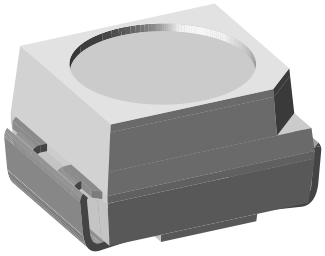
UV SMD LED PLCC-2



LINKS TO ADDITIONAL RESOURCES

Infographics

DESCRIPTION

The package of the VLMU3110 series is the PLCC-2. It consists of a lead frame which is embedded in a white thermoplast. The reflector inside this package is filled up with clear silicone which guarantees long life time. The viewing angle is 120°, package dimensions are 3.2 mm x 2.8 mm x 1.9 mm.

PRODUCT GROUP AND PACKAGE DATA

- Product group: LED
- Package: SMD PLCC-2
- Product series: standard
- Angle of half intensity: ± 60°
- Lead-finishing: Ag

FEATURES

- UV SMD LED with exceptional brightness
- High efficient InGaN technology
- Long life time due to silicone casting
- Compatible with automatic placement equipment
- EIA and ICE standard package
- Compatible with IR reflow and vapor phase
- Available in 8 mm tape
- Low profile package
- Non-diffused lens: excellent for coupling to light pipes
- Low power consumption
- Preconditioning according to JEDEC® level 2a
- ESD-withstand voltage: up to 1 kV according to JESD22-A114-B
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

Pb-free

e4

RoHS COMPLIANT

HALOGEN FREE

GREEN (5-2008)

APPLICATIONS

- Curing of glue and laquer
- Recognition of safety features of money bills
- Forensic analysis
- Fluorescence imaging
- Medical and analytic instruments
- Hygienic applications

SAFETY ADVICES

These devices emit highly concentrated near ultraviolet and blue light which can be hazardous to the human eye. Protect eyes and skin from exposure.

PARTS TABLE

PART	COLOR	RADIANT INTENSITY (mW/sr)			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.		
VLMU3110-GS08	Ultraviolet	3	5	10	20	400	405	410	20	2.8	3.2	3.6	20	InGaN

ABSOLUTE MAXIMUM RATINGS (T_{amb} = 25 °C, unless otherwise specified)
VLMU3100

PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
Forward current		I_F	30	mA
Peak forward current	$t_p \leq 100$ µs, $t_p/T \leq 0.1$	I_{FPM}	0.1	A
Power dissipation		P_{tot}	120	mW
Junction temperature		T_j	+110	°C
Operating temperature range		T_{amb}	-40 to +85	°C
Storage temperature range		T_{stg}	-40 to +100	°C
Solder temperature		T_{sol}	260/5	°C/s
Electrostatic discharge (HBM)		ESD (HBM)	1000	V

For technical questions, contact: LED@vishay.com

OPTICAL AND ELECTRICAL CHARACTERISTICS (T_{amb} = 25 °C, unless otherwise specified) **VLMU3100, ULTRAVIOLET**						
PARAMETER	**TEST CONDITION**	**SYMBOL**	**MIN.**	**TYP.**	**MAX.**	**UNIT**
Radiant intensity	I_F = 20 mA	I_e	3	5	10	mW/sr
Radiant power	I_F = 20 mA	ϕ_e	-	12	-	mW
Peak wavelength	I_F = 20 mA	λ_p	400	405	410	nm
Angle of half intensity	I_F = 20 mA	φ	-	± 60	-	°
Forward voltage	I_F = 20 mA	V_F	2.8	3.2	3.6	V
Reverse current	V_R = 5 V	I_R	-	-	10	µA

RADIANT INTENSITY (I_F = 20 mA) in mW/sr		
BIN CODE	**MIN.**	**MAX.**
1	3	5
2	5	7
3	7	10

PEAK WAVELENGTH (I_F = 20 mA) in nm		
BIN CODE	**MIN.**	**MAX.**
G	400	405
H	405	410

FORWARD VOLTAGE BINS (I_F = 20 mA) in V		
BIN CODE	**MIN.**	**MAX.**
B	2.8	2.9
C	2.9	3.0
D	3.0	3.1
E	3.1	3.2
F	3.2	3.3
G	3.3	3.4
H	3.4	3.5
I	3.5	3.6

