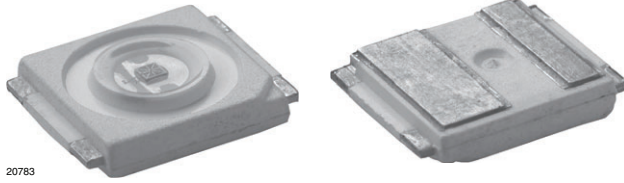


Little Star® 1 W Power SMD LED



DESCRIPTION

The VL7MR71.., VL7MY71.. 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: $\pm 60^\circ$

FEATURES

- Super high brightness surface mount LED
- High flux output
- 120° viewing angle
- Compact package outline (L x W x H) in mm: 6.0 x 6.0 x 1.5
- Ultra low height profile: 1.5 mm
- Designed for high current drive; typically 400 mA
- Low thermal resistance; $R_{thJP} = 20$ K/W
- Qualified according to JEDEC® moisture sensitivity level 2a
- Compatible with IR reflow solder processes according to CECC 00802 and J-STD-020C
- Little Star® are class 1M LED products. Do not view directly with optical instrument
- AEC-Q101 qualified
- ESD-withstand voltage: up to 2 kV according to JESD22-A114-B
- Optical efficiency typical up to 52 lm/W
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

AUTOMOTIVE GRADE



RoHS
COMPLIANT
HALOGEN
FREE
GREEN
(5-2008)

APPLICATIONS

- Automotive: exterior applications, e.g. center high mounted stop light (CHMSL), rear combination lights (RCLs), signal lighting, etc.
- Communication: indicator and backlight in mobile phone
- Industry: white goods (e.g. oven, microwave, etc.)
- Lighting: garden light, architecture lighting, general lighting, etc.

PARTS TABLE

PART	COLOR	LUMINOUS INTENSITY (mcd)			at I _F (mA)	WAVELENGTH (nm)			at I _F (mA)	FORWARD VOLTAGE (V)			at I _F (mA)	TECHNOLOGY
		MIN.	TYP.	MAX.		MIN.	TYP.	MAX.		MIN.	TYP.	MAX.		
VL7MR71AAAC-GS08	Red	7150	-	14 000	400	620	-	630	400	2.2	-	2.8	400	AllnGaP
VL7MY71AAAC-GS08	Yellow	7150	-	14 000	400	585	-	597	400	2.2	-	2.8	400	AllnGaP

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

VL7MR71.., VL7MY71..

PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
Forward current		I _F	400	mA
Power dissipation		P _{tot}	1120	mW
Junction temperature		T _j	+120	°C
Surge current t < 10 μs, d = 0.1		I _{FM}	500	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}	20	K/W

Note

- Not designed for reverse operation

**OPTICAL AND ELECTRICAL CHARACTERISTICS** ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified)
VLMR71AAAC-GS08, RED

PARAMETER	TEST CONDITION	PART	SYMBOL	MIN.	TYP.	MAX.	UNIT
Luminous intensity	$I_F = 400\text{ mA}$	VLMR71AAAC	I_V	7150	-	14 000	mcd
Dominant wavelength	$I_F = 400\text{ mA}$		λ_d	620	-	630	nm
Spectral bandwidth at 50 % $I_{rel\ max.}$	$I_F = 400\text{ mA}$		$\Delta\lambda$	-	18	-	nm
Angle of half intensity	$I_F = 400\text{ mA}$		ϕ	-	± 60	-	$^{\circ}$
Forward voltage ⁽¹⁾	$I_F = 400\text{ mA}$		V_F	2.2	-	2.8	V
Optical efficiency	$I_F = 400\text{ mA}$		η_{opt}	-	30	39	lm/W

Note

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

OPTICAL AND ELECTRICAL CHARACTERISTICS ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified)
VLMY71AAAC-GS08, YELLOW

