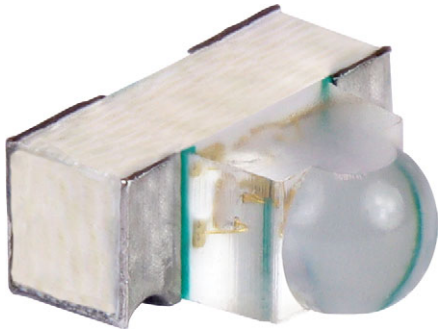
Side View SMD LED



FEATURES

- Package type: surface-mount
- Package form: side view
- Small dimensions (L x W x H in mm): 3.0 x 2.61 x 1.2
- Peak wavelength: λ_p = 452 nm (typical)
- High radiant intensity
- Angle of half intensity: φ = ± 12° (typical)
- Compatible with automatic placement equipment
- Available in 8 mm tape on 7" diameter reels
- Soldering terminal with tin plating
- MSL 3 according to J-STD-020
- UL 268 certification
- ESD-withstand voltage: up to 2 kV HBM according to JESD22-A114-B
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

Pb-free

e3

RoHS COMPLIANT

HALOGEN FREE

GREEN (5-2008)

DESCRIPTION

The VLMB14SV460-01UL is a blue, 457 nm, side looking emitting diode based on InGaN emitter chip technology with extremely high radiant intensities and high optical power, molded in a clear, untinted PCB based package with lens for surface mounting (SMD). It is certified according to UL 268 standard for smoke detectors.

PRODUCT GROUP AND PACKAGE DATA

- Product group: LED
- Package: SMD side view
- Product series: standard
- Angle of half intensity: ± 12°

APPLICATIONS

- Smoke detectors
- General use

PARTS TABLE

PART	COLOR	RADIANT INTENSITY (mW/sr)			at I_F (mA)	PEAK WAVELENGTH (nm)			at I_F (mA)	FORWARD VOLTAGE (V)			at I_F (mA)	TECHNOLOGY
		MIN.	TYP.	MAX.		MIN.	TYP.	MAX.		MIN.	TYP.	MAX.		
VLMB14SV460-01UL	Blue	26	38	52	20	445	452	465	20	2.6	2.9	3.4	20	InGaN / sapphire

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

VLMB14SV460-01UL

PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
Reverse voltage (1)		V_R	5	V
DC forward current		I_F	50	mA
Maximum pulse forward current	t_p = 100 µs, t_p/T = 1 %, T_{amb} = 70 °C	I_{FP}	0.15	A
Power dissipation		P_V	170	mW
Junction temperature		T_j	115	°C
Operating temperature range		T_{amb}	-40 to +85	°C
Storage temperature range		T_{stg}	-55 to +100	°C
Soldering temperature	According to Fig. 10, J-STD-020	T_{sd}	260	°C
Thermal resistance junction to ambient	J-STD-051, soldered on PCB	R_{thJA}	450	K/W
ESD-withstand voltage	HBM	V_{ESD}	2	kV

Note

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

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OPTICAL AND ELECTRICAL CHARACTERISTICS (T_{amb} = 25 °C, unless otherwise specified) **VLMB14SV460-01UL, BLUE**						
PARAMETER	**TEST CONDITION**	**SYMBOL**	**MIN.**	**TYP.**	**MAX.**	**UNIT**
Radiant intensity (1)	I_F = 20 mA	I_e	26	38	52	mW/sr
Radiant flux	I_F = 20 mA	ϕ_e	-	21	-	mW
Luminous flux	I_F = 20 mA	PHI_V	-	860	-	mlm
Peak wavelength (1)	I_F = 20 mA	λ_p	445	452	465	nm
Dominant wavelength	I_F = 20 mA	λ_d	-	457	-	nm
Spectral bandwidth at 50% $I_{rel.}$ max.	I_F = 20 mA	$\Delta\lambda_{0.5}$	-	16	-	nm
Angle of half intensity	I_F = 20 mA	φ	-	± 12	-	°
Forward voltage (1)	I_F = 20 mA	V_F	2.6	2.9	3.4	V
Reverse current	V_R = 5 V	I_R	-	0.1	10	µA