Notes

- Tolerances: radiant intensity I_e: ± 10 % I_V, peak wavelength λ_p: ± 1.0 nm, forward voltage V_F: ± 0.1 V
- The optical and electrical specification table shows the parameter ranges, comprising only a few classification groups. In order to ensure availability, single groups for radiant intensity, wavelength, and forward voltage will not be orderable. Only one group for radiant intensity, wavelength, and forward voltage will be shipped in any one reel

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

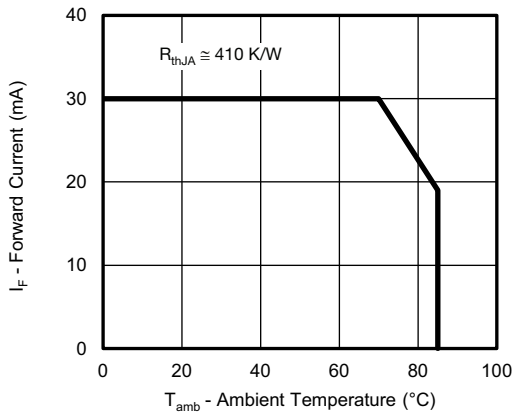


Fig. 1 - Forward Current vs. Ambient Temperature

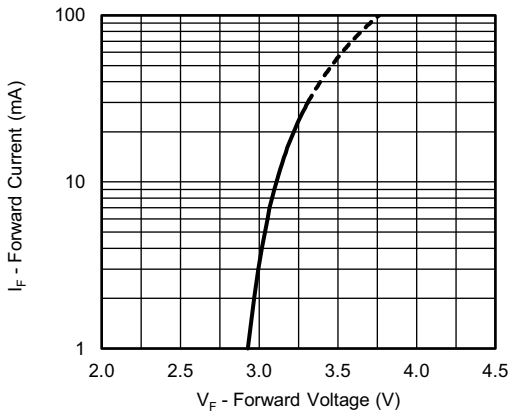


Fig. 2 - Forward Current vs. Forward Voltage

