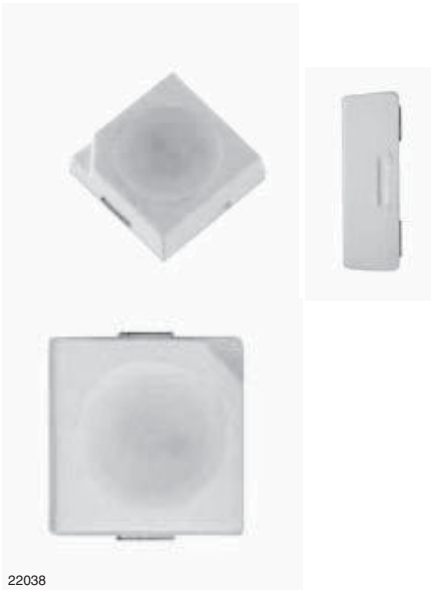
Power SMD LED PLCC2 Plus



FEATURES

- High efficient InGaN technology
- Long life, due to silicone resin casting
- Compact package outline 3.5 mm x 3.5 mm x 1.2 mm
- Angle of half intensity $\varphi = \pm 60°$
- Luminous flux and color categorized per packing unit
- Luminous flux ratio per packing unit $\Phi_{max.}/\Phi_{min.} < 1.2$
- ESD-withstand voltage: up to 2 kV (HBM) according to JESD22-A114-B
- Preconditioning: according to JEDEC level 2a
- Compatible with IR-reflow soldering profiles according to J-STD-020
- AEC-Q101 qualified
- Compliant to RoHS Directive 2002/95/EC and in accordance to WEEE 2002/96/EC

DESCRIPTION

The VLMW51.. white LED in PLCC2 plus package is an advanced product in terms of high luminous flux and low thermal resistance.
In combination with the small package outline (3.5 mm x 3.5 mm x 1.2 mm) the PLCC2 plus is an ideal choice for backlighting, signage, exterior and interior automotive lighting as well as all general lighting applications.

APPLICATIONS

- Camera flash light
- Marker lights
- Interior and exterior automotive lighting
- Decorative lighting
- Architectural lighting
- All kinds of general lighting
- Backlighting (TFT LCD displays)

PRODUCT GROUP AND PACKAGE DATA

- Product group: LED
- Package: PLCC2 plus
- Product series: SMD power
- Angle of half intensity: ± 60°

PARTS TABLE

PART	COLOR, LUMINOUS FLUX	TECHNOLOGY WAVELENGTH
VLMW51P2Q3-GS08	White, ϕ = (23.5 to 39.8) lm	InGaN

ABSOLUTE MAXIMUM RATINGS (T_{amb} = 25 °C, unless otherwise specified) **VLMW51..**				
PARAMETER	**TEST CONDITION**	**SYMBOL**	**VALUE**	**UNIT**
DC Forward current		I_F	180	mA
Surge forward current	$t_p \leq$ 10 µs	I_{FSM}	350	mA
Power dissipation		PV	738	mW
Junction temperature		$T_{jmax.}$	125	°C
Operating temperature range		T_{amb}	- 40 to + 100	°C
Storage temperature range		T_{stg}	- 40 to + 100	°C
Thermal resistance junction/ solder point		R_{thJS}	45	K/W
Thermal resistance junction/ ambient	Mounted on PC board total Cu area > 900 mm^2	R_{thJA}	125	K/W

Note:
Not designed for reverse bias

OPTICAL AND ELECTRICAL CHARACTERISTICS (T_{amb} = 25 °C, unless otherwise specified) **VLMW51.., WHITE**							
PARAMETER	**TEST CONDITION**	**PART**	**SYMBOL**	**MIN.**	**TYP.**	**MAX.**	**UNIT**
Luminous Flux	I_F = 150 mA	VLMW51P2Q3	Φ_V	23.5	30.6	39.8	lm
Luminous intensity	I_F = 150 mA	VLMW51P2Q3	I_V		10		cd
Chromaticity coordinate x, y acc. to CIE 1931	I_F = 150 mA		x y		0.33 0.33		
Angle of half intensity	I_F = 150 mA		φ		± 60		deg
Forward voltage	I_F = 150 mA		V_F	3	3.4	4.1	V