Note

(1) Tolerances: ± 15 % for I_e, ± 0.1 V for V_F, ± 1 nm for λ_p

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

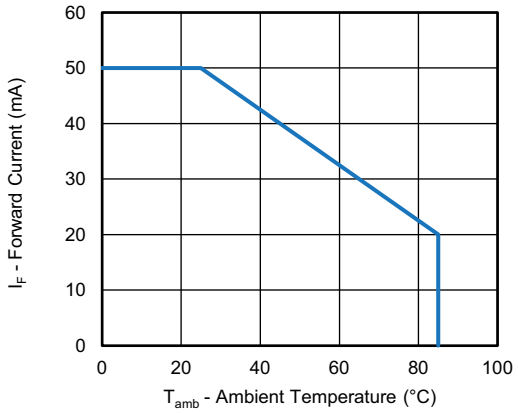

Fig. 1 - Maximum Permissible Forward Current vs. Ambient Temperature

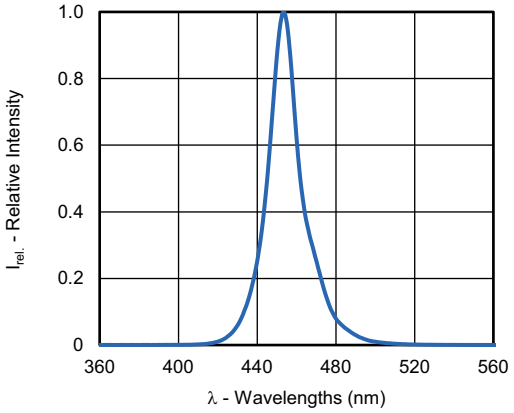

Fig. 3 - Relative Intensity vs. Wavelength

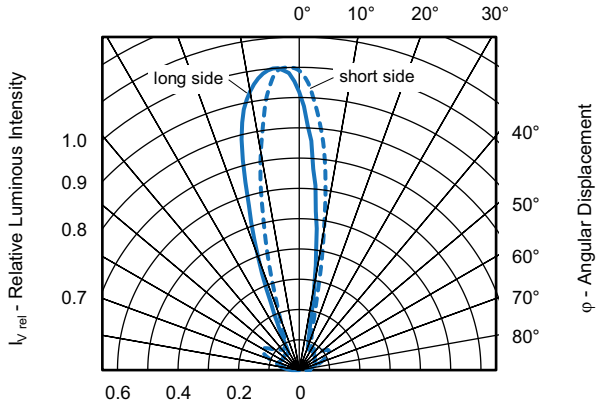

Fig. 2 - Relative Luminous Intensity vs. Angular Displacement

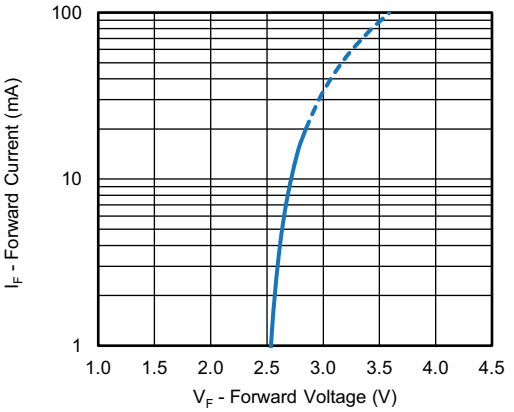

Fig. 4 - Forward Current vs. Forward Voltage

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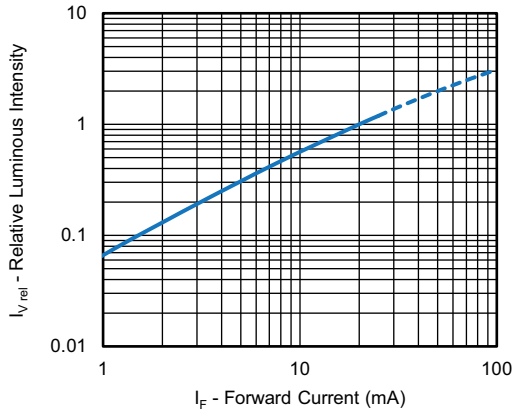

