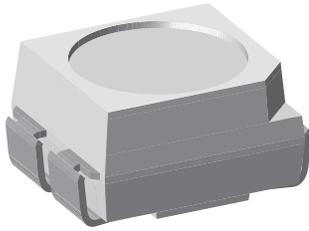


Power SMD LED PLCC-4



19210_1

DESCRIPTION

The VLMW321.. white LED is an advanced product in terms of heat dissipation.

The leadframe profile of this PLCC-4 SMD package is optimized to reduce the thermal resistance.

This allows higher drive current and doubles the light output compared to Vishay's high intensity SMD LED in PLCC-2 standard package.

PRODUCT GROUP AND PACKAGE DATA

- Product group: LED
- Package: SMD PLCC-4
- Product series: power
- Angle of half intensity: $\pm 60^\circ$

FEATURES

- 3 anode pins, 1 cathode pin
- High efficient InGaN technology
- Long life time, due to silicone casting
- Angle of half intensity $\varphi = \pm 60^\circ$
- Available in 8 mm tape
- Luminous intensity and color categorized per packing unit
- Luminous intensity ratio per packing unit $I_{Vmax}/I_{Vmin.} \leq 1.6$
- ESD-withstand voltage: Up to 2 kV (HBM) according to JESD22-A114-B
- Preconditioning: according to JEDEC level 2a
- Compatible with IR-reflow, vapor phase and wave soldering processes according to CECC 00802 and J-STD-020
- AEC-Q101 qualified
- Material categorization: For definitions of compliance please see www.vishay.com/doc?99912



APPLICATIONS

- Camera flash light
- Signals, signs, and symbol luminaire
- Marker lights
- Interior and exterior automotive lighting (brake lights, turn lights, backlighting, side markers)
- Indicator lighting
- General and architectural lighting
- Backlighting (advertising, displays, LCDs, switches, ...)

PARTS TABLE														
PART	COLOR	LUMINOUS INTENSITY (mcd)			at I _F (mA)	COORDINATE (x, y)			at I _F (mA)	FORWARD VOLTAGE (V)			at I _F (mA)	TECHNOLOGY
		MIN.	TYP.	MAX.		MIN.	TYP.	MAX.		MIN.	TYP.	MAX.		
VLMW321ABBB5K8L-08	White	1400	2200	2850	30	-	0.33, 0.33	-	30	2.9	3.4	4	30	InGaN on SiC
VLMW321BACA5K8L-08	White	1800	2800	3550	30	-	0.33, 0.33	-	30	2.9	3.4	4	30	InGaN on SiC

**ABSOLUTE MAXIMUM RATINGS** ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified)
VLMW321..

PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
Reverse voltage ⁽¹⁾		V_R	5	V
DC forward current	$T_{amb} \leq 60\text{ }^{\circ}\text{C}$	I_F	50	mA
Surge forward current	$t_p \leq 10\text{ }\mu\text{s}$	I_{FSM}	0.3	A
Power dissipation		PV	200	mW
Junction temperature		T_j	125	$^{\circ}\text{C}$
Operating temperature range		T_{amb}	- 40 to + 110	$^{\circ}\text{C}$
Storage temperature range		T_{stg}	- 40 to + 110	$^{\circ}\text{C}$
Thermal resistance junction/ambient	Mounted on PC board (pad design see page 6)	R_{thJA}	300	K/W

Note

- ⁽¹⁾ Driving the LED in reverse direction is suitable for a short term application

OPTICAL AND ELECTRICAL CHARACTERISTICS ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified)
VLMW321.., WHITE

