

Reverse Gullwing SMD LED Yellow



20857

DESCRIPTION

This device has been designed to meet the increasing demand for AlInGaP technology.

It consists of a lead frame which is embedded in a white thermoplast. The reflector inside this package is filled up with clear epoxy.

LED is mounted top down and emits through the PCB.

PRODUCT GROUP AND PACKAGE DATA

- Product group: LED
- Package: SMD reverse gullwing
- Product series: standard
- Angle of half intensity: $\pm 60^\circ$

FEATURES

- SMD LED with exceptional brightness
- Luminous intensity categorized
- Compatible with automatic placement equipment
- EIA and ICE standard package
- Compatible with IR reflow, vapor phase and wave solder processes according to CECC 00802 and J-STD-020C
- Available in 12 mm tape
- Low profile package
- Non-diffused lens: Excellent for coupling to light pipes and backlighting
- Low power consumption
- Luminous intensity ratio in one packaging unit $I_{Vmax}/I_{Vmin} > 1.6$
- Preconditioning according to JEDEC® level 2
- ESD-withstand voltage: up to 2 kV according to JESD22-A114-B
- Material categorization: for definitions of compliance please see www.vishay.com/doc299912



RoHS
COMPLIANT
HALOGEN
FREE
GREEN
(5-2008)

APPLICATIONS

- Telecommunication: indicator and backlighting in telephone and fax
- Indicator and backlight for audio and video equipment
- Indicator and backlight in office equipment
- Flat backlight for LCDs, switches, and symbols

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.		
VLRYG31P1Q2-GS08	Yellow green	45	72	112.5	20	564.5	571	576.5	20	-	2.1	2.3	20	AlInGaP on GaAs
VLRYG31Q1R2-GS08	Yellow green	71.5	112	180	20	564.5	571	576.5	20	-	2.1	2.3	20	AlInGaP on GaAs

ABSOLUTE MAXIMUM RATINGS ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified)

VLRYG31..

PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT
Reverse voltage ⁽¹⁾		V_R	12	V
DC forward current	$T_{amb} \leq 80\text{ }^{\circ}\text{C}$ (400 K/W)	I_F	30	mA
Power dissipation		P_V	75	mW
ESD-withstand voltage	HBM	V_{ESD}	2	kV
Junction temperature		T_J	+125	$^{\circ}\text{C}$
Operating temperature range		T_{amb}	-40 to +100	$^{\circ}\text{C}$
Storage temperature range		T_{stg}	-40 to +100	$^{\circ}\text{C}$
Thermal resistance junction-to-ambient	Mounted on PC board (pad size > 16 mm ²)	R_{thJA}	400	K/W

Note

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

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

VLRYG31.., YELLOW GREEN

PARAMETER	TEST CONDITION	PART	SYMBOL	MIN.	TYP.	MAX.	UNIT
Luminous intensity	$I_F = 20\text{ mA}$	VLRYG31P1Q2...	I_V	45	72	112.5	mcd
		VLRYG31Q1R2...	I_V	71.5	112	180	mcd
Luminous flux/luminous intensity			Φ_V/I_V	-	3	-	lm/mcd
Dominant wavelength	$I_F = 20\text{ mA}$		λ_d	564.5	571	576.5	nm
Peak wavelength	$I_F = 20\text{ mA}$		λ_p	-	573	-	nm
Spectral bandwidth at 50 % $I_{rel. max.}$	$I_F = 20\text{ mA}$		$\Delta\lambda_{0.5}$	-	18	-	nm
Angle of half intensity	$I_F = 20\text{ mA}$		ϕ	-	± 60	-	$^{\circ}$
Forward voltage ⁽¹⁾	$I_F = 20\text{ mA}$		V_F	-	2.1	2.3	V
Reverse current	$V_R = 12\text{ V}$		I_R	-	0.01	10	μA

Note

⁽¹⁾ Forward voltage is tested at a pulse current duration of 10 ms and an accuracy of 0.1 V