Note:
Not designed for reverse bias

LUMINOUS FLUX CLASSIFICATION		
GROUP	**LUMINOUS FLUX (lm)**	
STANDARD	**MIN.**	**MAX.**
P2	23.5	26.8
P3	26.8	30.6
Q2	30.6	34.8
Q3	34.8	39.8

Note:
Luminous flux is tested at a current pulse duration of 25 ms and an accuracy of ± 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 PLCC2 PLUS						
	X	Y			X	Y
YU	0.274	0.301		WL	0.317	0.325
	0.283	0.284			0.319	0.310
	0.307	0.316			0.329	0.319
	0.303	0.333			0.329	0.336
YL	0.283	0.284		VU	0.329	0.354
	0.290	0.270			0.329	0.336
	0.310	0.299			0.345	0.350
	0.307	0.316			0.347	0.368
XU	0.303	0.333		VL	0.329	0.336
	0.307	0.316			0.329	0.319
	0.317	0.325			0.343	0.331
	0.315	0.343			0.345	0.350
XL	0.307	0.316		UU	0.347	0.368
	0.310	0.299			0.345	0.350
	0.319	0.310			0.361	0.365
	0.317	0.325			0.364	0.383
WU	0.315	0.343		UL	0.345	0.350
	0.317	0.325			0.343	0.331
	0.329	0.336			0.357	0.343
	0.329	0.354			0.361	0.365

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

TYPICAL CHARACTERISTICS (T_{amb} = 25 °C, unless otherwise specified)

