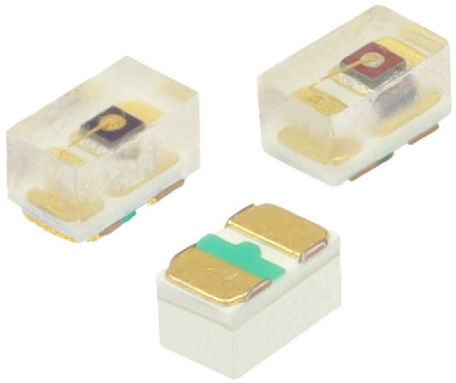
Highbright 0201 ChipLED



FEATURES

- Super small ChipLED with high brightness 0.65 x 0.375 x 0.35 (L x W x H in mm)
- High reliability PCB based
- Wavelength:
  - Yellow: 585.5 nm to 594.5 nm
  - Soft orange: 597.5 nm to 609.5 nm
  - Red: 617.5 nm to 633.5 nm
- AlInGaP technology
- Wide viewing angle: 120°
- Grouping parameter: luminous intensity, wavelength and forward voltage
- Available in 8 mm tape on 7" diameter reel
- HBM ESD-withstand voltage: up to 2 kV according to JESD22-A114
- Compatible to IR reflow soldering
- Preconditioning according to JEDEC® level 3
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

Pb-free

e4

RoHS COMPLIANT

HALOGEN FREE

GREEN (5-2008)

DESCRIPTION

The 0201 ChipLED delivers brilliant illumination in one of the smallest surface-mount formats available. Measuring just 0.65 mm x 0.375 mm x 0.35 mm, it is perfectly suited for space-constrained applications in consumer electronics, wearables, industrial systems, and more. This RoHS-compliant component combines ultra compact dimensions, low power consumption, a wide viewing angle, and multiple color options engineered for seamless integration into automated SMT processes. Offering exceptional versatility and performance, the 0201 ChipLED empowers the next generation of compact, high efficiency electronic designs.

PRODUCT GROUP AND PACKAGE DATA

- Product group: LED
- Package: SMD 0201 ChipLED
- Product series: standard
- Angle of half intensity: ± 60°

APPLICATIONS

- Backlighting for keypads, logos, and buttons in ultra thin devices
- Instrument illumination
- Indicators and backlight for telecommunication equipment, consumer electronics, and white goods
- Displays for industrial control systems
- Next-generation wearables and smart accessories
- General use

PARTS TABLE

PART	COLOR	LUMINOUS INTENSITY (mcd)			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.		
VLMY1700-GS08	Yellow	4.5	-	11.5	2	585.5	-	594.5	2	1.55	-	2.35	2	AlInGaP/GaAs
VLMO1700-GS08	Soft orange	7.2	-	18	2	597.5	-	609.5	2	1.5	-	2.2	2	AlInGaP/GaAs
VLMR1700-GS08	Red	7.2	-	18	2	617.5	-	633.5	2	1.55	-	2.35	2	AlInGaP/GaAs

ABSOLUTE MAXIMUM RATINGS (T_{amb} = 25 °C, unless otherwise specified) **VLMY170., VLMO170., VLMR170.** (AlInGaP technology)				
PARAMETER	**TEST CONDITION**	**SYMBOL**	**VALUE**	**UNIT**
Reverse voltage [1]		V_R	5	V
DC forward current		I_F	25	mA
Surge forward current	1/10 duty cycle, 0.1 ms pulse width	I_{FSM}	50	mA
Power dissipation	$T_{amb} \leq 25$ °C	P_V	60	mW
Operating temperature range		T_{amb}	-40 to +85	°C
Storage temperature range		T_{stg}	-40 to +90	°C
ESD withstand voltage	HBM	V_{ESD}	2000	V
Reflow solder conditions	According Vishay specifications	T_{sld}	260	°C