LUMINOUS INTENSITY CLASSIFICATION

GROUP	LUMINOUS INTENSITY I_V (mcd)		
	STANDARD	OPTIONAL	MIN. MAX.
P		1	45 56
		2	56 71.5
Q		1	71.5 90
		2	90 112.5
R		1	112.5 140
		2	140 180

Note

- Luminous intensity is tested at a current pulse duration of 25 ms and an accuracy of $\pm 11\%$.
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 in any one reel.
In order to ensure availability, single wavelength groups will not be orderable

COLOR CLASSIFICATION

GROUP	DOM. WAVELENGTH (nm)	
	YELLOW	
	MIN.	MAX.
W	564.5	567.5
X	567.5	570.5
Y	570.5	573.5
Z	573.5	576.5

Note

- Wavelengths are tested at a current pulse duration of 25 ms and an accuracy of $\pm 1\text{ nm}$

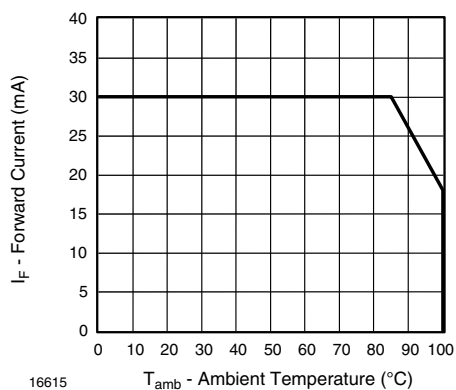
TYPICAL CHARACTERISTICS ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified)