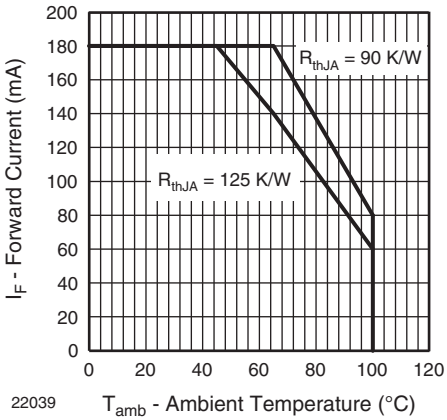


Figure 1. Forward Current vs. Ambient Temperature

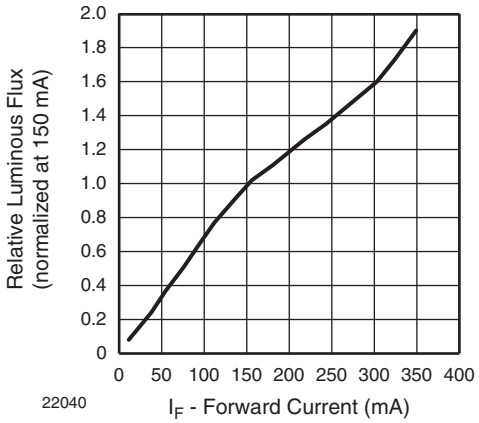


Figure 2. Relative Luminous Intensity vs. Forward Current

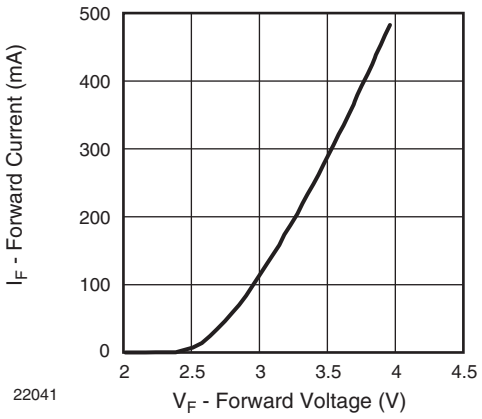


Figure 3. Forward Current vs. Forward Voltage

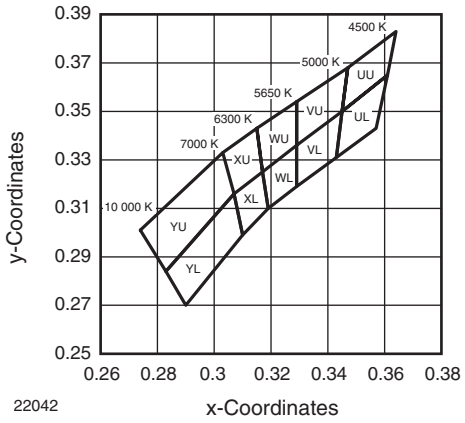


Figure 6. White Grouping SMD

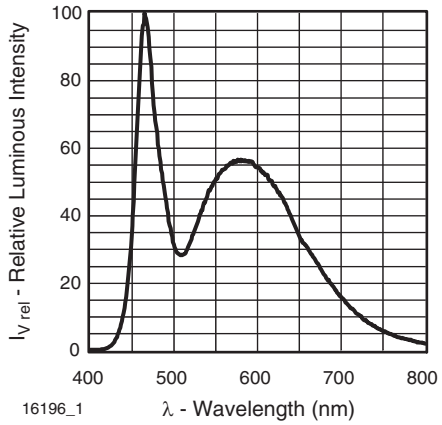


Figure 4. Relative Intensity vs. Wavelength

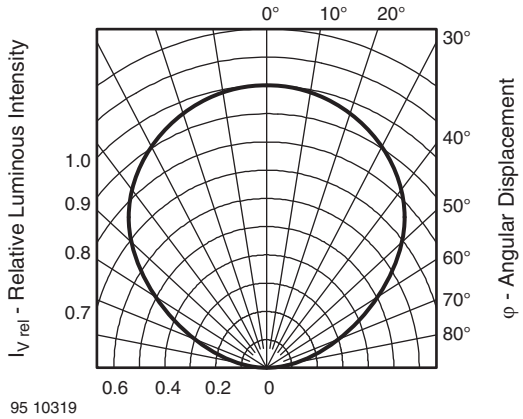
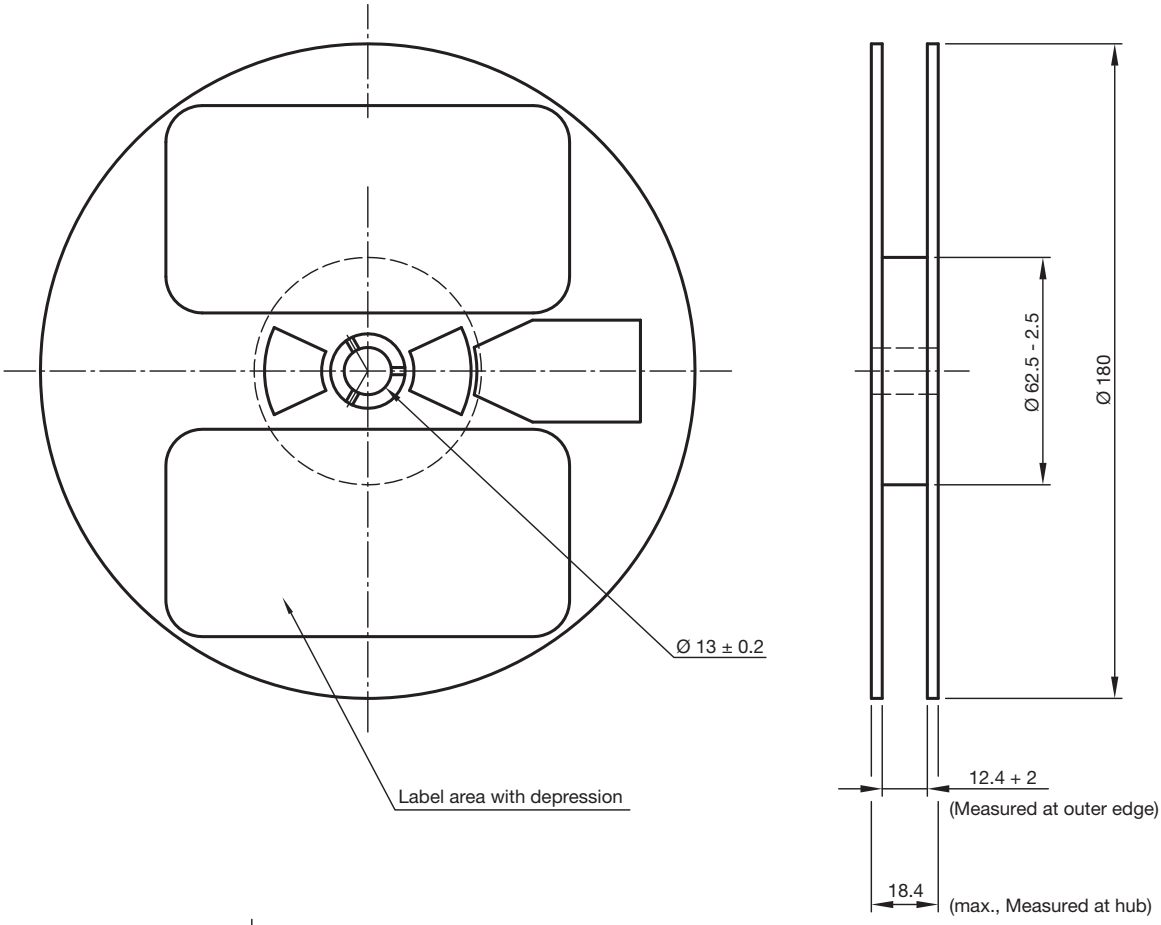