Note

(1) Reverse voltage is intended for test purposes only; do not operate the device under reverse bias

OPTICAL AND ELECTRICAL CHARACTERISTICS (T_{amb} = 25 °C, unless otherwise specified) **VLMY170., YELLOW**						
PARAMETER	**TEST CONDITION**	**SYMBOL**	**MIN.**	**TYP.**	**MAX.**	**UNIT**
Luminous intensity	I_F = 2 mA	I_V	4.5	-	11.5	mcd
Dominant wavelength	I_F = 2 mA	λ_d	585.5	-	594.5	nm
Peak wavelength	I_F = 2 mA	λ_p	-	591	-	nm
Angle of half intensity	I_F = 2 mA	φ	-	± 60	-	°
Spectral line half width	I_F = 2 mA	$\Delta\lambda$	-	20	-	nm
Forward voltage	I_F = 2 mA	V_F	1.55	-	2.35	V
Reverse current	V_R = 5 V	I_R	-	-	50	µA

OPTICAL AND ELECTRICAL CHARACTERISTICS (T_{amb} = 25 °C, unless otherwise specified) **VLMO170., SOFT ORANGE**						
PARAMETER	**TEST CONDITION**	**SYMBOL**	**MIN.**	**TYP.**	**MAX.**	**UNIT**
Luminous intensity	I_F = 2 mA	I_V	7.2	-	18	mcd
Dominant wavelength	I_F = 2 mA	λ_d	597.5	-	609.5	nm
Peak wavelength	I_F = 2 mA	λ_p	-	610	-	nm
Angle of half intensity	I_F = 2 mA	φ	-	± 60	-	°
Spectral line half width	I_F = 2 mA	$\Delta\lambda$	-	20	-	nm
Forward voltage	I_F = 2 mA	V_F	1.5	-	2.2	V
Reverse current	V_R = 5 V	I_R	-	-	50	µA

OPTICAL AND ELECTRICAL CHARACTERISTICS (T_{amb} = 25 °C, unless otherwise specified) **VLMR170., RED**						
PARAMETER	**TEST CONDITION**	**SYMBOL**	**MIN.**	**TYP.**	**MAX.**	**UNIT**
Luminous intensity	I_F = 2 mA	I_V	7.2	-	18	mcd
Dominant wavelength	I_F = 2 mA	λ_d	617.5	-	633.5	nm
Peak wavelength	I_F = 2 mA	λ_p	-	632	-	nm
Angle of half intensity	I_F = 2 mA	φ	-	± 60	-	°
Spectral line half width	I_F = 2 mA	$\Delta\lambda$	-	20	-	nm
Forward voltage	I_F = 2 mA	V_F	1.55	-	2.35	V
Reverse current	V_R = 5 V	I_R	-	-	50	µA

LUMINOUS INTENSITY CLASSIFICATION AT 2 mA

GROUP	LUMINOUS INTENSITY (mcd)		ASSIGNMENT VLM...		
	MIN.	MAX.			
J1	4.5	5.6	Y1700	-	-
J2	5.6	7.2	Y1700	-	-
K1	7.2	9.0	Y1700	O1700	R1700
K2	9.0	11.5	Y1700	O1700	R1700
L1	11.5	14.5	-	O1700	R1700
L2	14.5	18.0	-	O1700	R1700

Note

- Tolerance of luminous intensity: ± 11 %

COLOR CLASSIFICATION AT 2 mA

COLOR	GROUP	DOMINANT WAVELENGTH (nm)	
		MIN.	MAX.
Yellow	D3	585.5	588.5
	D4	588.5	591.5
	D5	591.5	594.5
Soft orange	D7	597.5	600.5
	D8	600.5	603.5
	D9	603.5	606.5
	D10	606.5	609.5
Red	E4	617.5	621.5
	E5	621.5	625.5
	E6	625.5	629.5
	E7	629.5	633.5

