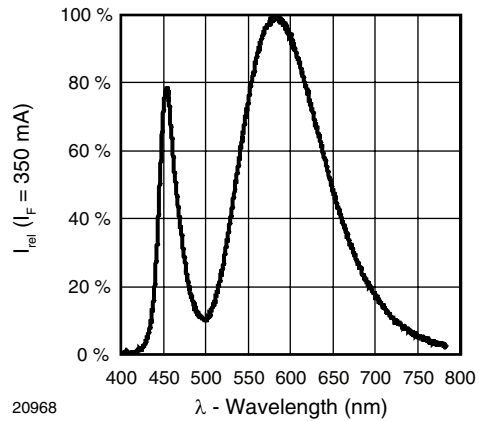


Figure 6. Relative Spectrale Emission

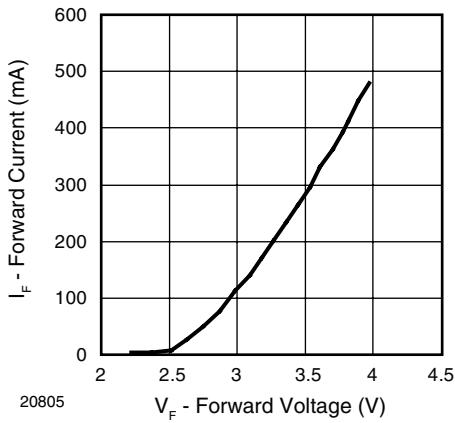


Figure 4. Forward Current vs. Forward Voltage

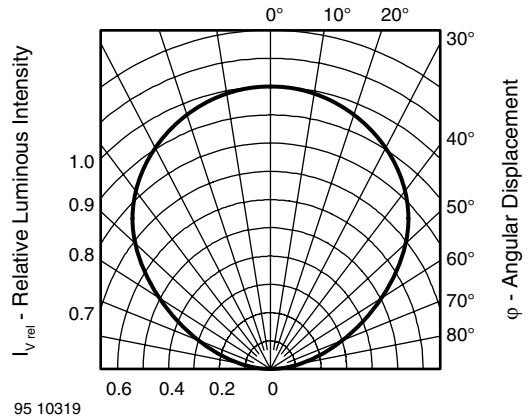


Figure 7. Relative Luminous Intensity vs. Angular Displacement