PARAMETER	TEST CONDITION	PART	SYMBOL	MIN.	TYP.	MAX.	UNIT
Luminous intensity	$I_F = 400\text{ mA}$	VLMY71AAAC	I_V	7150	-	14 000	mcd
Dominant wavelength	$I_F = 400\text{ mA}$		λ_d	585	-	597	nm
Spectral bandwidth at 50 % $I_{rel\ max.}$	$I_F = 400\text{ mA}$		$\Delta\lambda$	-	15	-	nm
Angle of half intensity	$I_F = 400\text{ mA}$		ϕ	-	± 60	-	$^{\circ}$
Forward voltage ⁽¹⁾	$I_F = 400\text{ mA}$		V_F	2.2	-	2.8	V
Optical efficiency	$I_F = 400\text{ mA}$		η_{opt}	-	30	39	lm/W

Note

(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

GROUP	LUMINOUS INTENSITY I_V (mcd)		LUMINOUS FLUX ϕ_V (mlm) CORRELATION TABLE	
	MIN.	MAX.	MIN.	MAX.
AA	7150	9000	20 700	26 100
AB	9000	11 250	26 100	33 000
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
AF	22 400	28 500	71 000	97 000

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



COLOR CLASSIFICATION			
GROUP	DOM. WAVELENGTH (nm)		
	YELLOW		
	MIN.		MAX.
A	585		588
B	588		591
C	591		594
D	594		597

Note

- Wavelengths are tested at a current pulse duration of 25 ms and an accuracy of ± 1 nm

FORWARD VOLTAGE CLASSIFICATION			
GROUP	FORWARD VOLTAGE (V)		
	MIN.		MAX.
	02	2.2	
03	2.5		2.8

Note

- Forward voltages are tested at a current pulse duration of 25 ms and a tolerance of ± 0.05 V. In order to ensure availability, a single forward voltage group can not be ordered

