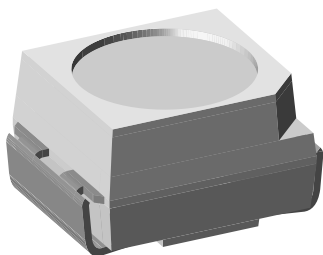


UV SMD LED PLCC-2



LINKS TO ADDITIONAL RESOURCES



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: $\pm 60^\circ$
- 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



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 ≤ 100 μs, t _p /T ≤ 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


OPTICAL AND ELECTRICAL CHARACTERISTICS ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified)
VLMU3100, ULTRAVIOLET

PARAMETER	TEST CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Radiant intensity	$I_F = 20\text{ mA}$	I_e	3	5	10	mW/sr
Radiant power	$I_F = 20\text{ mA}$	ϕ_e	-	12	-	mW
Peak wavelength	$I_F = 20\text{ mA}$	λ_p	400	405	410	nm
Angle of half intensity	$I_F = 20\text{ mA}$	φ	-	± 60	-	$^{\circ}$
Forward voltage	$I_F = 20\text{ mA}$	V_F	2.8	3.2	3.6	V
Reverse current	$V_R = 5\text{ V}$	I_R	-	-	10	μA

RADIANT INTENSITY ($I_F = 20\text{ mA}$) in mW/sr

BIN CODE	MIN.	MAX.
1	3	5
2	5	7
3	7	10

PEAK WAVELENGTH ($I_F = 20\text{ mA}$) in nm

BIN CODE	MIN.	MAX.
G	400	405
H	405	410

FORWARD VOLTAGE BINS ($I_F = 20\text{ mA}$) 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 : $\pm 10\%$ I_V , peak wavelength λ_p : $\pm 1.0\text{ nm}$, forward voltage V_F : $\pm 0.1\text{ V}$
- 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

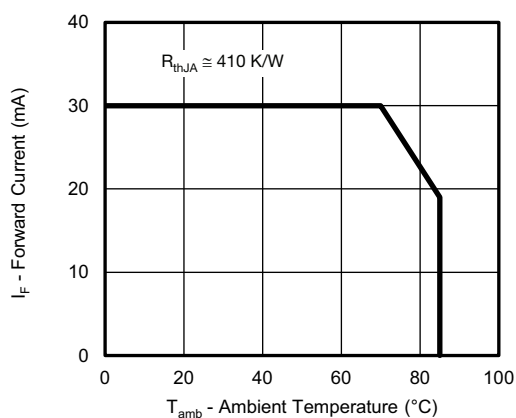
TYPICAL CHARACTERISTICS ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified)