PARAMETER	TEST CONDITION	PART	SYMBOL	MIN.	TYP.	MAX.	UNIT
Luminous intensity	$I_F = 30\text{ mA}$	VLMW321ABBB5K8L	I_V	1400	2200	2850	mcd
		VLMW321BACA5K8L	I_V	1800	2800	3550	mcd
Luminous flux	$I_F = 30\text{ mA}$	VLMW321ABBB5K8L	ϕ_V	-	7000	-	mlm
		VLMW321BACA5K8L	ϕ_V	-	8900	-	mlm
Chromaticity coordinate x, y acc. to CIE 1931	$I_F = 30\text{ mA}$		x	-	0.33	-	
			y	-	0.33	-	
Angle of half intensity	$I_F = 30\text{ mA}$		φ	-	± 60	-	deg
Forward voltage	$I_F = 30\text{ mA}$		V_F	2.9	3.4	4	V
Reverse voltage	$I_R = 10\text{ }\mu\text{A}$		V_R	5	-	-	V
Temperature coefficient of V_F	$I_F = 30\text{ mA}$		TC_{VF}	-	- 3.6	-	mV/K
Temperature coefficient of I_V	$I_F = 30\text{ mA}$		TC_{IV}	-	- 0.5	-	%/K
Temperature coefficient of x	$I_F = 30\text{ mA}$		TC_x	-	- 0.0002	-	Dx/K
Temperature coefficient of y	$I_F = 30\text{ mA}$		TC_y	-	- 0.0003	-	Dy/K

LUMINOUS INTENSITY CLASSIFICATION

GROUP STANDARD	LIGHT INTENSITY (mcd)	
	MIN.	MAX.
AB	1400	1800
BA	1800	2240
BB	2240	2850
CA	2850	3550

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 on any one reel.
In order to ensure availability, single wavelength groups will not be orderable.

CHROMATICITY COORDINATED GROUPS FOR WHITE SMD LED						
	X	Y		X	Y	
5L	0.291	0.268		7L	0.330	0.330
	0.285	0.279			0.330	0.347
	0.307	0.312			0.347	0.371
	0.310	0.297			0.345	0.352
5K	0.296	0.259		7K	0.330	0.310
	0.291	0.268			0.330	0.330
	0.310	0.297			0.338	0.342
	0.313	0.284			0.352	0.344
6L	0.310	0.297		8L	0.345	0.352
	0.307	0.312			0.347	0.371
	0.330	0.347			0.367	0.401
	0.330	0.330			0.364	0.380
6K	0.313	0.284		8K	0.352	0.344
	0.310	0.297			0.338	0.342
	0.330	0.330			0.364	0.380
	0.330	0.310			0.360	0.357

Note

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

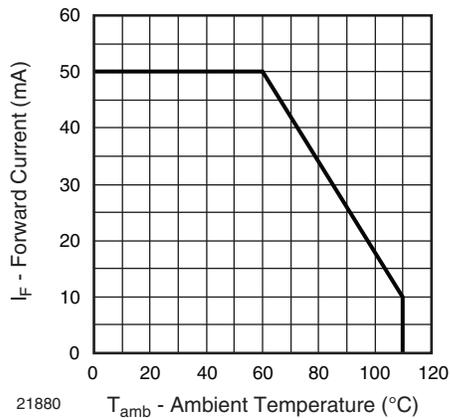
TYPICAL CHARACTERISTICS ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified)