Figure 5. Rel. Luminous Intensity vs. Angular Displacement

For technical support, please contact: LED@vishay.com

REEL DIMENSIONS in millimeters



technical drawings
according to DIN
specifications

Not indicated tolerances ± 0.5

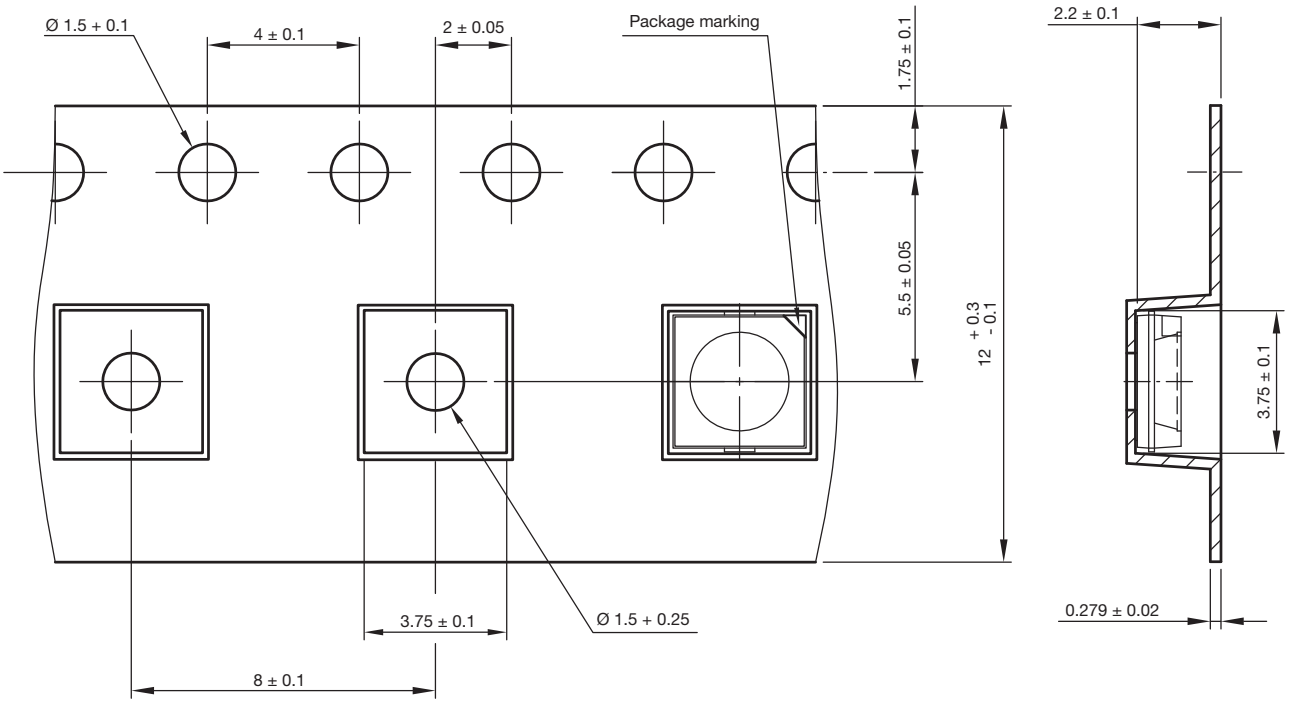
Material: black static dissipative

GS08 = 1000 pcs

Drawing-No.: 9.800-5104.01-4
Issue: 2; 19.03.10
22067

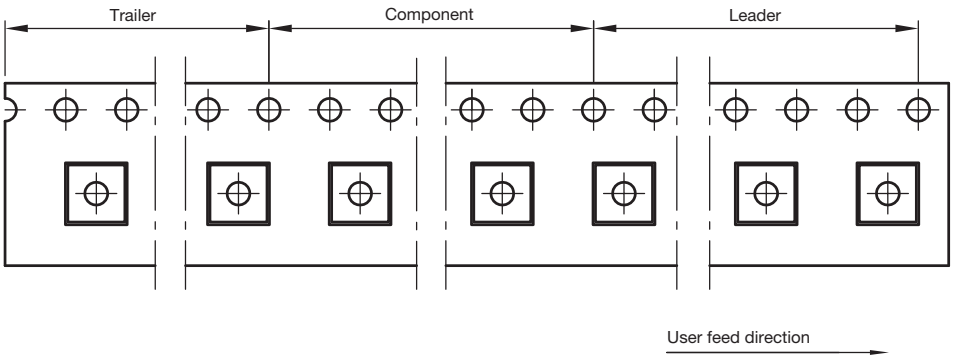
TAPING AND ORIENTATION DIMENSIONS in millimeters

Reels come in quantity of 1000 units.