Fig. 1 - Forward Current vs. Ambient Temperature

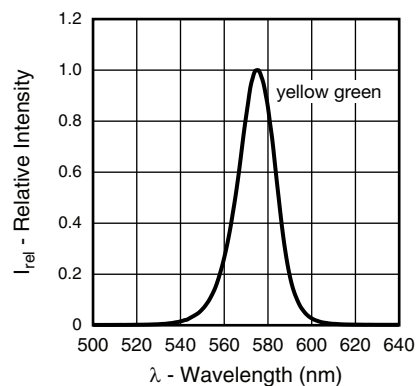


Fig. 4 - Relative Intensity vs. Wavelength

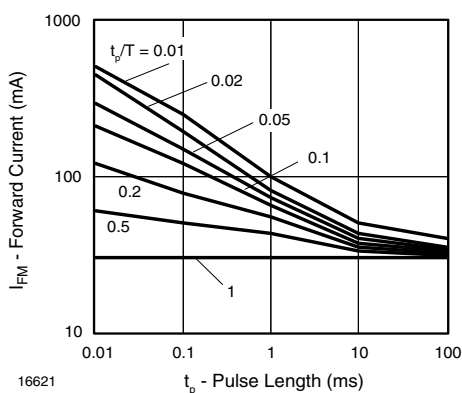


Fig. 2 - Forward Current vs. Pulse Length

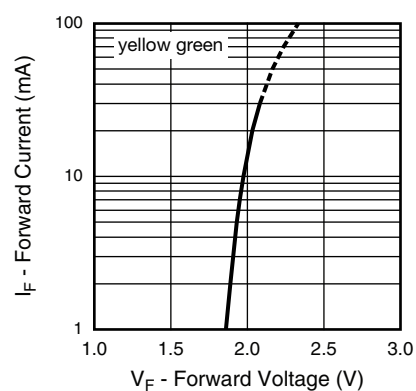


Fig. 5 - Forward Current vs. Forward Voltage

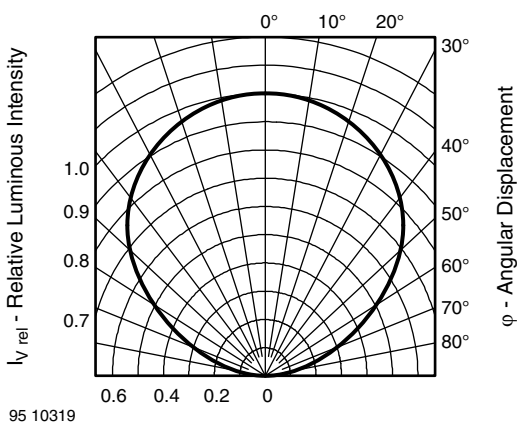


Fig. 3 - Relative Luminous Intensity vs. Angular Displacement

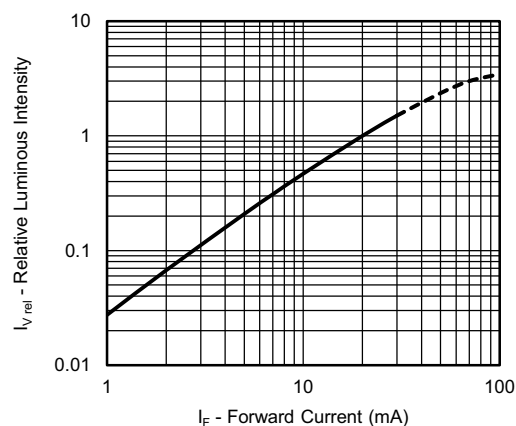


Fig. 6 - Relative Luminous Intensity vs. Forward Current

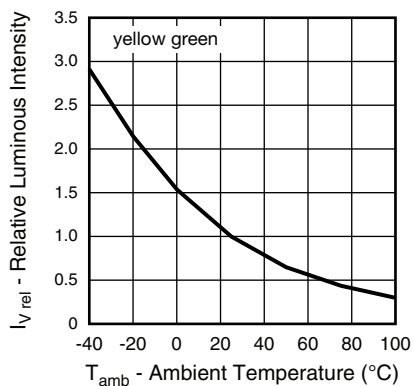


Fig. 7 - Relative Luminous Intensity vs. Ambient Temperature

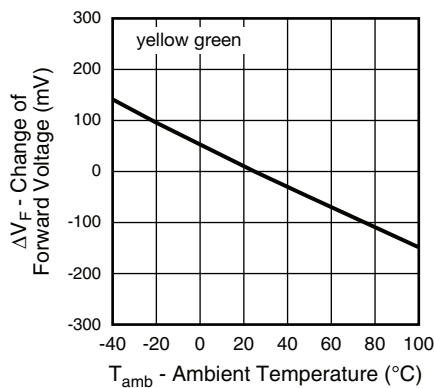


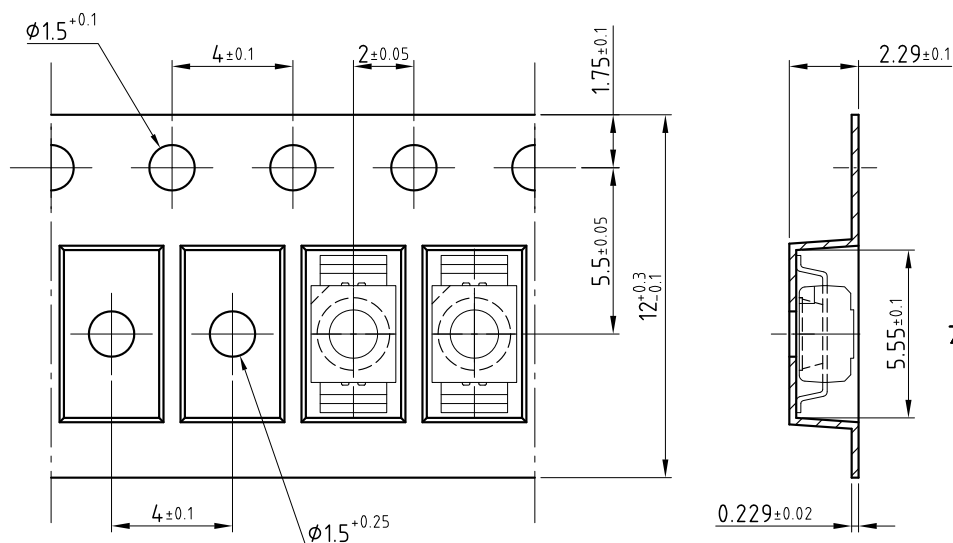
Fig. 8 - Forward Voltage vs. Ambient Temperature