Fig. 5 - Relative Luminous Intensity vs. Forward Current

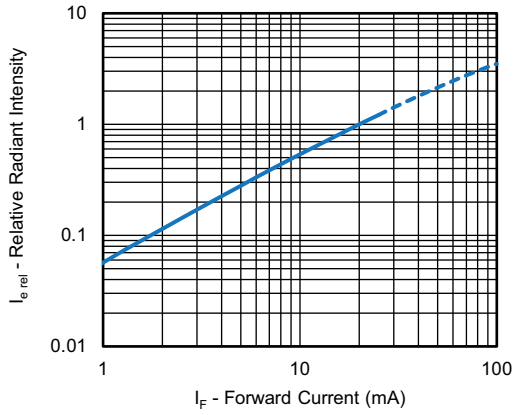

Fig. 6 - Relative Radiant Intensity vs. Forward Current

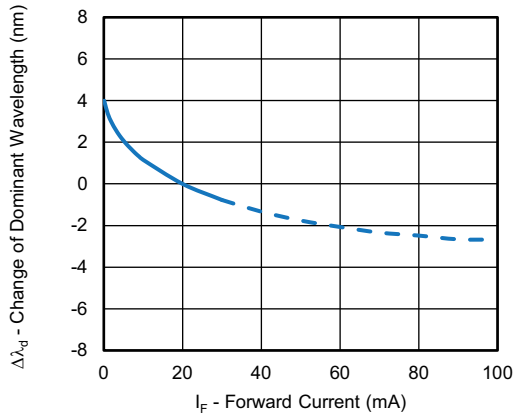

Fig. 7 - Change of Dominant Wavelength vs. Forward Current

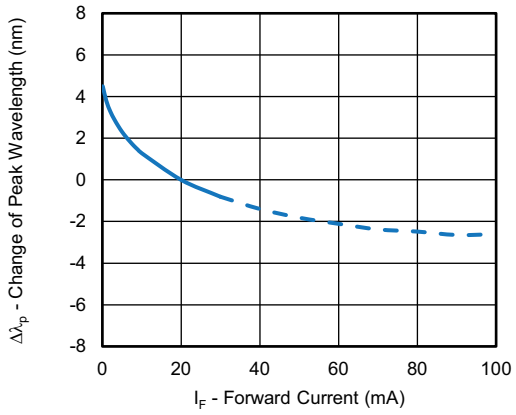

Fig. 8 - Change of Peak Wavelength vs. Forward Current

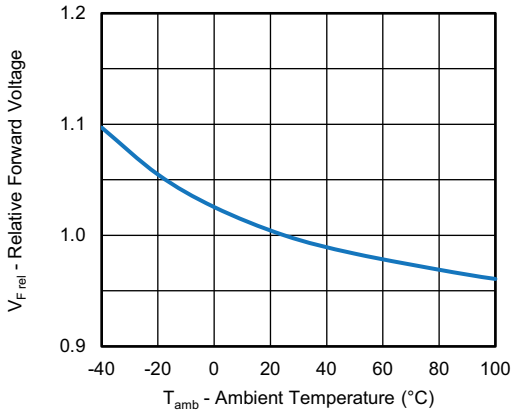

Fig. 9 - Relative Forward Voltage vs. Ambient Temperature

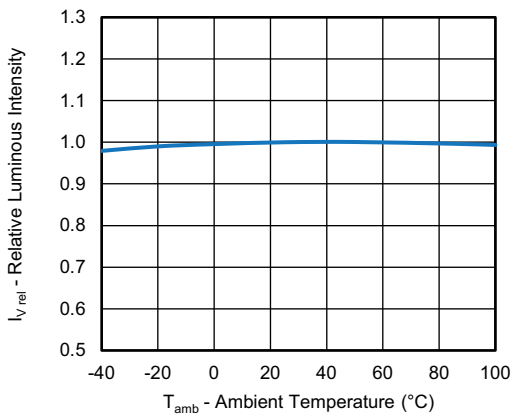

Fig. 10 - Relative Luminous Intensity vs. Ambient Temperature