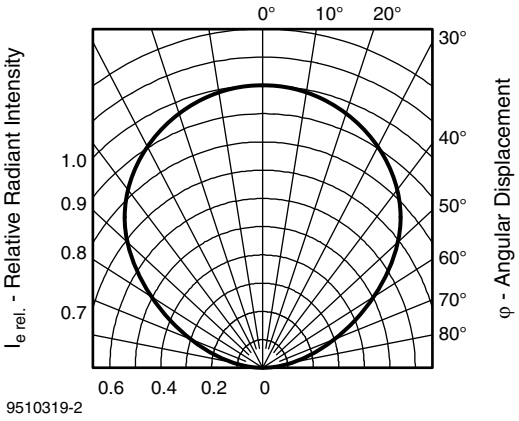


Fig. 3 - Relative Radiant Intensity vs. Angular Displacement

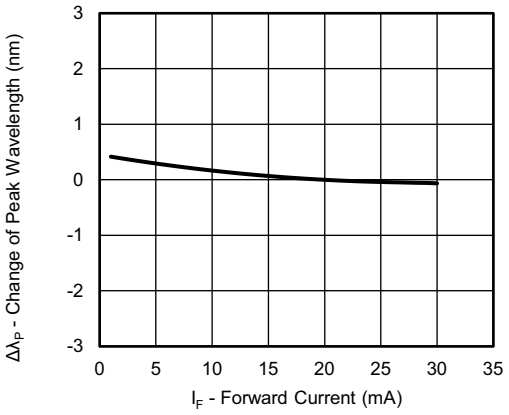


Fig. 6 - Change of Peak Wavelength vs. Forward Current

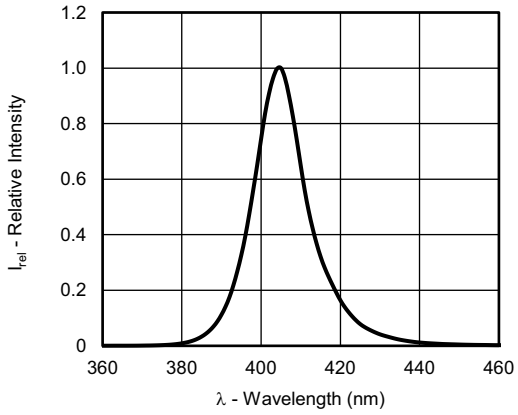


Fig. 4 - Relative Intensity vs. Wavelength

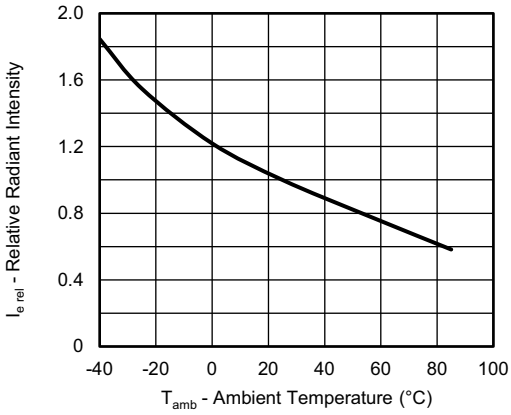


Fig. 7 - Relative Radiant Intensity vs. Ambient Temperature

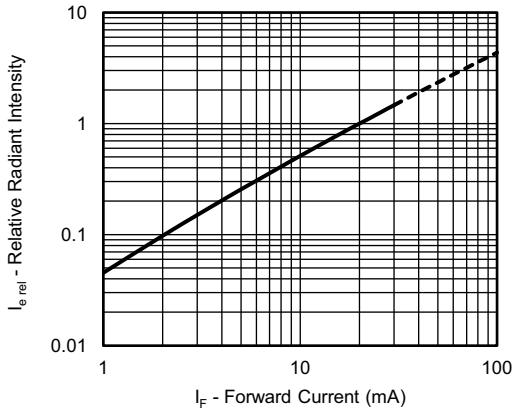


Fig. 5 - Relative Radiant Intensity vs. Forward Current

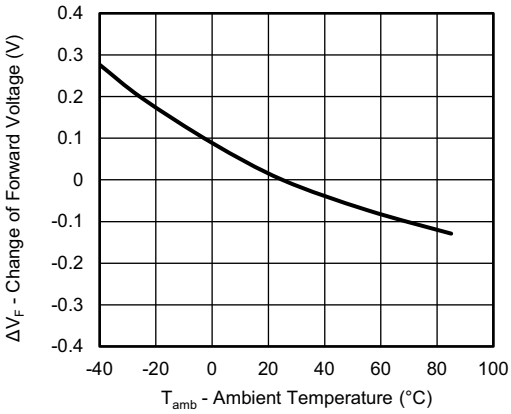


Fig. 8 - Change of Forward Voltage vs. Ambient Temperaure

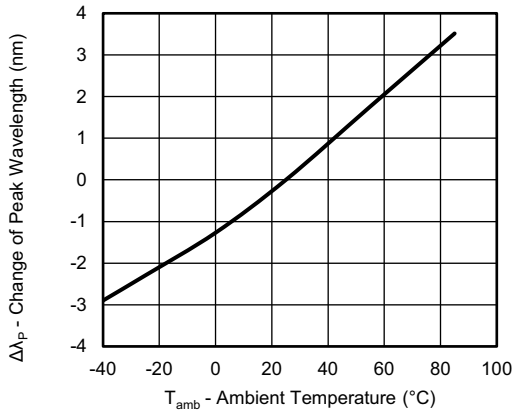
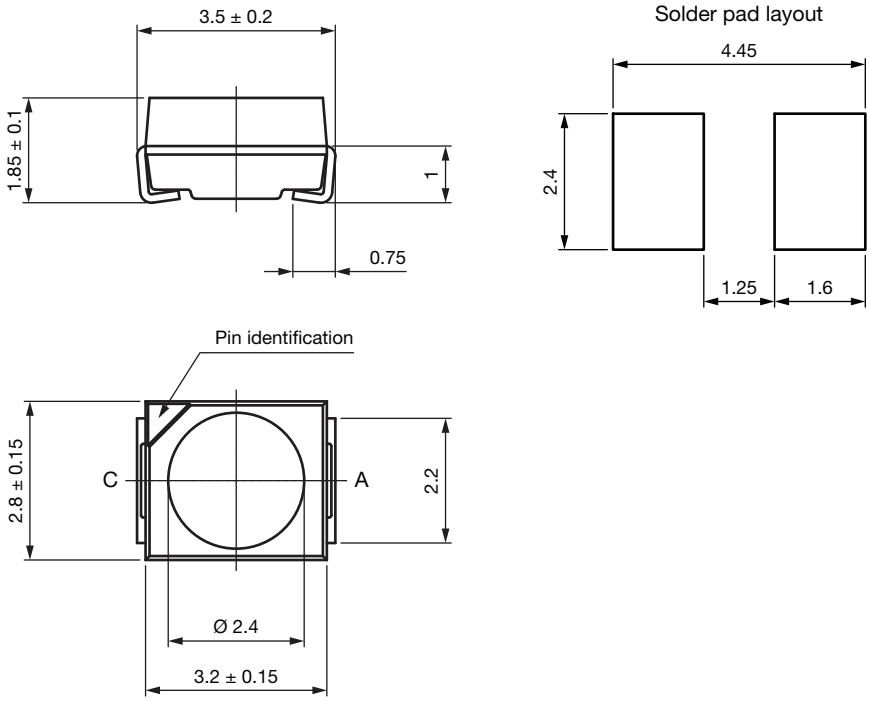