Fig. 1 - Forward Current vs. Ambient Temperature

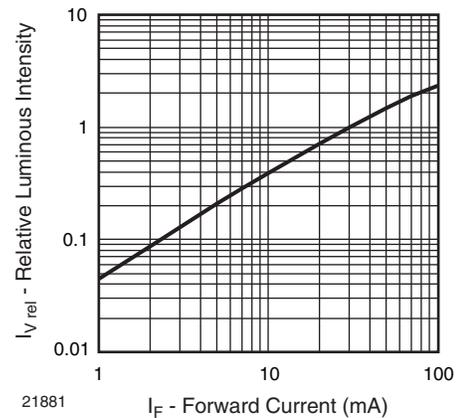


Fig. 2 - Relative Luminous Intensity vs. Forward Current

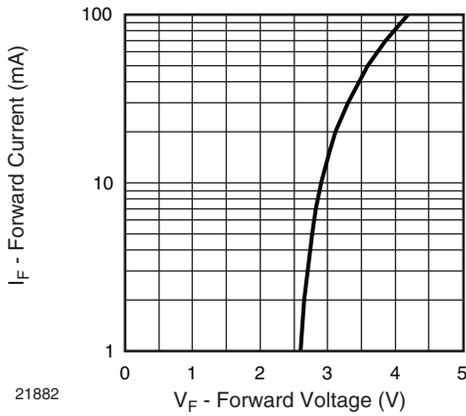


Fig. 3 - Forward Current vs. Forward Voltage

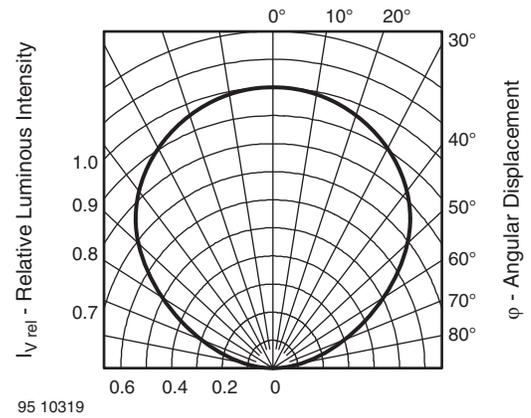


Fig. 5 - Relative Luminous Intensity vs. Angular Displacement

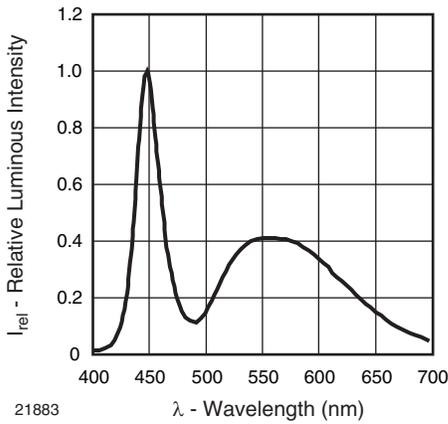


Fig. 4 - Relative Intensity vs. Wavelength

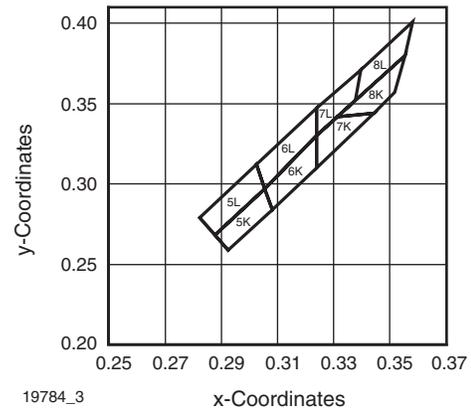