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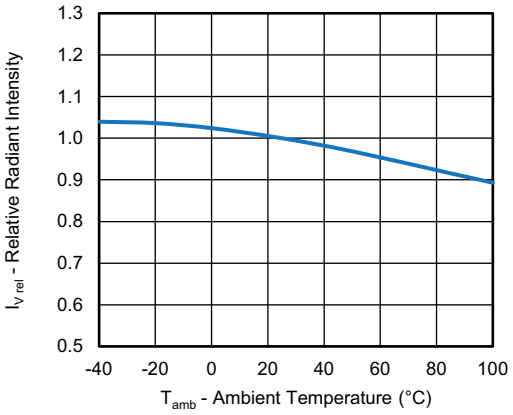

Fig. 11 - Relative Radiant Intensity vs. Ambient Temperature

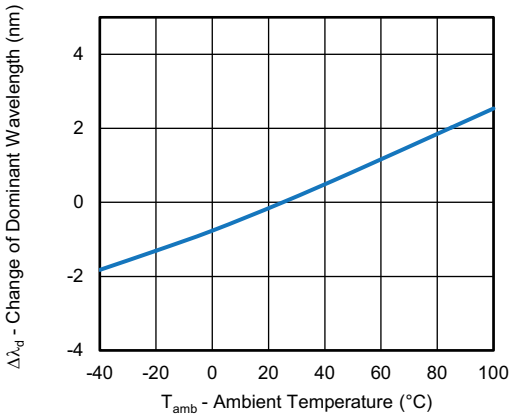

Fig. 12 - Change of Dominant Wavelength vs. Ambient Temperature

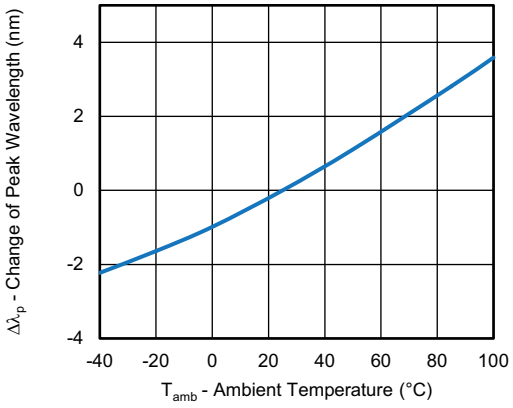

Fig. 13 - Change of Peak Wavelength vs. Ambient Temperature

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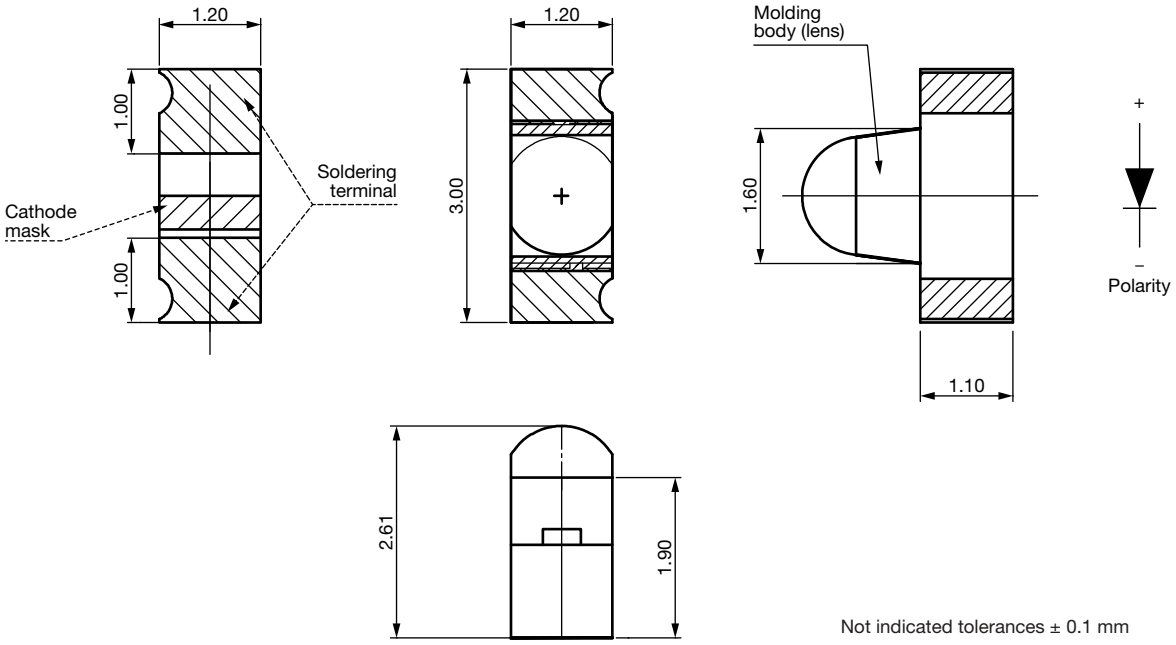
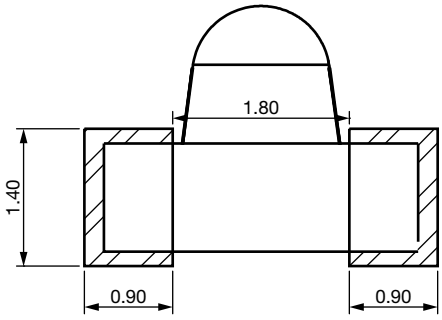
PACKAGE DIMENSIONS in millimeters