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

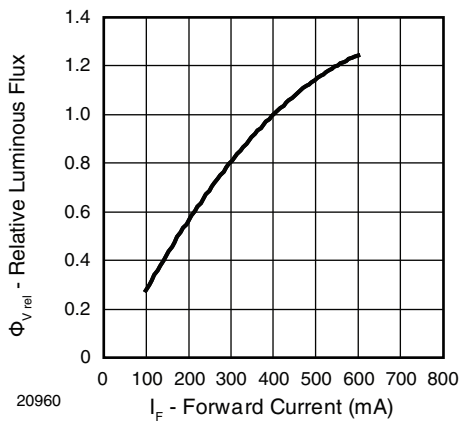


Fig. 1 - Relative Luminous Flux vs. Forward Current

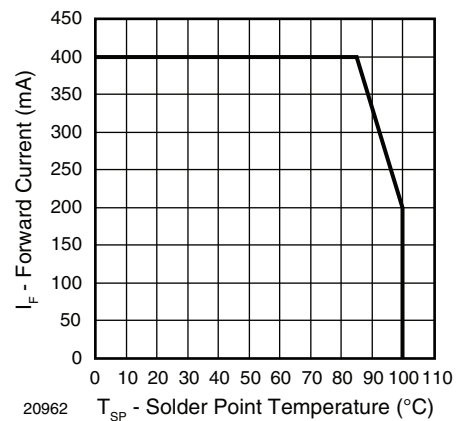


Fig. 3 - Forward Current vs. Solder Point Temperature

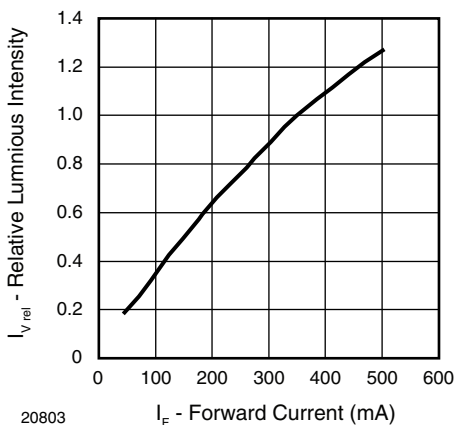


Fig. 2 - Relative Luminous Intensity vs. Forward Current

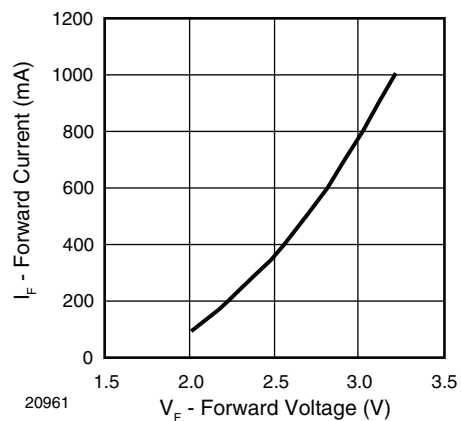


Fig. 4 - Forward Current vs. Forward Voltage

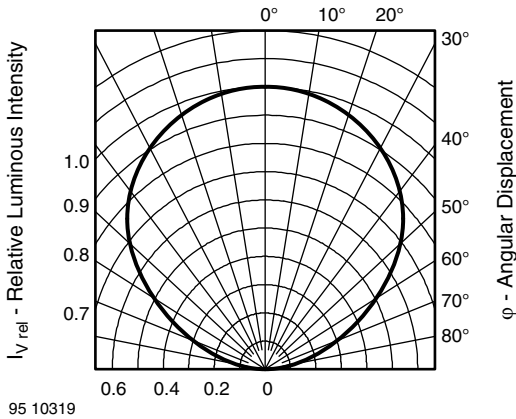
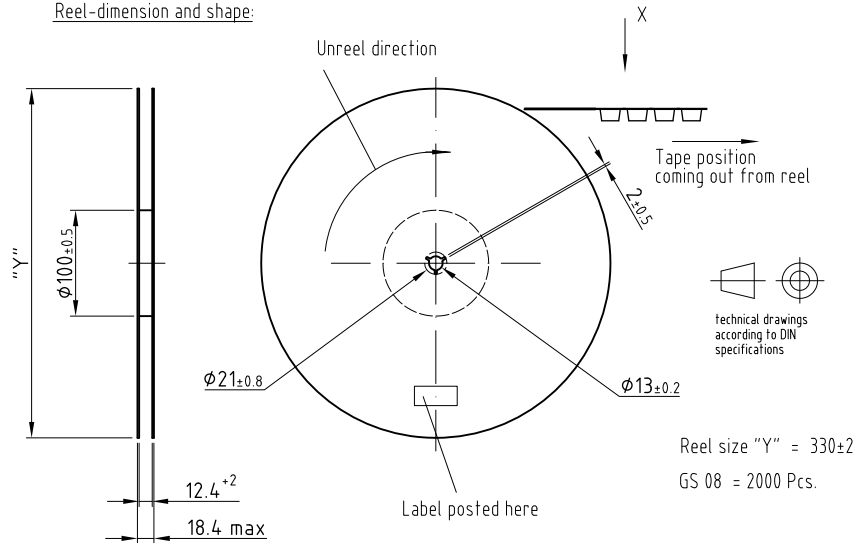


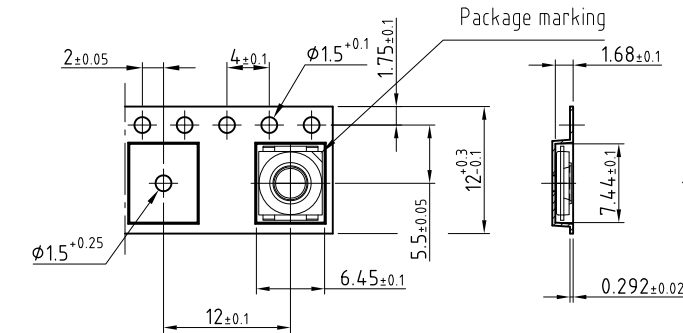
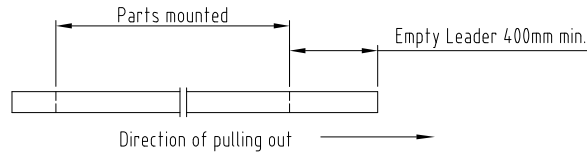
Fig. 5 - Relative Luminous Intensity vs. Angular Displacement