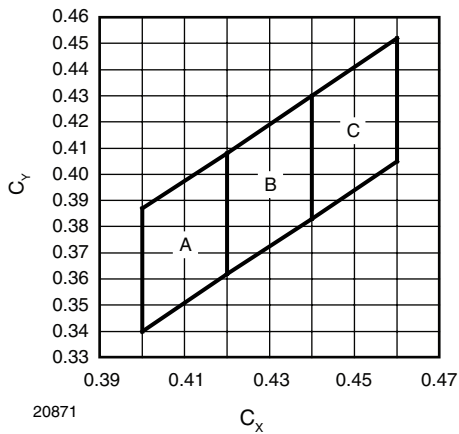
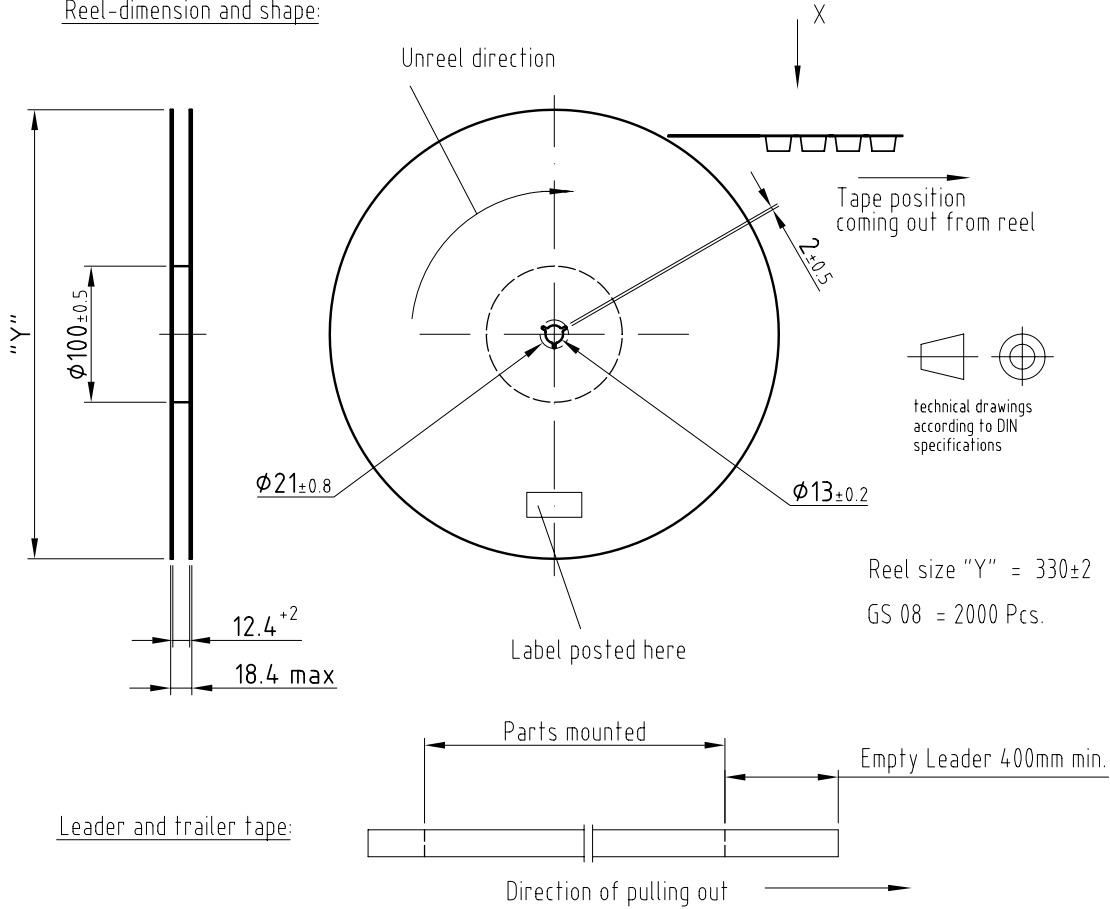


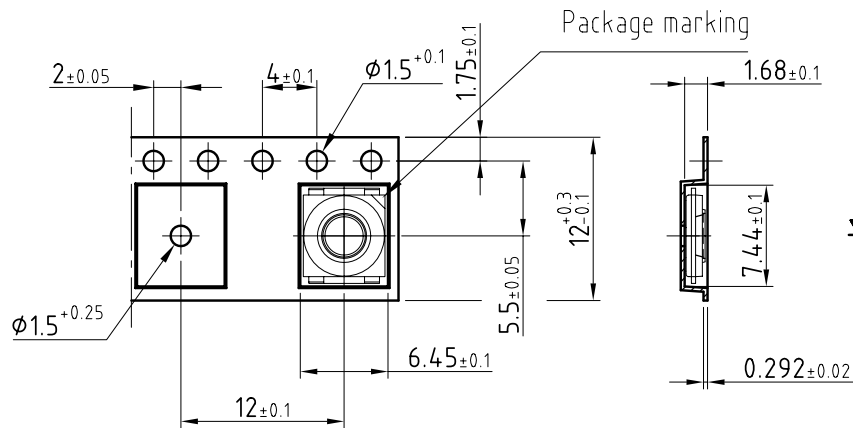
Figure 5. Coordinates of Color Groups

TAPING DIMENSIONS in millimeters

Reel-dimension and shape:



Leader and trailer tape:

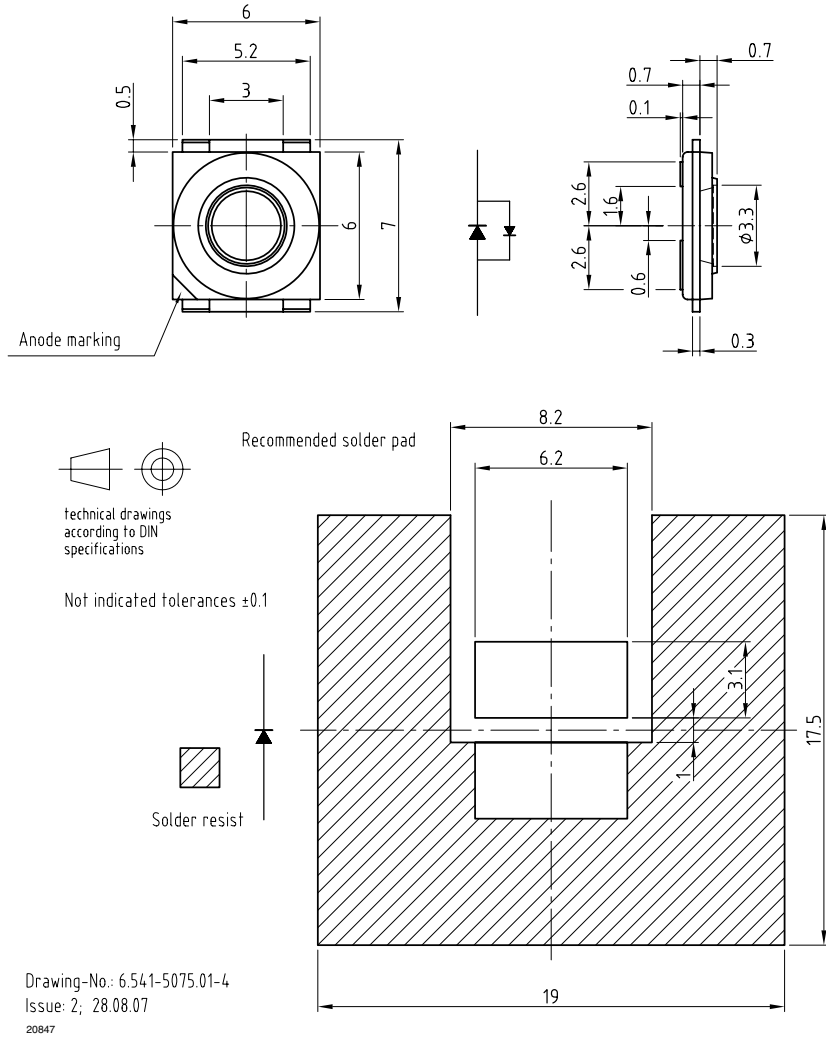


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Issue: 3; 22.01.08

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PACKAGE DIMENSIONS/SOLDERING PADS DIMENSIONS in millimeters



SOLDERING PROFILE

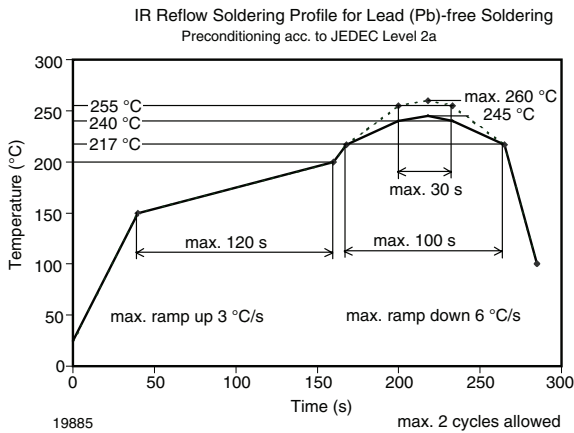
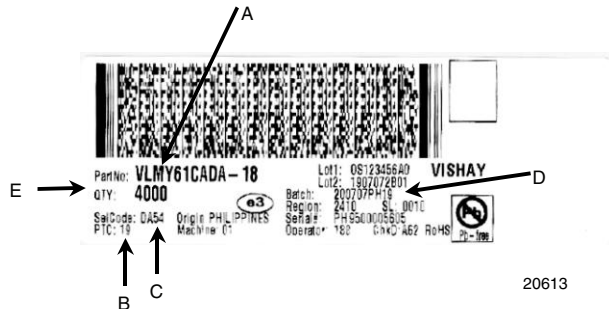