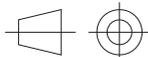
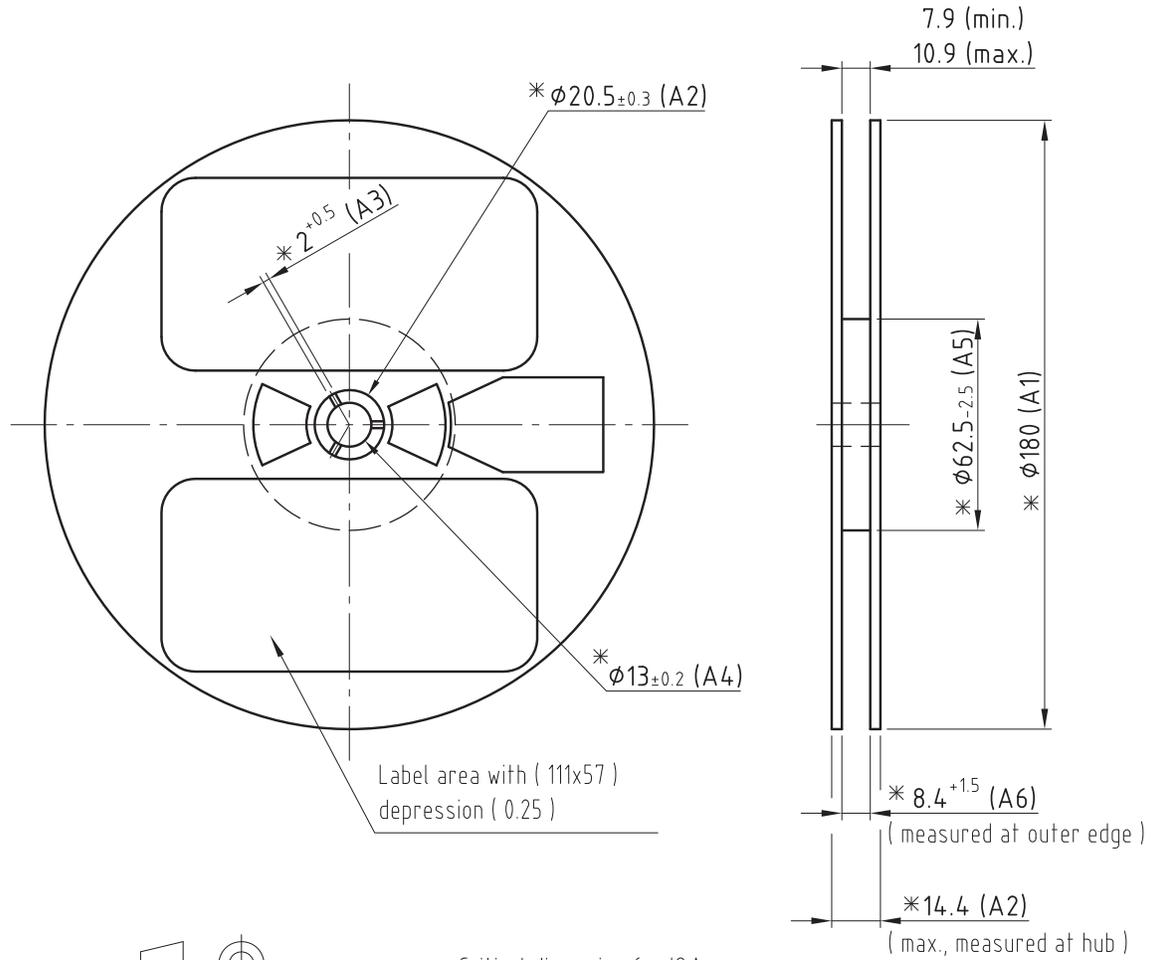


Fig. 6 - White Grouping SMD



REEL DIMENSIONS in millimeters



technical drawings according to DIN specifications

* Critical dimension for IQA.

GS08 = 2000 pcs

Not indicated tolerances ± 0.05
Material: black static dissipative

Drawing refers to following types: $\phi 180$ mm Plastic reel
Drawing-No.: 9.800-5086.01-4
Issue: 2; 05.05.08
20983