Note

- Tolerance of dominant wavelength: ± 1 nm

FORWARD VOLTAGE CLASSIFICATION AT 2 mA

COLOR	GROUP	FORWARD VOLTAGE (V)	
		MIN.	MAX.
Yellow	00	1.55	1.75
	0	1.75	1.95
	1	1.95	2.15
	2	2.15	2.35
Soft orange	X	1.50	1.85
	Y	1.85	2.20
Red	1	1.55	1.95
	2	1.95	2.35

Note

- Tolerance of forward voltage: ± 0.05 V

Notes

- In order to ensure availability, single groups for luminous intensity, dominant wavelength, and forward voltage will not be orderable
- Only one group for luminous intensity, dominant wavelength, and forward voltage will be shipped in any one reel

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

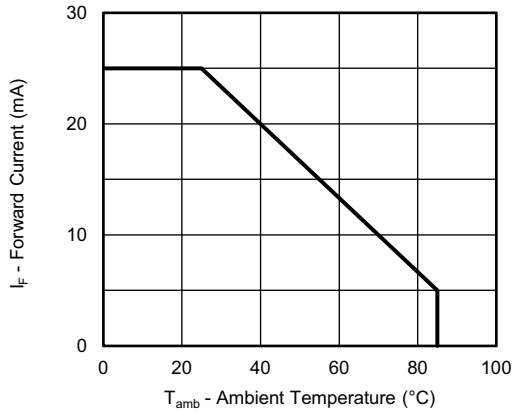


Fig. 1 - Forward Current vs. Ambient Temperature

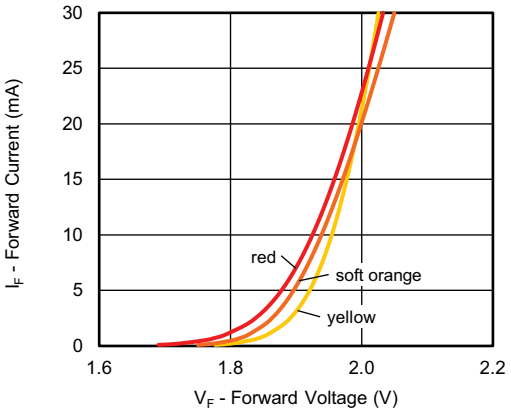


Fig. 4 - Forward Current vs. Forward Voltage

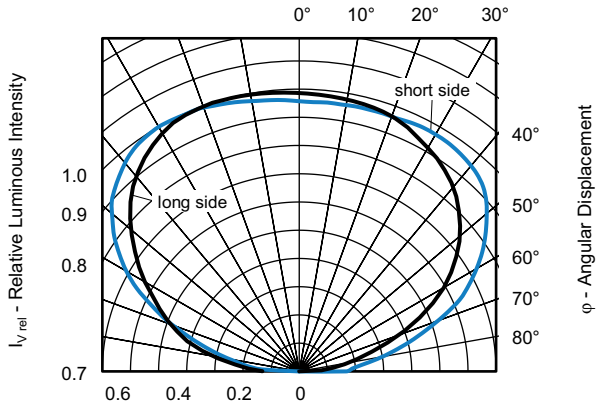


Fig. 2 - Relative Luminous Intensity vs. Angular Displacement

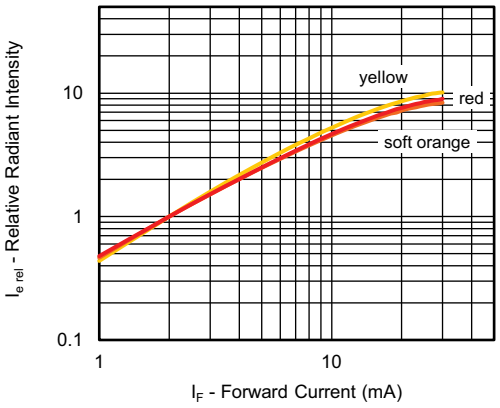


Fig. 5 - Relative Luminous Intensity vs. Forward Current