200 mm min. for Ø 180 reel

480 mm min. for Ø 180 reel



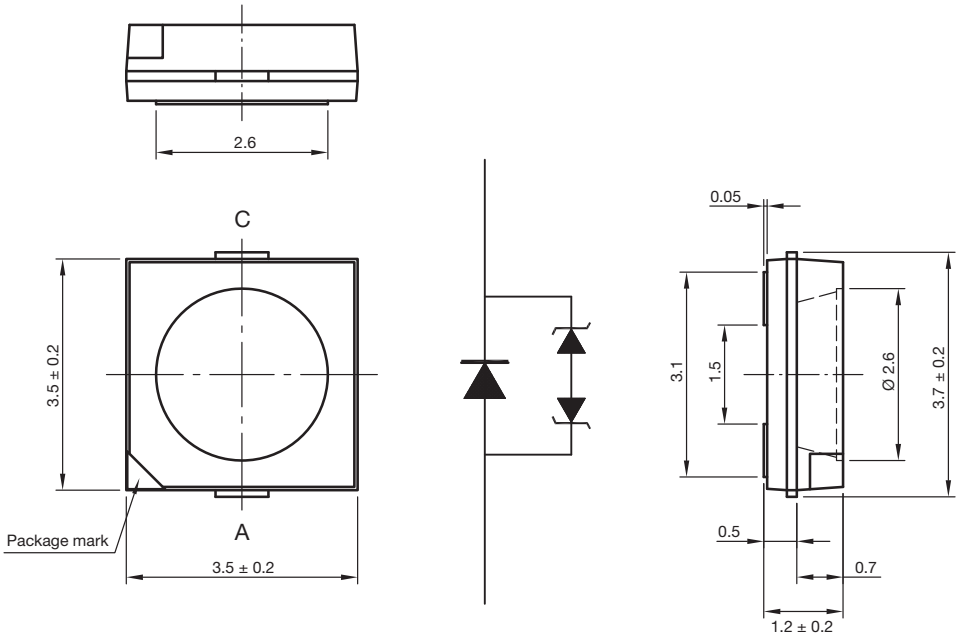
Drawing-No.: 9.700-5348.01-4

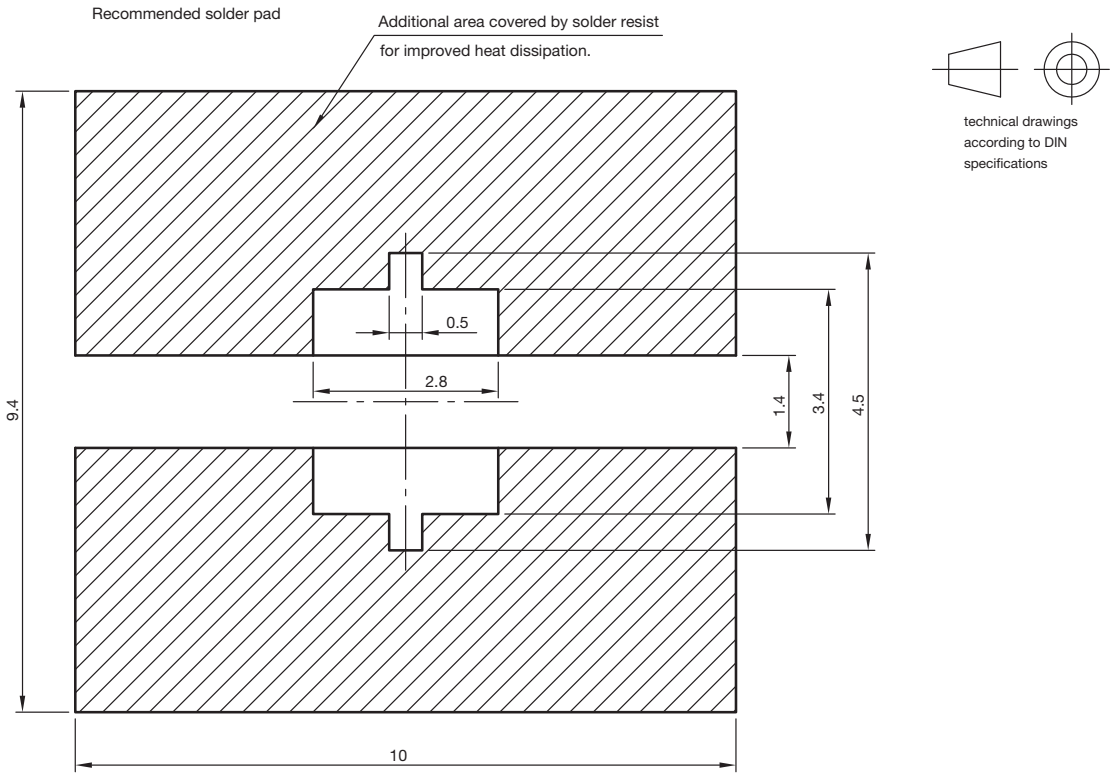
Issue: 1; 01.03.10

22066

technical drawings according to DIN specifications

RECOMMENDED PAD DESIGN DIMENSIONS in millimeters





Drawing-No.: 6.541-5082.01-4
Issue: 2; 23.07.10
22065

SOLDERING PROFILE

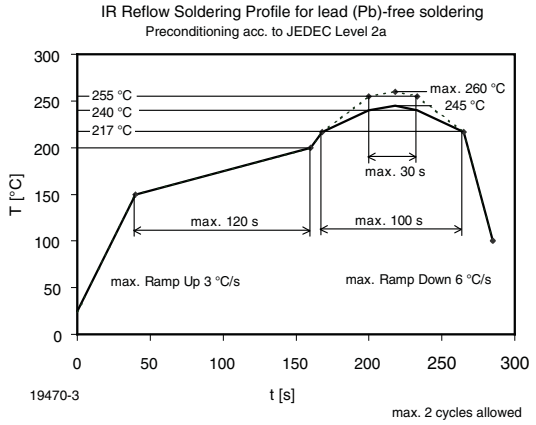
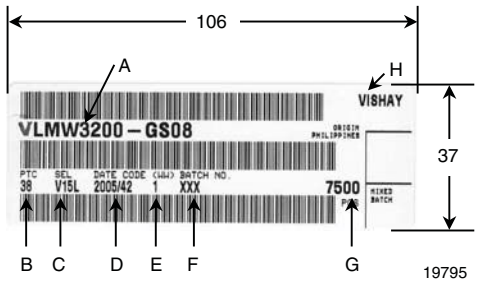