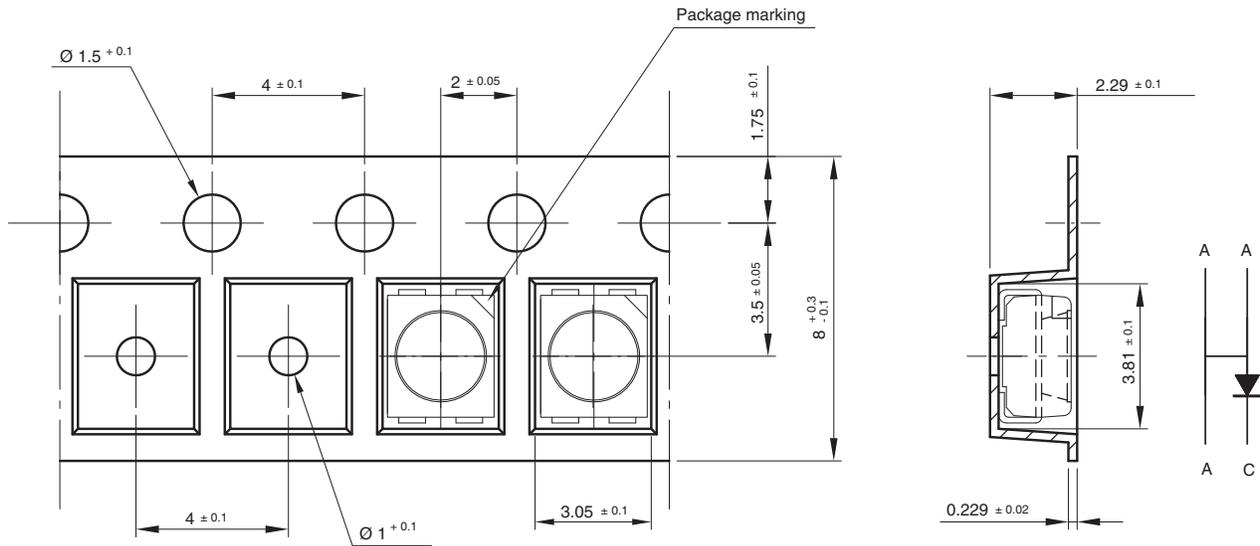


TAPING DIMENSIONS in millimeters

Taping and orientation

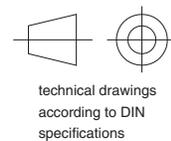
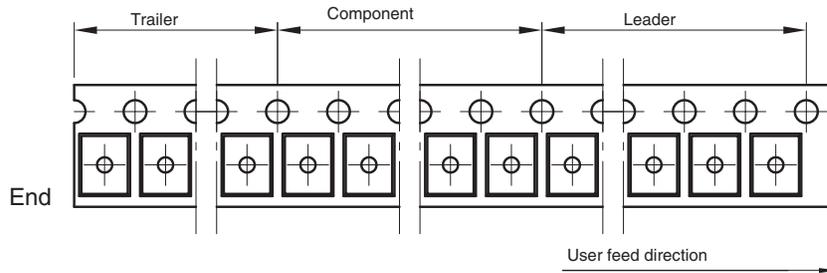
180 reel come in quantity of 2000 units