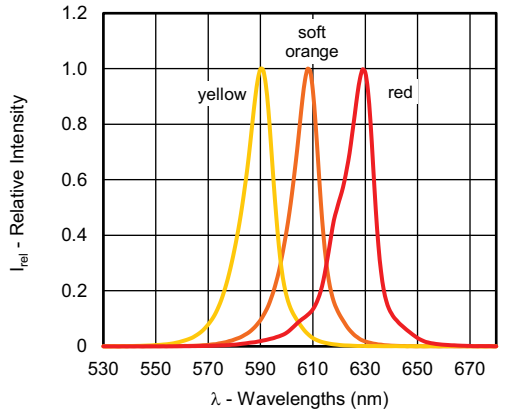


Fig. 3 - Relative Intensity vs. Wavelength

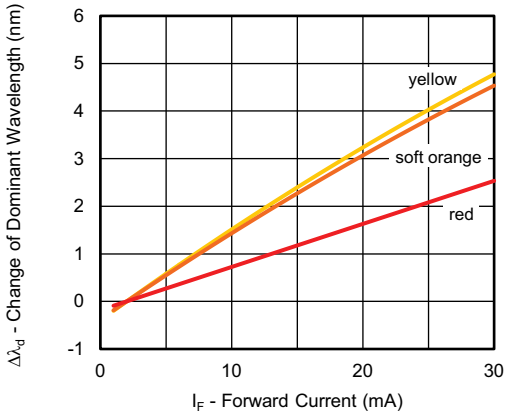


Fig. 6 - Change of Dominant Wavelength vs. Forward Current

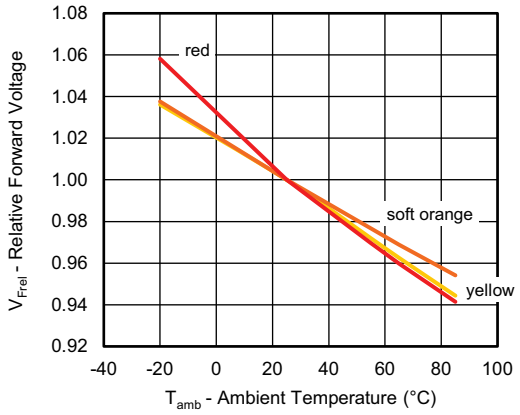


Fig. 7 - Relative Forward Voltage vs. Ambient Temperature

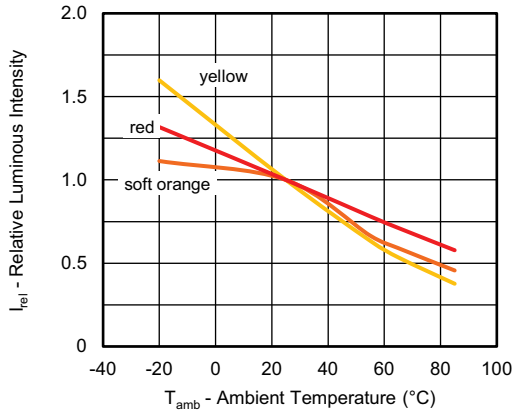


Fig. 8 - Relative Luminous Intensity vs. Ambient Temperature

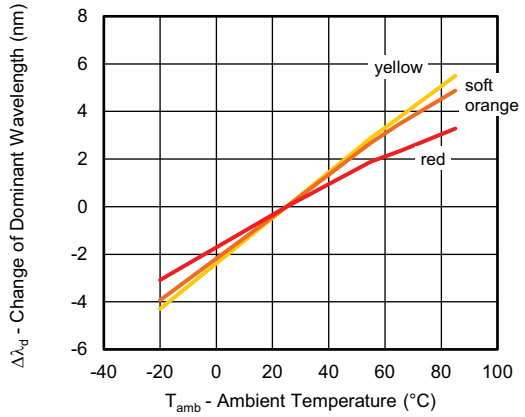
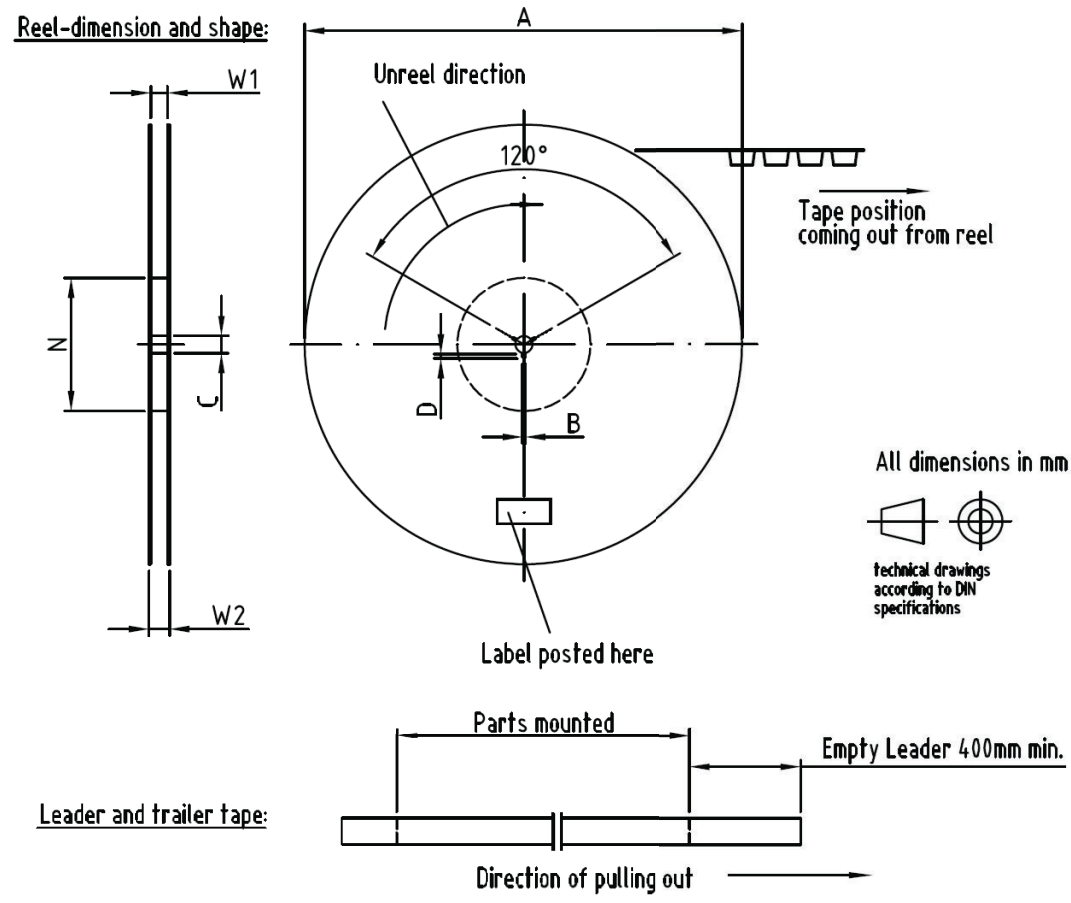