Figure 7. Vishay Lead (Pb)-free Reflow Soldering Profile (acc. to J-STD-020)

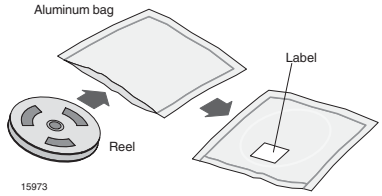
BARCODE-PRODUCT-LABEL EXAMPLE:



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.

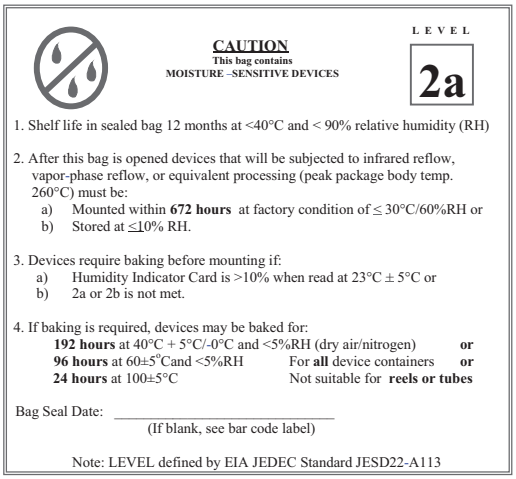
In case of moisture absorption, the devices will recover to the former condition by drying under the following condition:

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.

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