Fig. 1 - Forward Current vs. Ambient Temperature

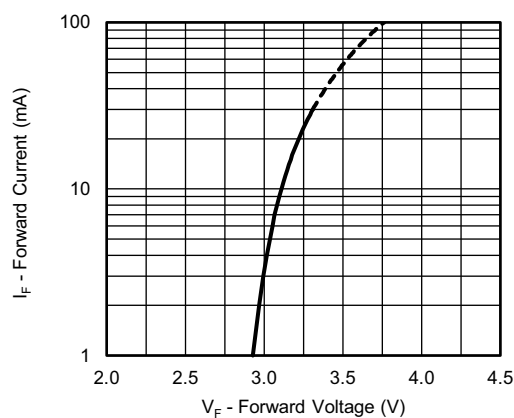


Fig. 2 - Forward Current vs. Forward Voltage

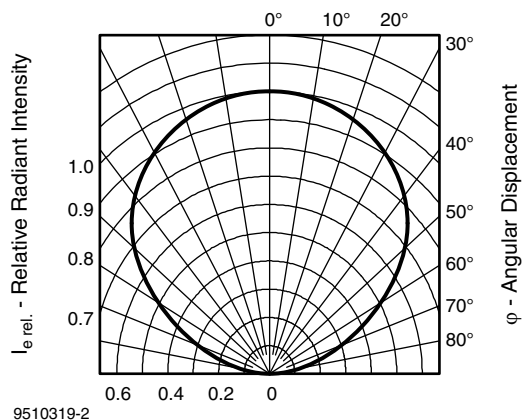


Fig. 3 - Relative Radiant Intensity vs. Angular Displacement

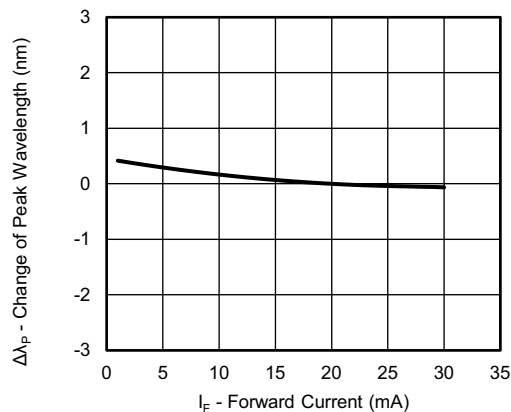