Figure 8. Vishay Lead (Pb)-free Reflow Soldering Profile (acc. to J-STD-020C)

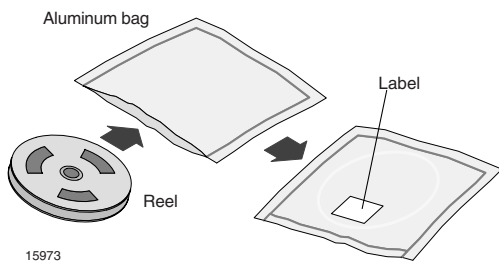
**BAR CODE PRODUCT LABEL
EXAMPLE:**



- A) Type of component
- B) Manufacturing plant
- C) SEL - selection code (bin):
e.g.: DA = code for luminous intensity group
5 = code for color group
4 = code for forward voltage
- D) Batch:
200707 = year 2007, week 07
PH19 = plant code
- E) Total quantity

DRY PACKING

The reel is packed in an anti-humidity bag to protect the devices from absorbing moisture during transportation and storage.



FINAL PACKING

The sealed reel is packed into a cardboard box. A secondary cardboard box is used for shipping purposes.

RECOMMENDED METHOD OF STORAGE

Dry box storage is recommended as soon as the aluminum bag has been opened to prevent moisture absorption. The following conditions should be observed, if dry boxes are not available:

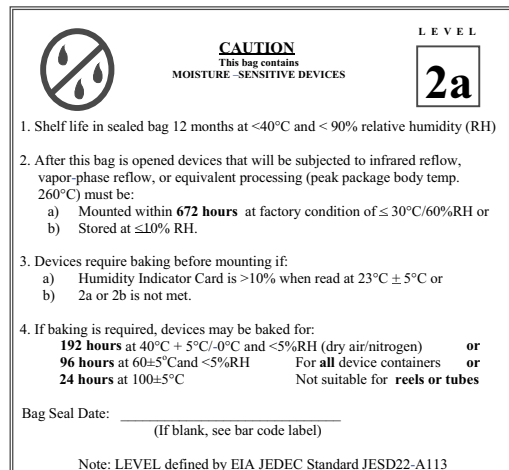
- Storage temperature 10 °C to 30 °C
- Storage humidity ≤ 60 % RH max.

After more than 672 h under these conditions moisture content will be too high for reflow soldering.

In case of moisture absorption, the devices will recover to the former condition by drying under the following condition:

- 192 h at 40 °C + 5 °C/- 0 °C and < 5 % RH (dry air/nitrogen) or
- 96 h at 60 °C + 5 °C and < 5 % RH for all device containers or
- 24 h at 100 °C + 5 °C not suitable for reel or tubes.

An EIA JEDEC standard JESD22-A112 level 2a label is included on all dry bags.



Example of JESD22-A112 level 2a label

ESD PRECAUTION

Proper storage and handling procedures should be followed to prevent ESD damage to the devices especially when they are removed from the antistatic shielding bag. Electro-static sensitive devices warning labels are on the packaging.

**VISHAY SEMICONDUCTORS STANDARD
BAR CODE LABELS**

The Vishay Semiconductors standard bar code labels are printed at final packing areas. The labels are on each packing unit and contain Vishay Semiconductors specific data.



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