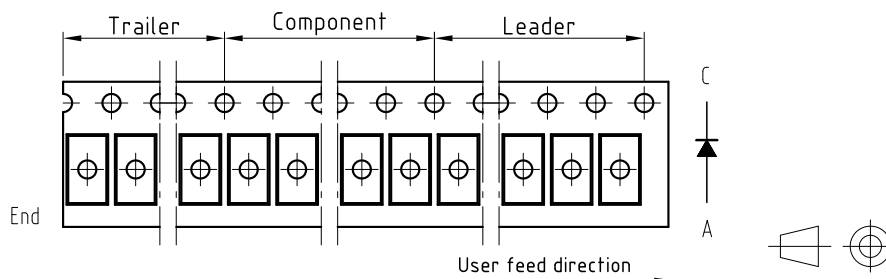
TAPING DIMENSIONS in millimeters

Taping and orientation

Reels come in quantity of 2000 units.

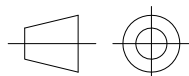
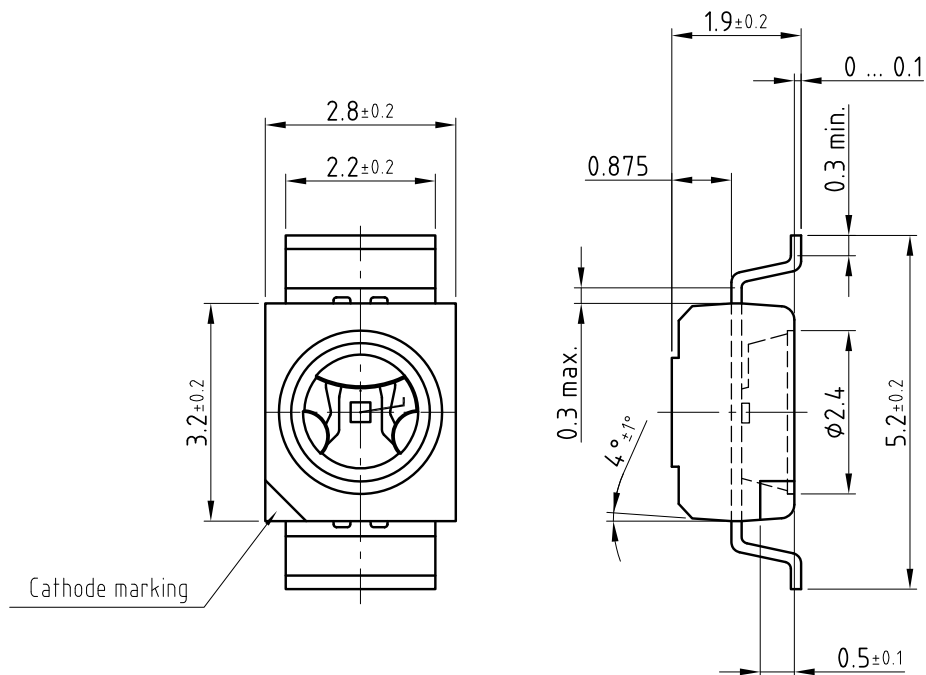
Reel diameters are 180 mm.