Fig. 6 - Change of Peak Wavelength vs. Forward Current

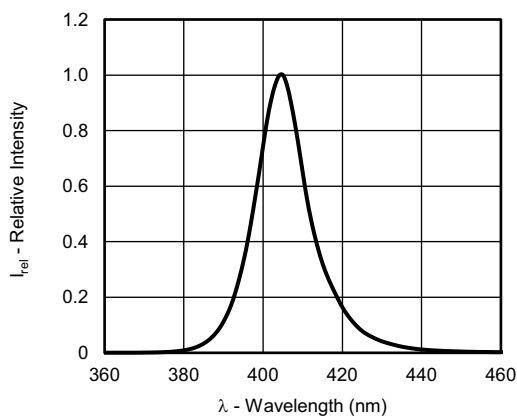


Fig. 4 - Relative Intensity vs. Wavelength

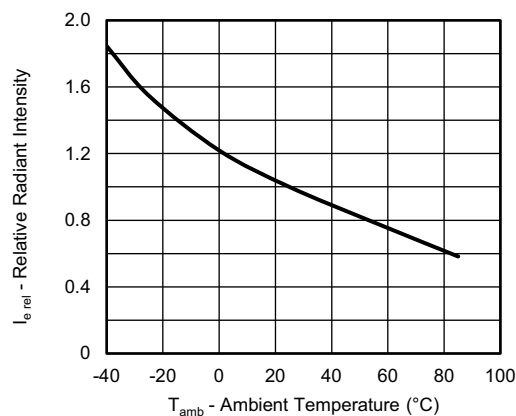


Fig. 7 - Relative Radiant Intensity vs. Ambient Temperature

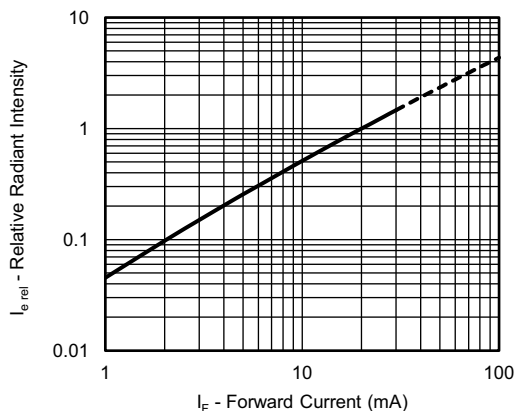


Fig. 5 - Relative Radiant Intensity vs. Forward Current