330 reel come in quantity of 8000 units



200 mm min. for 180 reel
200 mm min. for 330 reel

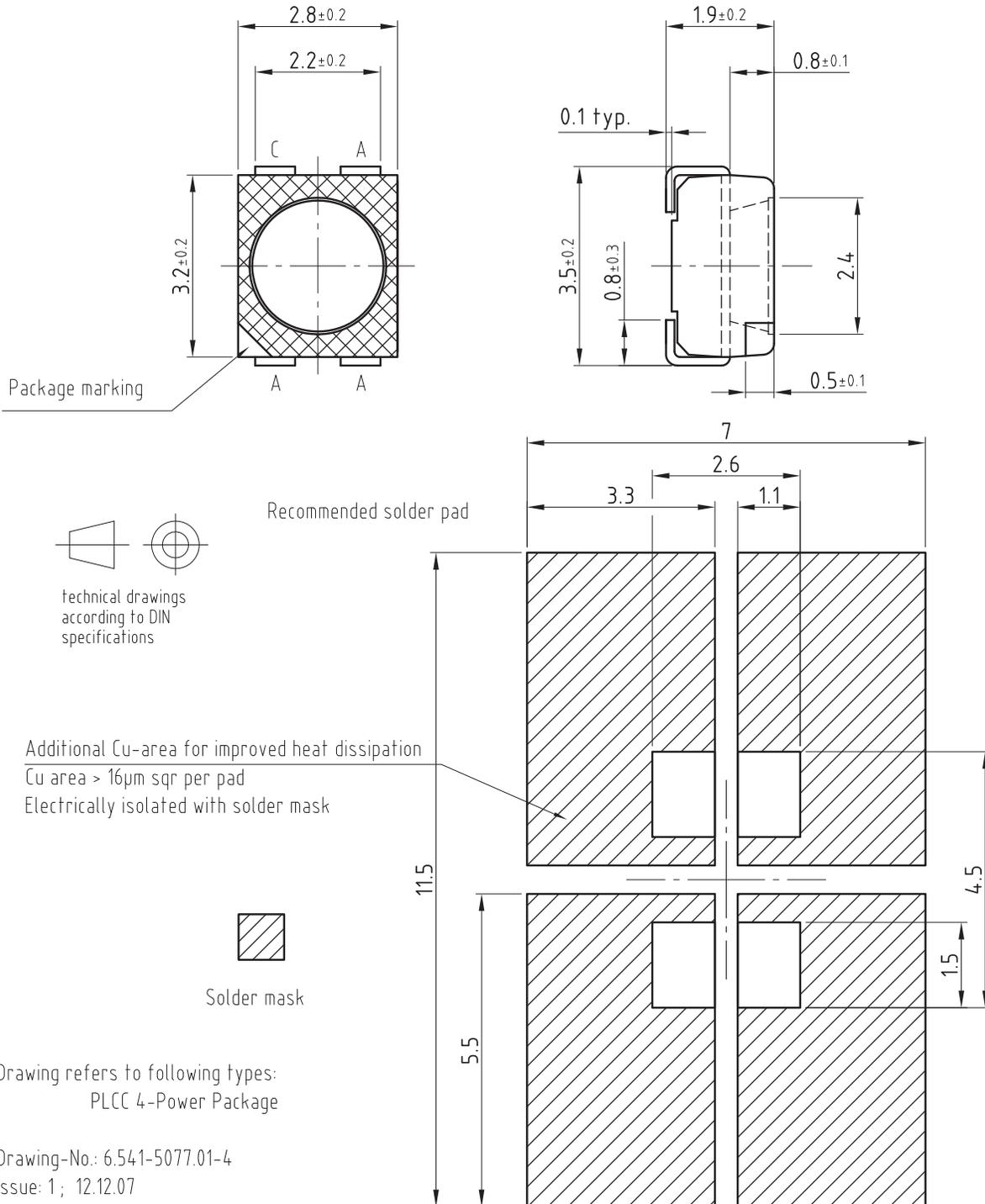
480 mm min. for 180 reel
960 mm min. for 330 reel



Drawing-No.: 9.700-5334.01-4
Issue: 3; 27.11.08
21066



OPTIONAL PAD DESIGN DIMENSIONS in millimeters
(Reflow-Soldering), $R_{thJA} = 290$ K/W



Drawing refers to following types:
PLCC 4-Power Package

Drawing-No.: 6.541-5077.01-4
Issue: 1 ; 12.12.07

20982

SOLDERING PROFILE

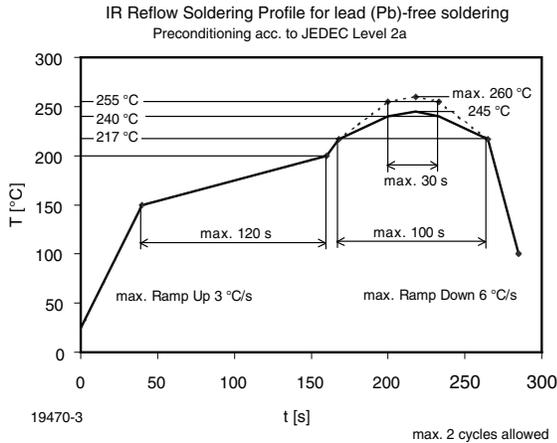


Fig. 7 - Vishay Lead (Pb)-free Reflow Soldering Profile (acc. to J-STD-020)