200 mm min. for ϕ 180 reel

480 mm min. for ϕ 180 reel

Drawing-No.: 9.700-5322.01-4
Issue: 1; 12.09.07

20858

technical drawings
according to DIN
specifications

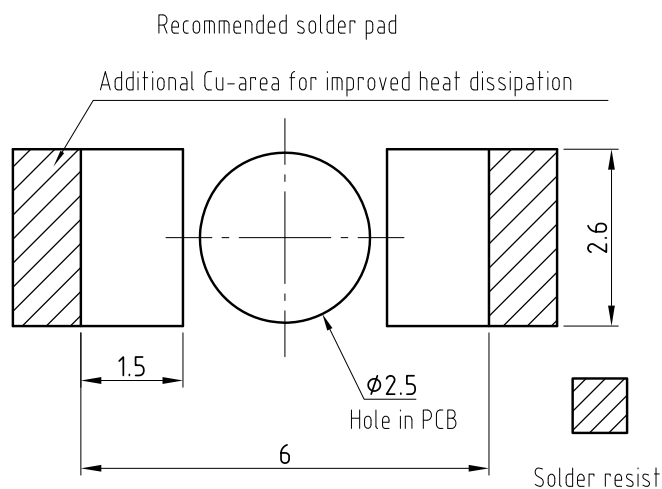
PACKAGE DIMENSIONS in millimeters


technical drawings
according to DIN
specifications

Drawing-No.: 6.541-5073.01-4

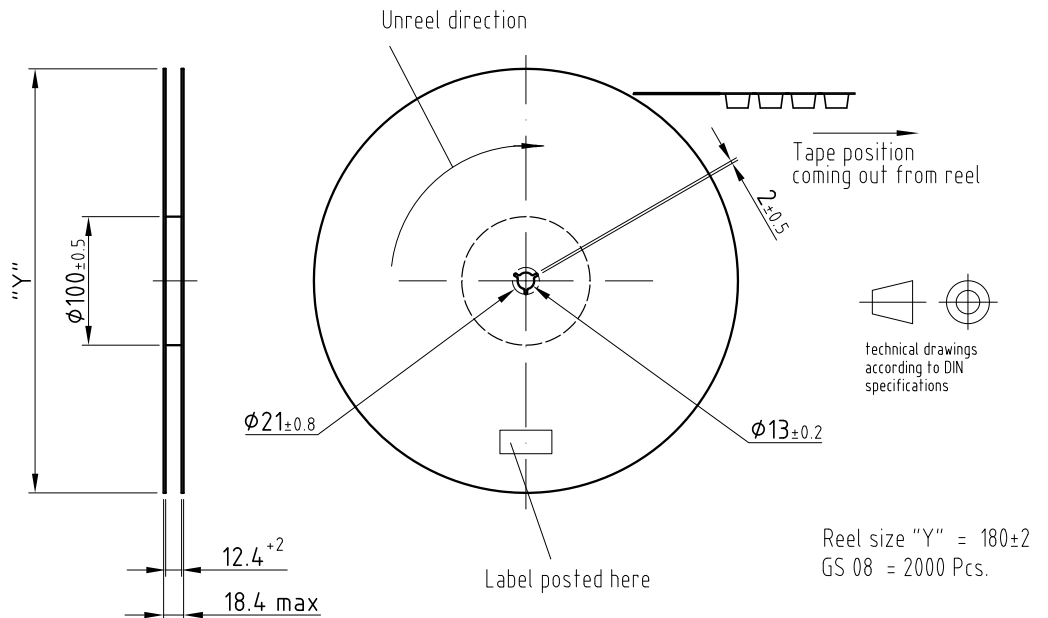
Issue: 1; 21.08.07

20859

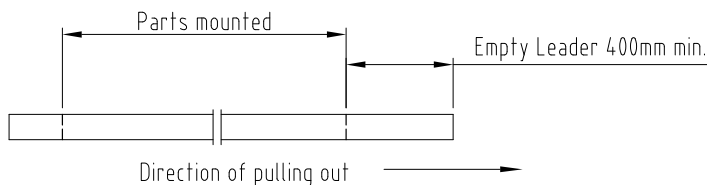


REEL DIMENSIONS in millimeters

Reel-dimension and shape:



Leader and trailer tape:



Drawing-No.: 9.800-5099.01-4

Issue: 2; 22.02.08

21067

SOLDERING PROFILE

IR Reflow Soldering Profile for Lead (Pb)-Free Soldering
Preconditioning according to JEDEC level 2