Fig. 9 - Change of Dominant Wavelength vs. Ambient Temperature

REEL DIMENSIONS in millimeters

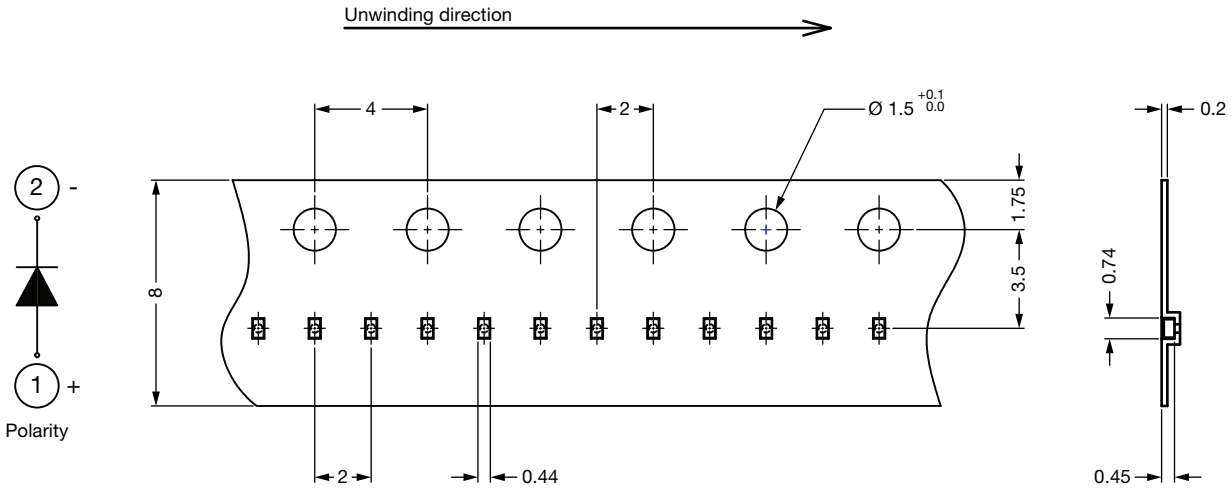


Drawing-No.: 9.800-5172.01
Issue: VK; 18.04.24

DIMENSIONS OF REEL in millimeters (according drawing reference)							
TAPING VERSION	**A**	**B**	**C**	**D**	**N**	**W1**	**W2**
GS08	Ø 180 ± 2	2 ± 0.5	Ø 13 ± 0.2	-	Ø 60 + 0 / - 1	9 + 0.3 / - 0	11.4 ± 1

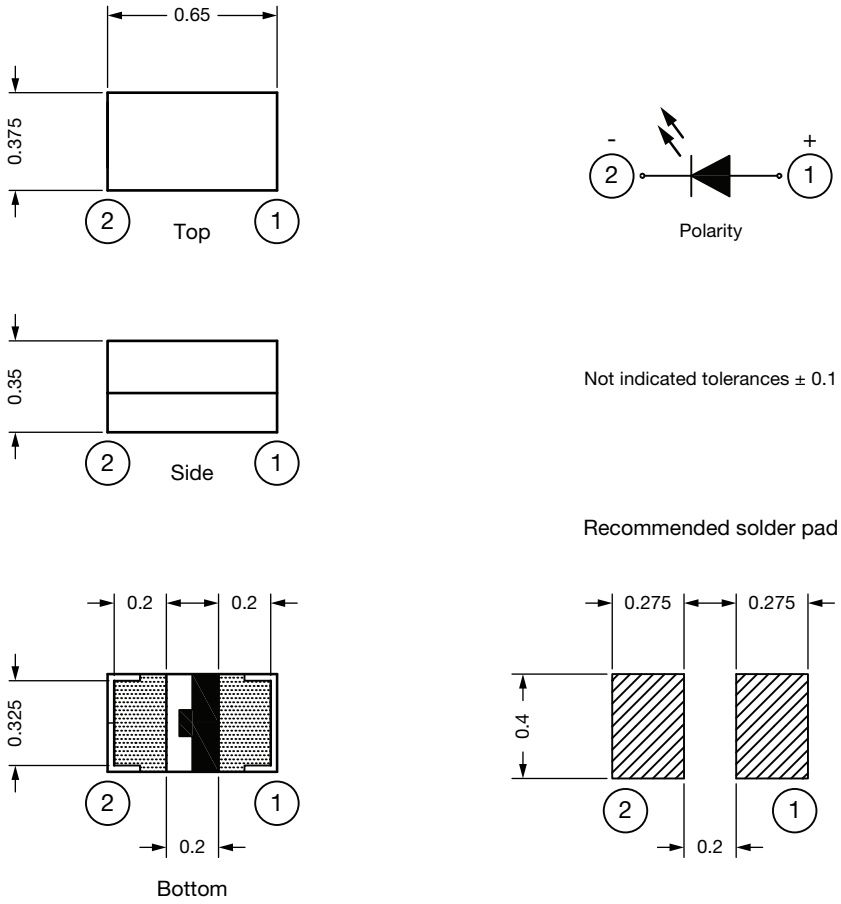
Reels come in quantity of 3000 units.