TAPING DIMENSIONS in millimeters

Reel-dimension and shape:

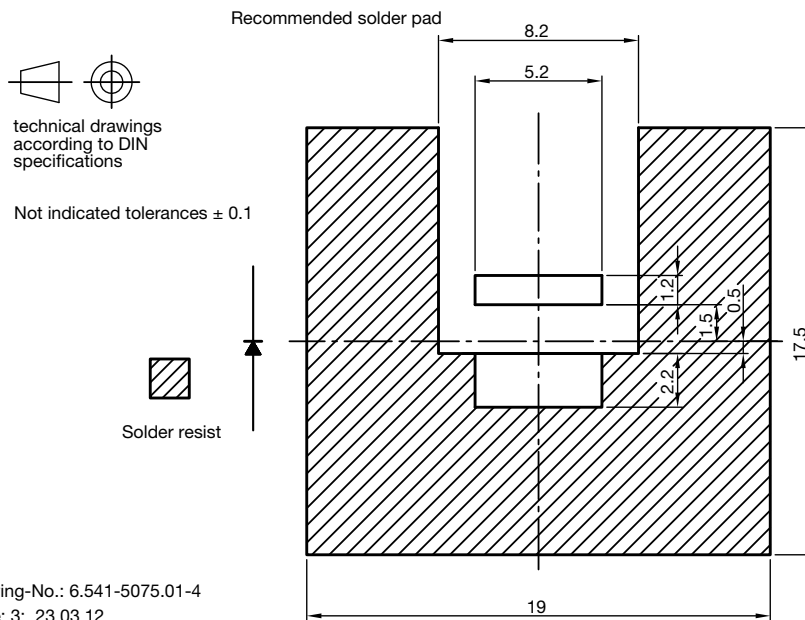
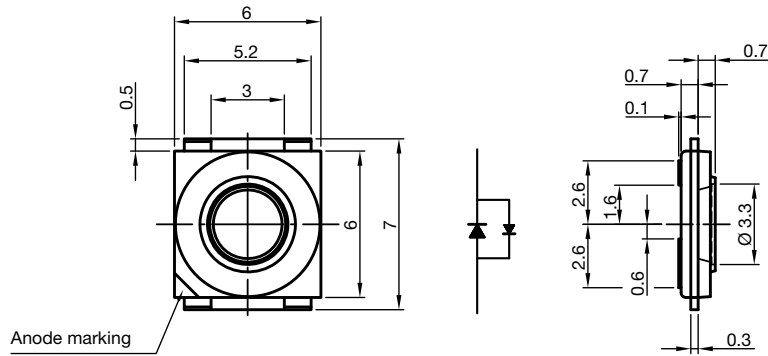


Leader and trailer tape:



Drawing-No.: 9.800-5094.01-4
Issue: 3; 22.01.08
20846

PACKAGE DIMENSIONS / SOLDERING PADS DIMENSIONS in millimeters



SOLDERING PROFILE

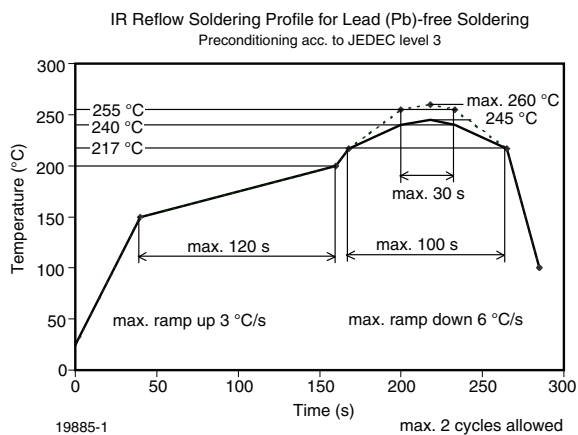
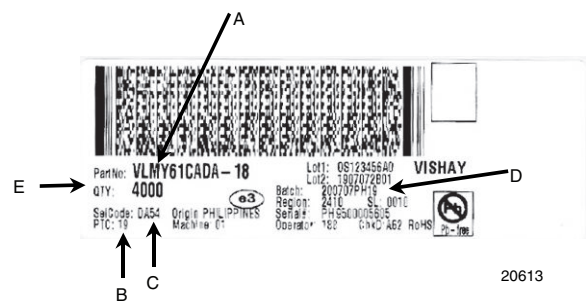