Fig. 9 - Change of Peak Wavelength vs. Ambient Temperature

PACKAGE DIMENSIONS in millimeters

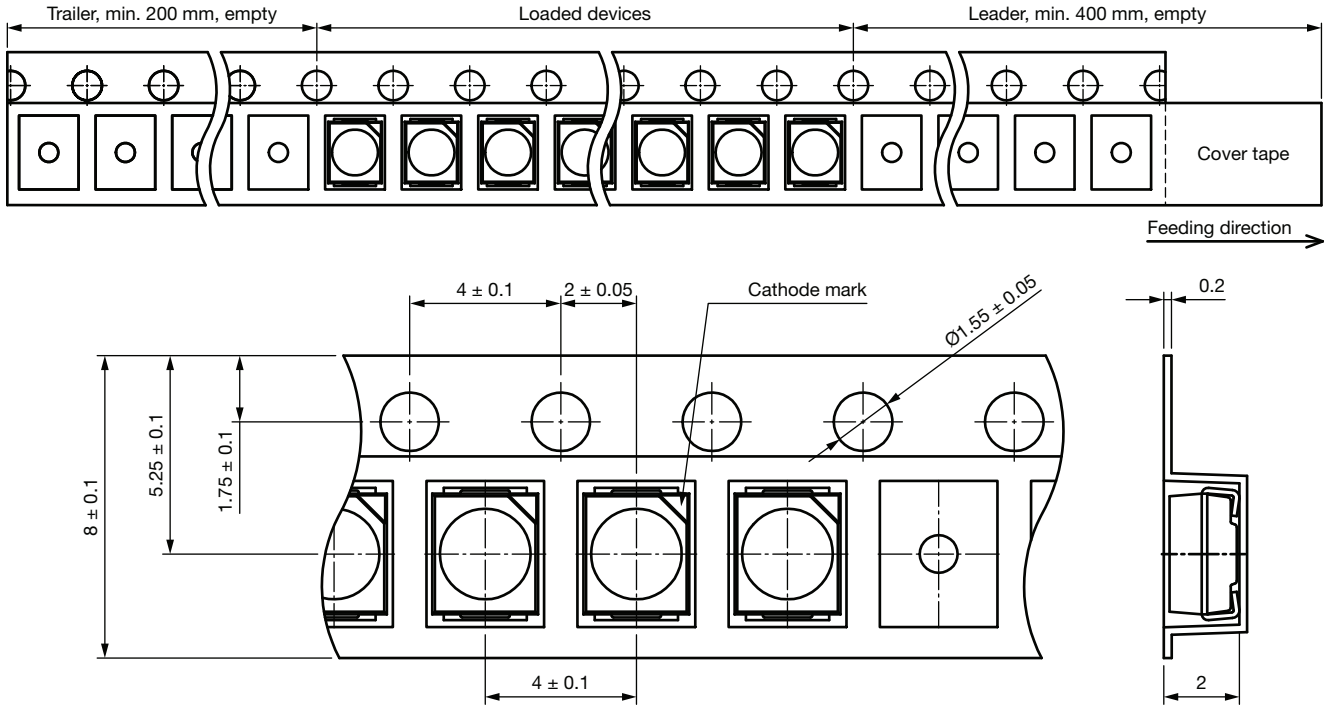


METHOD OF TAPING / POLARITY AND TAPE AND REEL

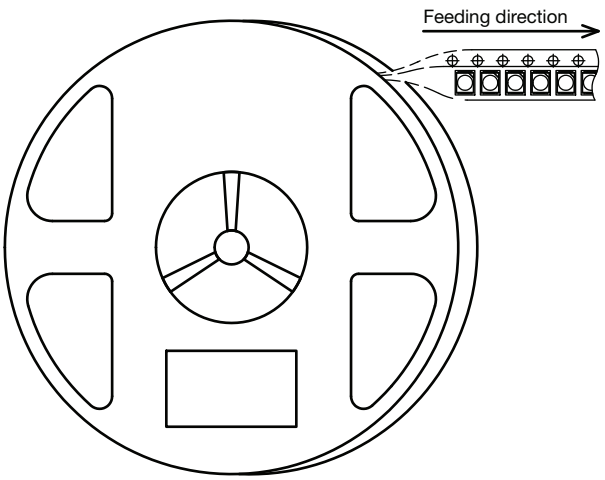
SMD LED (VLM3 - SERIES)

Vishay's LEDs in SMD packages are available in an antistatic 8 mm blister tape (in accordance with DIN IEC 40 (CO 564) for automatic component insertation. The blister tape is a plastic strip with impressed component cavities, covered by a top tape.

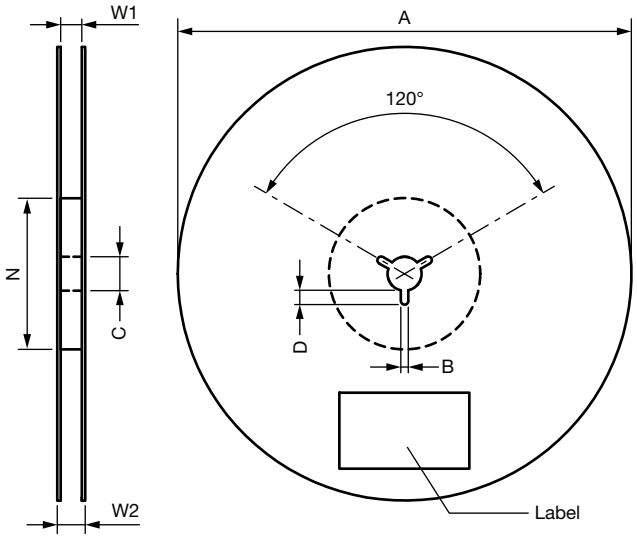
ARRANGEMENT OF TAPE



FEEDING DIRECTION



DIMENSIONS OF REEL in millimeters



DIMENSIONS OF REEL in millimeters (according drawing reference)							
TAPING VERSION	A	B	C	D	N	W1	W2
GS08	180 ± 0.5	3.0 ± 0.5	13.0 ± 0.5	5.5 ± 0.5	59.8 ± 0.5	9.25 +0.75 / -0.25	14.4 max.

2000 pcs per reel

HANDLING RECOMMENDATIONS

In order to achieve excellent lifetime, the package of these UV-LEDs consists of a leadframe embedded in a white plastic reflector, filled with a UV stable silicone as lens material. Compared to standard materials silicone is generally softer and it tends more to attract dust:

- Minimize the level of dirt and dust particles in contact with the LED
- Small amounts of particles on the LEDs, although noticeable from a cosmetic point of view, do not affect the performance in terms of brightness, reliability and quality
- If cleaning is required, a short rinsing with isopropyl alcohol, not longer than 15 seconds, is recommended. Do not use ultrasonic cleaning, it may damage the LED
- Do not apply mechanical stress on the silicone lens
- Avoid any piercing of the silicone lens by sharp objects
- It is recommended to use a suitable pick and place tool for the removal of the LED from blister tape without applying stress to the lens. The pick-up needle has to be larger than the silicone lens
- For manual handling using tweezers make sure that the LED will be touched carefully at the sidewall of the plastic package, but not at the silicone lens