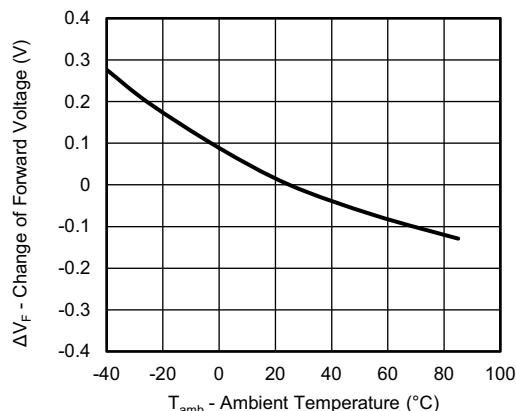


Fig. 8 - Change of Forward Voltage vs. Ambient Temperature

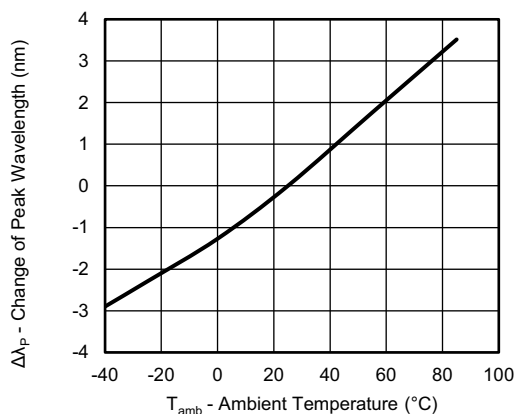
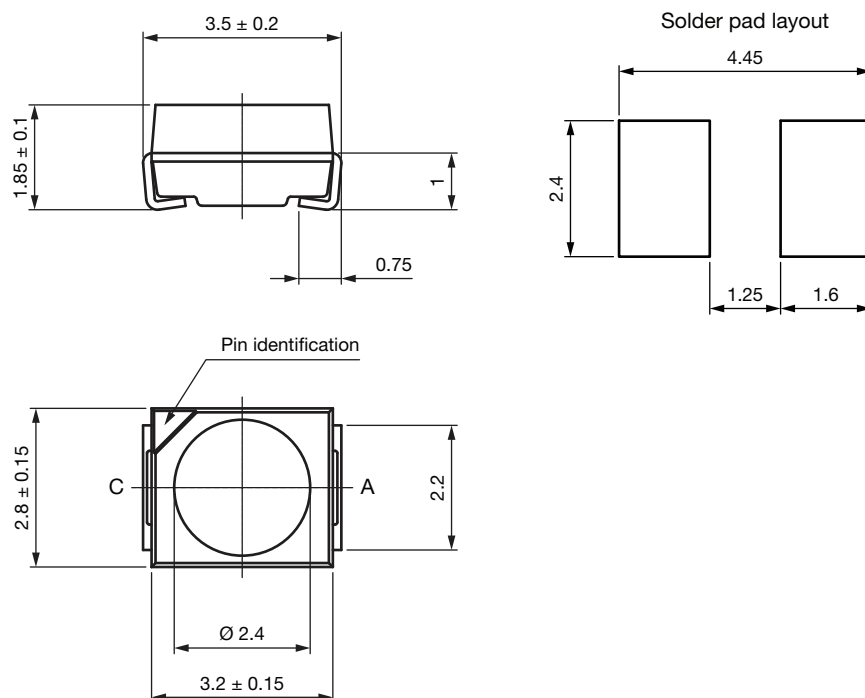
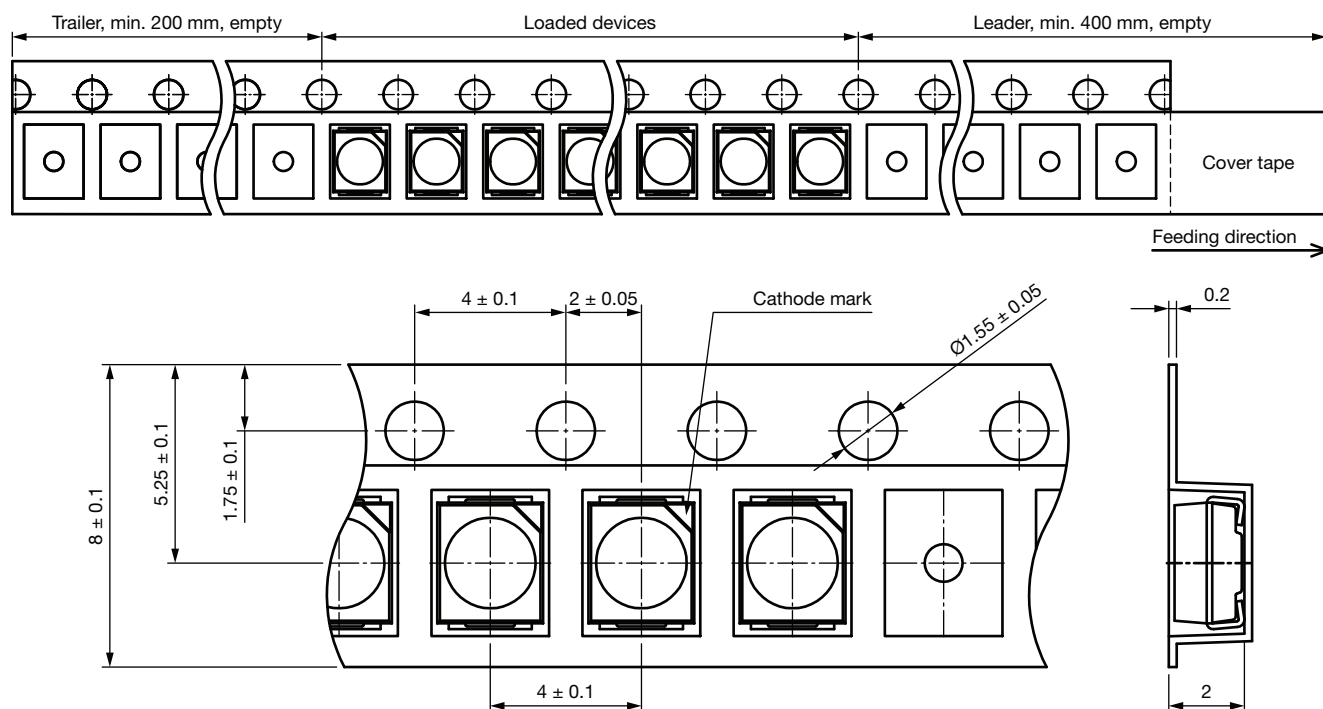
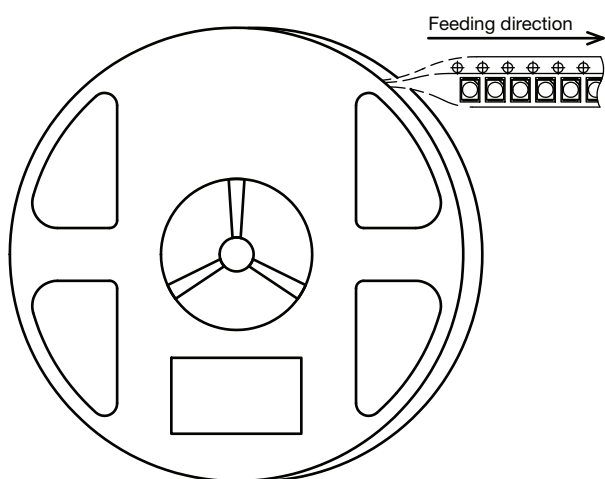
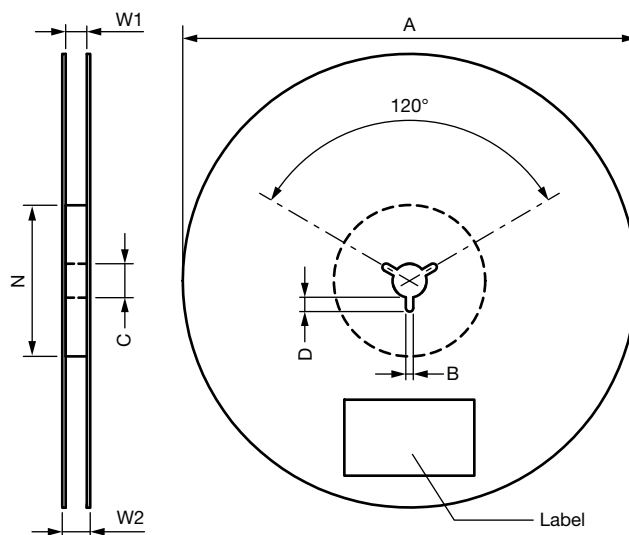