Not indicated tolerances ± 0.1 mm

Recommended Solder Pad



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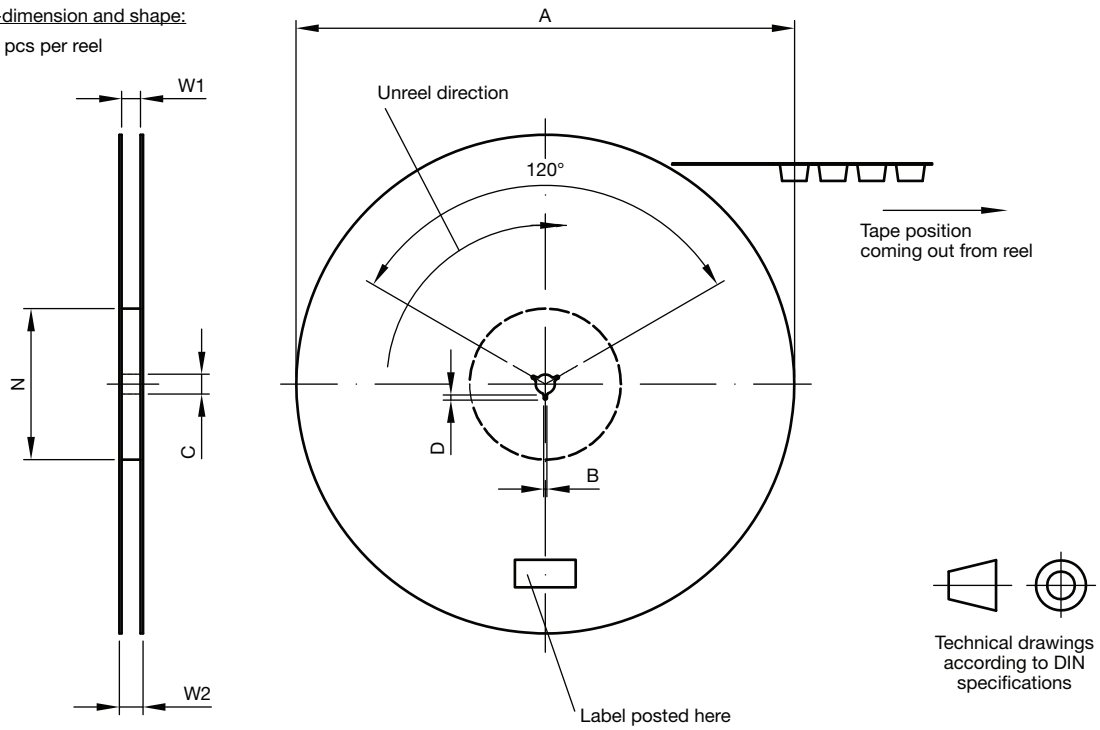
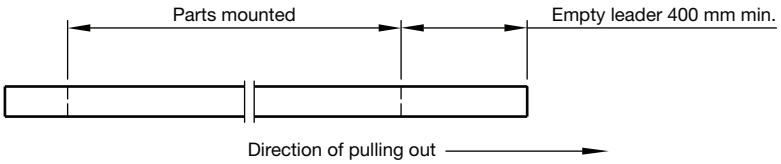
REEL DIMENSIONS in millimeters