SOLDERING PROFILE

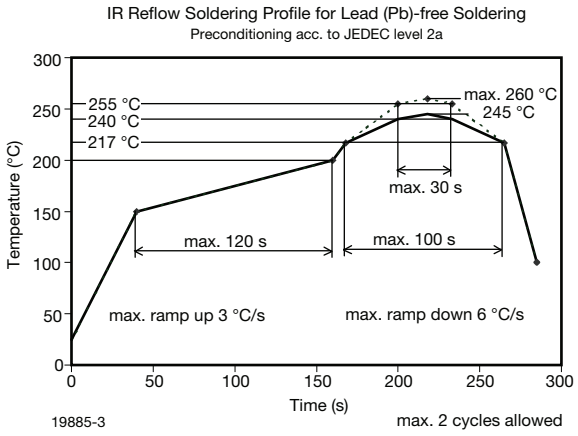
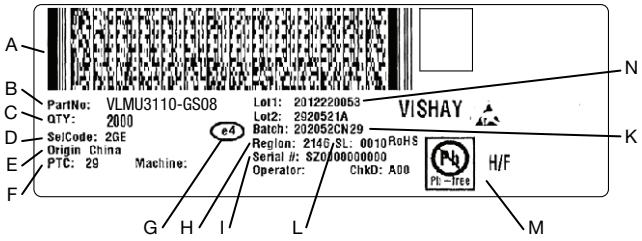


Fig. 10 - Vishay Lead (Pb)-Free Reflow Soldering Profile (according to J-STD-020C)

BAR CODE PRODUCT LABEL (example only)



A. 2D barcode

B. Part No: Vishay part number

C. QRY: quantity

D. SelCode: selection bin code (I_e, λ_p, V_F)

E. Country of origin

F. PTC: production plant code

G. Termination finish

H. Region code

I. Serial#: serial number

K. Batch Number: year, week, country code, plant code

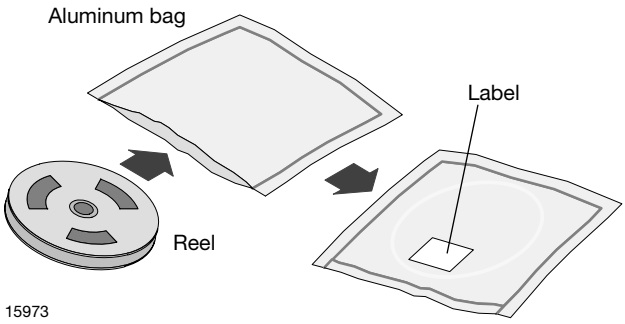
L. SL: sales location

M. Environmental Symbols: RoHS, lead (Pb)-free, halogen-free

N. Lot numbers

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.

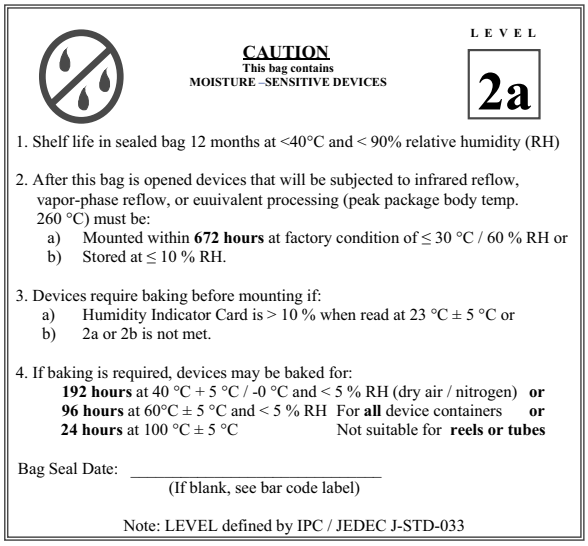
In case of moisture absorption, the devices will recover to the former condition by drying under the following condition:

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 J-STD-033 level 2a label is included on all dry bags.



Example of IPC / JEDEC J-STD-033 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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