Fig. 9 - Change of Peak Wavelength vs. Ambient Temperature

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

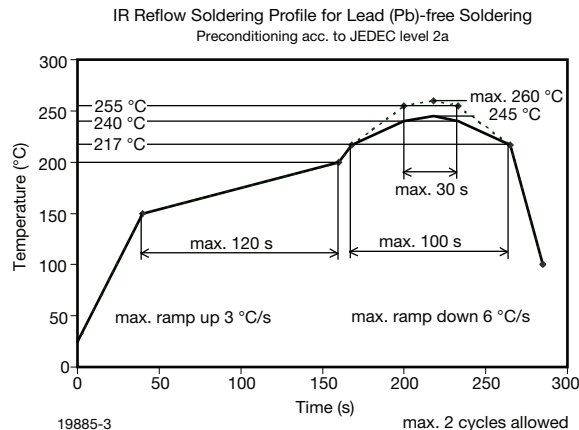
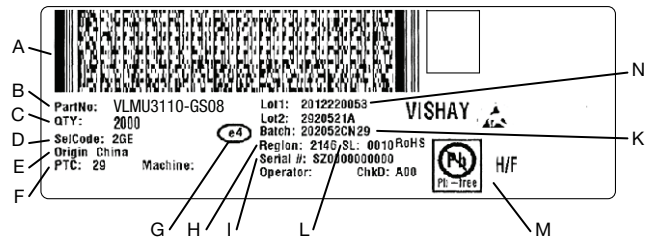


Fig. 10 - Vishay Lead (Pb)-Free Reflow Soldering Profile
(according to J-STD-020C)

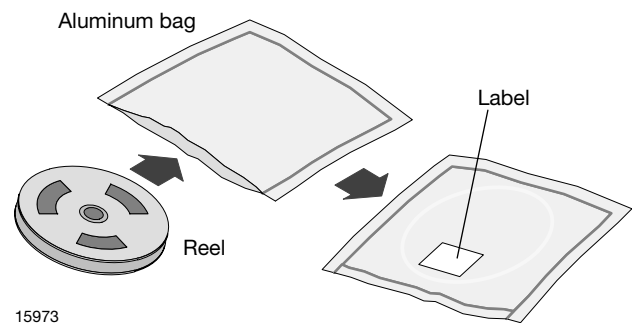
BAR CODE PRODUCT LABEL (example only)



- 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 $\leq 60\%$ 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.

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.

	CAUTION This bag contains MOISTURE-SENSITIVE DEVICES	LEVEL 2a
1. Shelf life in sealed bag 12 months at $< 40^{\circ}\text{C}$ 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 $\leq 30^{\circ}\text{C}$ / 60% RH or b) Stored at $\leq 10\%$ RH.		
3. Devices require baking before mounting if: a) Humidity Indicator Card is $> 10\%$ when read at $23^{\circ}\text{C} \pm 5^{\circ}\text{C}$ or b) 2a or 2b is not met.		
4. If baking is required, devices may be baked for: 192 hours at $40^{\circ}\text{C} + 5^{\circ}\text{C} / -0^{\circ}\text{C}$ and $< 5\%$ RH (dry air / nitrogen) or 96 hours at $60^{\circ}\text{C} \pm 5^{\circ}\text{C}$ and $< 5\%$ RH For all device containers or 24 hours at $100^{\circ}\text{C} \pm 5^{\circ}\text{C}$ Not suitable for reels or tubes		
Bag Seal Date: _____ (If blank, see bar code label)		
Note: LEVEL defined by IPC / JEDEC J-STD-033		

19786-3

Example of IPC / JEDEC J-STD-033 level 2a label



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