Reel-dimension and shape:

9000 pcs per reel



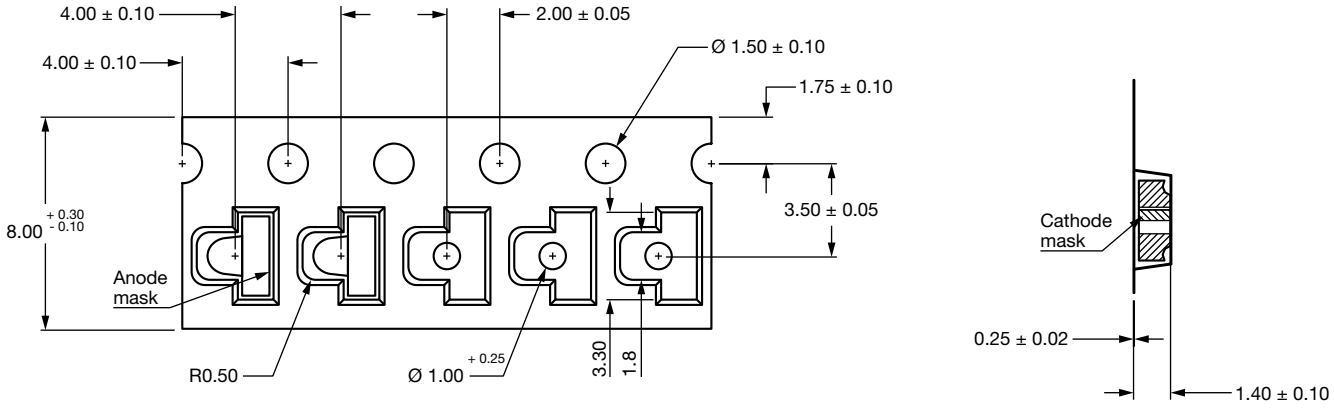
Leader and trailer tape:



Drawing-No.: 9.800-5172.01
Issue: VK; 18.04.2024

DIMENSIONS OF REEL in millimeters (according drawing reference)							
TAPING VERSION	**A**	**B**	**C**	**D**	**N**	**W1**	**W2**
VLMB14SV460-01UL	Ø 330 ± 2	2.0 ± 0.5	Ø $13^{+0.5}_{-0.2}$	4 typ.	Ø 100 ± 0.5	8.4 ± 0.2	$12^{+0.6}_{-0.2}$

TAPE DIMENSIONS in millimeters



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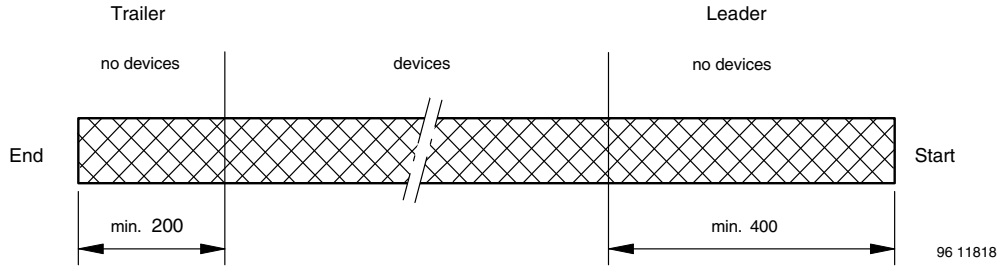
LEADER AND TRAILER DIMENSIONS in millimeters



COVER TAPE PEEL STRENGTH

According to DIN EN 60286-3

0.1 N to 1.3 N

300 mm/min ± 10 mm/min

165° to 180° peel angle

LABEL

Standard bar code labels for finished goods

The standard bar code labels are product labels and used for identification of goods. The finished goods are packed in final packing area. The standard packing units are labeled with standard bar code labels before transported as finished goods to warehouses. The labels are on each packing unit and contain Vishay Semiconductor GmbH specific data.