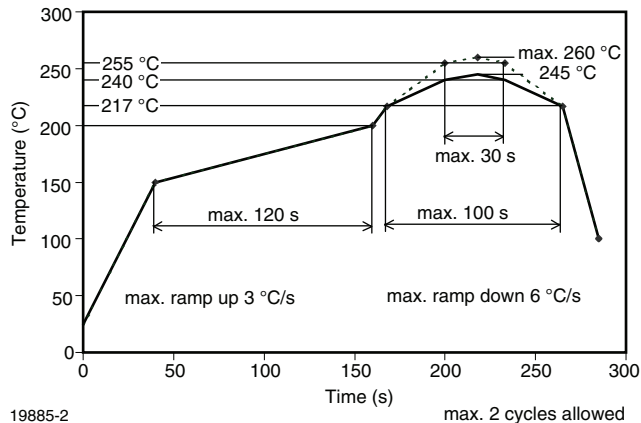


Fig. 9 - Vishay Lead (Pb)-free Reflow Soldering Profile (according to J-STD-020C)

TTW Soldering (according to CECC00802)

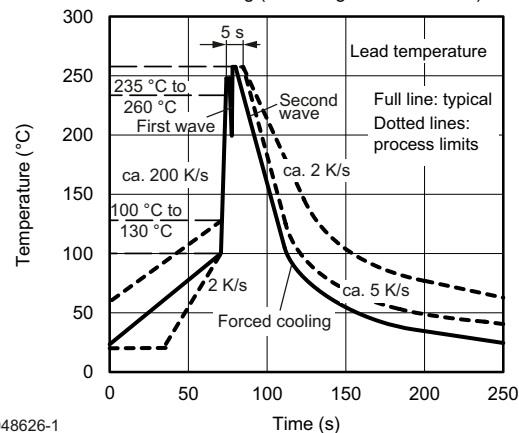
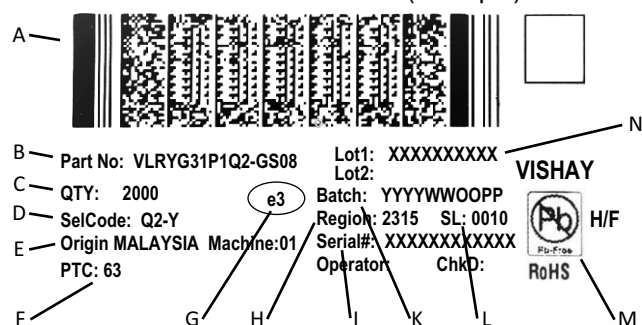


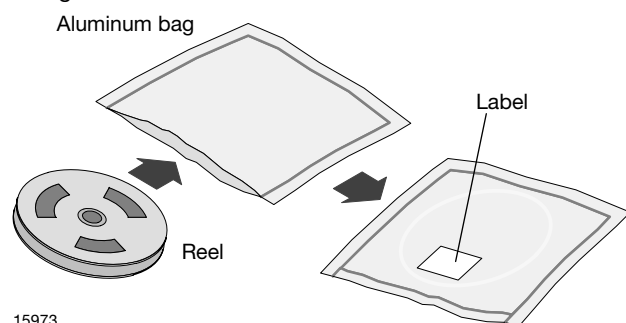
Fig. 10 - Double Wave Soldering of Opto Devices (all Packages)

BARCODE 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, 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 one year under these conditions moisture content will be too high for reflow soldering.

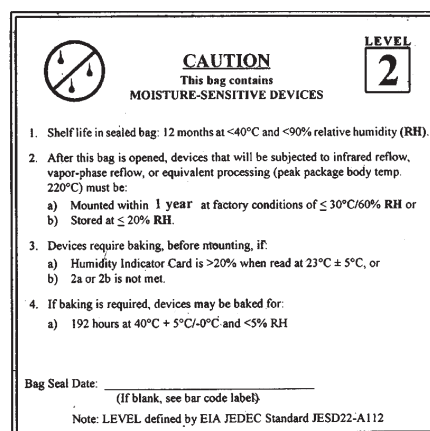
In case of moisture absorption, the devices will recover to the former condition by drying under the following condition:

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 2 label is included on all dry bags.

BAR CODE


17028

Example of JESD22-A112 Level 2 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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