Fig. 6 - Vishay Lead (Pb)-free Reflow Soldering Profile (according to J-STD-020C)

BAR CODE PRODUCT LABEL (Example)

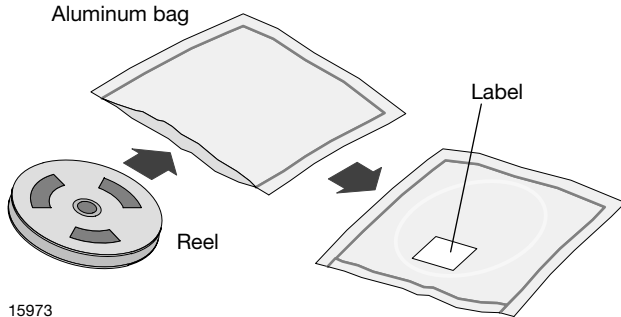


- A. Type of component
- B. Manufacturing plant
- C. SEL - selection code (bin):
e.g.: DA = code for luminous intensity group
5 = code for color group
4 = code for forward voltage
- D. Batch no.
20070 = year 2007, week 07
PH19 = plant code
- E. Total quantity



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.

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. Electrostatic 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.



CAUTION
This bag contains
MOISTURE -SENSITIVE DEVICES

LEVEL

2a

1. Shelf life in sealed bag 12 months at <40°C and < 90% relative humidity (RH)
2. After this bag is opened devices that will be subjected to infrared reflow, vapor-phase reflow, or equivalent processing (peak package body temp. 260°C) must be:
 - a) Mounted within **672 hours** at factory condition of ≤ 30°C/60%RH or
 - b) Stored at ≤10% RH.
3. Devices require baking before mounting if:
 - a) Humidity Indicator Card is >10% when read at 23°C ± 5°C or
 - b) 2a or 2b is not met.
4. If baking is required, devices may be baked for:

192 hours at 40°C + 5°C/-0°C and <5%RH (dry air/nitrogen)	or
96 hours at 60±5°C and <5%RH	For all device containers or
24 hours at 100±5°C	Not suitable for reels or tubes

Bag Seal Date: _____
(If blank, see bar code label)

Note: LEVEL defined by EIA JEDEC Standard JESD22-A113

Example of JESD22-A112 level 2a label



Disclaimer

ALL PRODUCT, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE TO IMPROVE RELIABILITY, FUNCTION OR DESIGN OR OTHERWISE.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "Vishay"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained in any datasheet or in any other disclosure relating to any product.

Vishay makes no warranty, representation or guarantee regarding the suitability of the products for any particular purpose or the continuing production of any product. To the maximum extent permitted by applicable law, Vishay disclaims (i) any and all liability arising out of the application or use of any product, (ii) any and all liability, including without limitation special, consequential or incidental damages, and (iii) any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.

Statements regarding the suitability of products for certain types of applications are based on Vishay's knowledge of typical requirements that are often placed on Vishay products in generic applications. Such statements are not binding statements about the suitability of products for a particular application. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Parameters provided in datasheets and / or specifications may vary in different applications and performance may vary over time. All operating parameters, including typical parameters, must be validated for each customer application by the customer's technical experts. Product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein.

Except as expressly indicated in writing, Vishay products are not designed for use in medical, life-saving, or life-sustaining applications or for any other application in which the failure of the Vishay product could result in personal injury or death. Customers using or selling Vishay products not expressly indicated for use in such applications do so at their own risk. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay. Product names and markings noted herein may be trademarks of their respective owners.