SOLDERING PROFILE

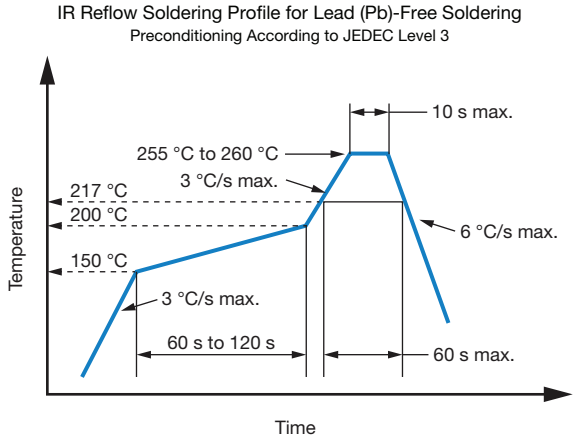
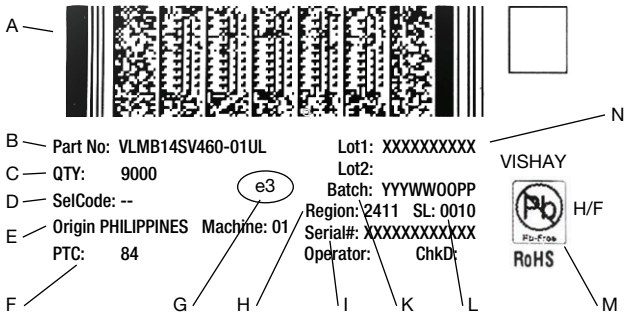


Fig. 14 - Lead (Pb)-free Reflow Soldering Profile (according to J-STD-020)

BAR CODE PRODUCT LABEL (example)



A. 2D barcode

B. Part No: Vishay part number

C. QTY: quantity

D. SelCode: selection bin code

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

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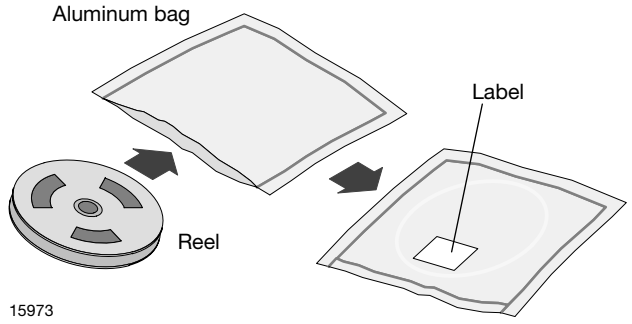
DRY PACKING

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

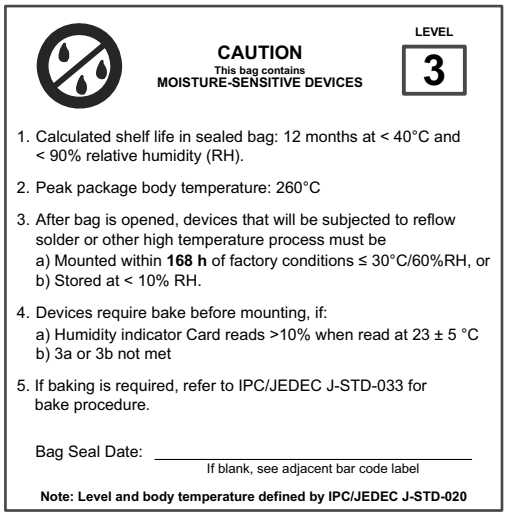
Dry box storage is recommended as soon as the aluminum bag has been opened to prevent moisture absorption. The following conditions should be observed, if dry boxes are not available:

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

After more than 168 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 condition given in J-STD-033.

An EIA JEDEC standard J-STD-033 level 3 label is included on all dry bags.



Example of MSL 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. 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.

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