

# **EIA/JEDEC ENGINEERING PUBLICATION**

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## **Symbol and Labels for Moisture- Sensitive Devices**

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### **JEP113-B**

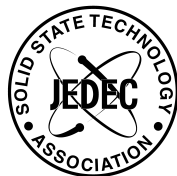
(Revision of JEP113-A)

MAY 1999

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## SYMBOL AND LABELS FOR MOISTURE-SENSITIVE DEVICES

(From JEDEC Board Ballot JCB-98-132, formulated under the cognizance of the JC-14.1 Subcommittee on Reliability Test Methods for Packaged Devices.)

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### 1 Introduction

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Certain plastic surface-mount components are subject to permanent damage due to moisture-induced failures encountered during high-temperature surface-mount processing unless appropriate precautions are observed.

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### 2 Purpose

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The purpose of this publication is to provide a distinctive symbol and labels to be used to identify those devices that require special packing and handling precautions.

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### 3 Reference documents

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J-STD-020 Moisture/Reflow Sensitivity Classification for Non-Hermetic Solid State Surface Mount Devices

J-STD-033 Standard for Handling And Shipping Of Moisture/Reflow Sensitive Surface Mount Devices

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### 4 Symbol and labels

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#### 4.1 Moisture-sensitive symbol

This symbol (see Figure 1) indicates that devices are moisture sensitive to a level from 2 to 6 and it appears on all moisture sensitive caution labels (see Figure 4).



**Figure 1 — Moisture-sensitive symbol**

## 4 Symbol and labels (cont'd)

### 4.2 Moisture-Sensitive Identification (MSID) label

This label should be on the lowest level shipping container to indicate that moisture-sensitive devices are in the container. This label is recommended to be a minimum of 3/4 inch (19 millimeters) in diameter. See Figure 2.

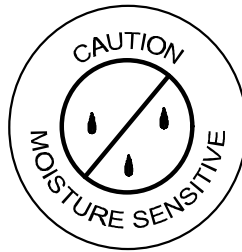


Figure 2 — MSID Label

### 4.3 Moisture-sensitive caution labels

#### 4.3.1 Level 1

This label is required only if the classification temperature is 235 °C and shall be placed on the lowest level shipping container to identify the devices as “NOT MOISTURE SENSITIVE”. See Figure 3.

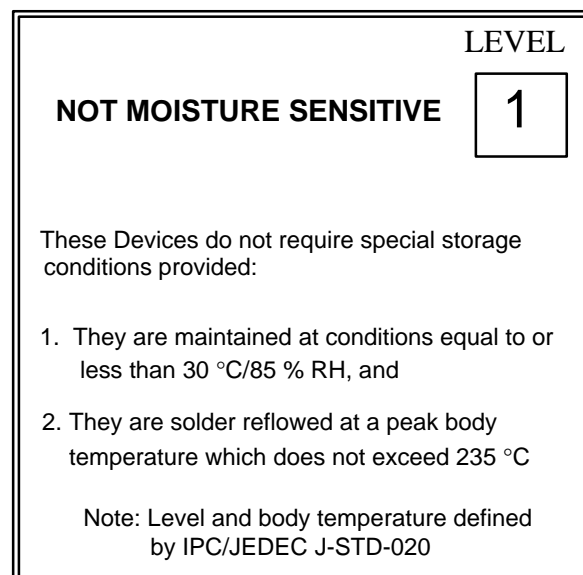


Figure 3 — Information label for level 1


## 4 Symbols and Labels (cont'd)

### 4.3.2 Levels 2-5a

The moisture-sensitive caution label shall be used for levels 2, 2a, 3, 4, 5, and 5a as defined by J-STD-020. See Figure 4. This label is required on the moisture barrier bag and will provide the following information:

- (a) Moisture classification level.
- (b) The calculated shelf life in the sealed bag
- (c) The peak package body temperature (Top surface) used for device classification as defined by J-STD-020.
- (d) The floor life of the device at 30 °C/60%RH as defined by J-STD-020.
- (e) The bag seal date utilizing “MMDDYY”, “YYWW” or equivalent format.