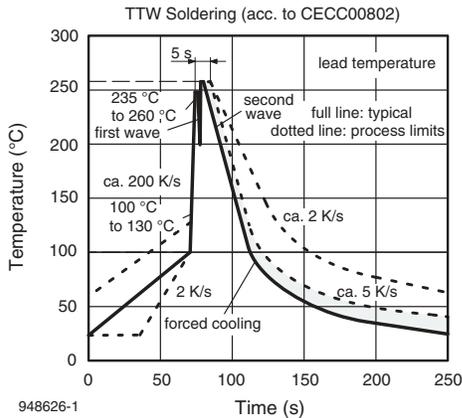
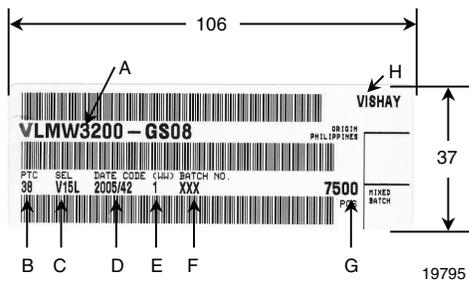


Fig. 8 - Double Wave Soldering of Opto Devices (all Packages)

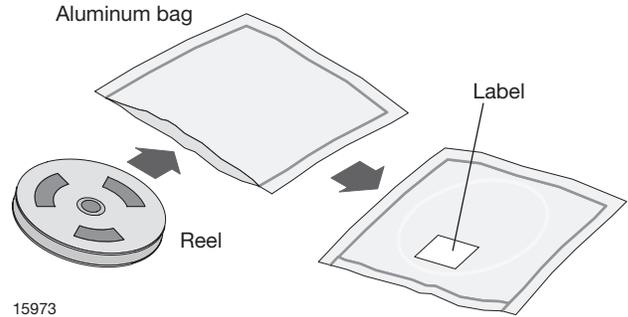
BAR CODE PRODUCT LABEL (example)



- A. Type of component
- B. Manufacturing plant
- C. SEL - selection code (bin):
e.g.: V1 = code for luminous intensity group
5L = code for chrom. coordinate group
- D. Date code year/week
- E. Day code (e. g. 1: Monday)
- F. Batch no.
- G. Total quantity
- H. Company code

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:

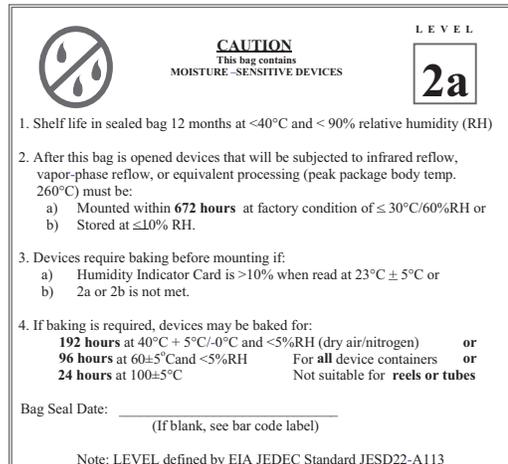
- Storage temperature 10 °C to 30 °C
- Storage humidity ≤ 60 % RH max.

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.



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.

Material Category Policy

Vishay Intertechnology, Inc. hereby certifies that all its products that are identified as RoHS-Compliant fulfill the definitions and restrictions defined under Directive 2011/65/EU of The European Parliament and of the Council of June 8, 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment (EEE) - recast, unless otherwise specified as non-compliant.

Please note that some Vishay documentation may still make reference to RoHS Directive 2002/95/EC. We confirm that all the products identified as being compliant to Directive 2002/95/EC conform to Directive 2011/65/EU.

Vishay Intertechnology, Inc. hereby certifies that all its products that are identified as Halogen-Free follow Halogen-Free requirements as per JEDEC JS709A standards. Please note that some Vishay documentation may still make reference to the IEC 61249-2-21 definition. We confirm that all the products identified as being compliant to IEC 61249-2-21 conform to JEDEC JS709A standards.