TAPE DIMENSIONS in millimeters



Not indicated tolerances ± 0.1

PACKAGE DIMENSIONS in millimeters



Not indicated tolerances ± 0.1

Note

- Suggested pad dimensions for reference only; please modify the pad dimensions based on individual need

SOLDERING PROFILE

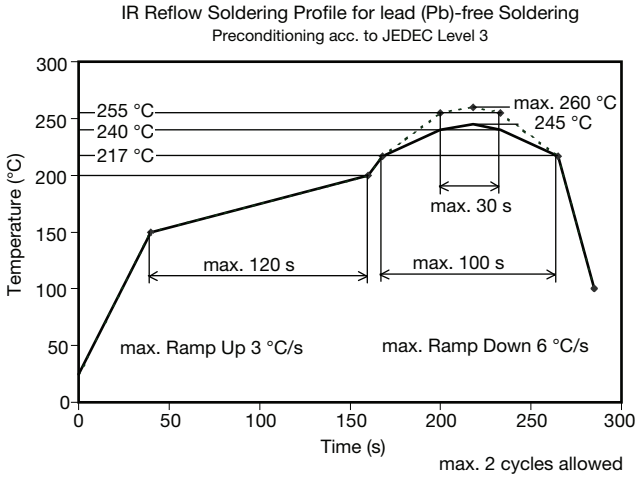
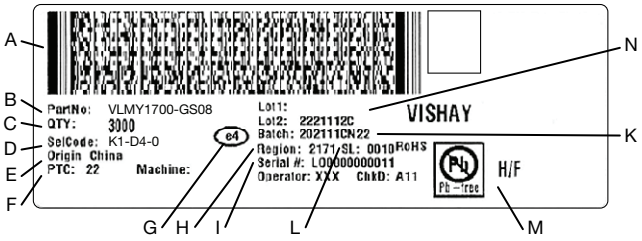


Fig. 10 - Vishay Lead (Pb)-free Reflow Soldering Profile (according to J-STD-020C)

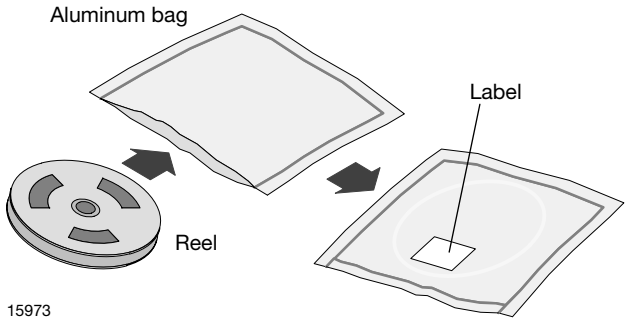
BAR CODE PRODUCT LABEL (Example only)



A. 2D barcode
B. Part No: Vishay part number
C. QTY: quantity
D. SelCode: selection bin code
E. Country of origin
F. PTC: product plant code
G. Termination finish
H. Region code
I. Serial#: serial number
K. Batch Number: year, week, country code, plant code
L. SL: storage 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 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.

A JEDEC J-STD-033 level 3 label is included on all aluminum dry bags.

Example of JEDEC J-STD-033 Level 3 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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