An acceptable alternative will be to provide the above information on the adjacent bar code label.

	<b>CAUTION</b> This bag contains <b>MOISTURE-SENSITIVE DEVICES</b>	<b>LEVEL</b> <div style="border: 1px solid black; width: 40px; height: 30px; margin: 0 auto;"></div> <small>If Blank, see adjacent bar code label</small>
1. Calculated shelf life in sealed bag: 12 months at < 40 °C and < 90% relative humidity (RH) 2. Peak package body temperature: _____ °C <small>If Blank, see adjacent bar code label</small> 3. After bag is opened, devices that will be subjected to reflow solder or other high temperature process must a) Mounted within: _____ hours of factory <small>If Blank, see adjacent bar code label</small> conditions ≤ 30 °C/60% b) stored at <10% RH 4. Devices require bake, before mounting, if: a) Humidity Indicator Card is > 10% when read at 23 ± 5 °C b) 3a or 3b not met. 5. If baking is required, devices may be baked for 48 hours at 125 ± 5 °C Note: If device containers cannot be subjected to high temperature or shorter bake times are desired, reference IPC/JEDEC J-STD-033 for bake procedure Bag Seal Date: _____ <small>If Blank, see adjacent bar code label</small> Note: Level and body temperature defined by IPC/JEDEC J-STD-020		


**Figure 4 — Moisture-sensitive caution label for levels 2-5a**

## 4 Symbols and Labels (cont'd)

### 4.3.3 Level 6

Level 6 devices must be identified as “EXTREMELY MOISTURE SENSITIVE”. See Figure 5. This label is required on the moisture barrier bag and/or the lowest level shipping container. The label must specify the peak package body temperature at which the device was classified. If the required information is not provided on the caution label then it must be on the adjacent bar code label.

Level 6, as defined by J-STD-020, does not require that devices be shipped in a moisture-barrier bag with desiccant, etc. (dry-pack), since these devices require baking by the end user before use. However, moisture-barrier bags have become a “symbol” for moisture-sensitive devices and therefore are recommended to be used with level 6 device shipments. It is also recommended that these bags be sealed even though desiccant and humidity indicator cards (HIC) may not be inside the bags.

	<b>CAUTION</b> <b><u>EXTREMELY</u></b> <b>MOISTURE SENSITIVE</b>	<div style="border: 1px solid black; padding: 2px; display: inline-block;"> <b>LEVEL</b>  <b>6</b> </div>
Peak package body temperature: _____ °C <small>If Blank, see adjacent bar code label</small>		
1. Must be baked before mounting for 48 hours. at $125 \pm 5$ °C in high-temperature device containers <small>Note: If device containers cannot be subjected to high temperature          or shorter bake times are desired, reference IPC/JEDEC J-STD-033          for bake procedure</small>		
2. After baking devices must be mounted within 6 hours at factory conditions of $\leq 30$ °C/60% RH <small>Note: Level and body temperature defined          by IPC/JEDEC J-STD-020</small>		

**Figure 5 — Moisture-sensitive caution label for level 6**

### 4.3.4 Label size

Labels are recommended to be a minimum of 3 inches (76.2 millimeters) by 3 inches (76.2 millimeters) square.

#### **4.3.5 Label colors**

The ID and caution labels shall be contrasting colors. These labels shall be legible to normal vision at a distance of three feet. Monochromatic reproduction in any color that contrasts with the background may be used. Where the choice of color is arbitrary, it is suggested that:

- 1) The ID label background be blue (Pantone #297C) with a black symbol and letters.
- 2) The caution label background be white with a blue (Process blue) symbol and letters.

Wherever possible the color red should be avoided as red suggests a personal hazard.





