

JEDEC JC-11 COMMITTEE ON MECHANICAL STANDARDIZATION
STANDARD PROCEDURES AND PRACTICES

Number: SPP-012

Subject: Pin #1 Mark and Lead-Numbering Convention for Dual-In-Line
Packages with Standard and Reverse-Bend Lead Form

Effective Date: January 01, 1993

BACKGROUND

There is an increasing need within the market place for mirror-image packages to facilitate the surface mounting of semiconductor devices on both sides of the panel. There are two manufacturing methodologies being used to meet this need. One is to externally form the leads "up" (Reverse-Bend) while the second method is to internally rewire the package in a mirror-image configuration. This practice of providing a mirror-image pinout has generated a need to redefine the Pin #1 Mark and Lead-numbering convention.

PRACTICE

There will be a mark on each subject package that will be called the Pin #1 identifier (ID) mark. This mark will be contained in an area located at one corner of the subject package. The pin-numbering convention will be counterclockwise, as viewed from above, for standard-bend product (leads bent down) and clockwise, as viewed from above, for reverse-bend (leads bent up) or mirror-image product.

APPLICATION INFORMATION

This policy consists of four parts: the nomenclature and the location of the Pin #1 identifier, the axis of rotation, and the pin-numbering convention. This policy is applicable to all Dual-In-Line parts.

Current drawings show an "Index Area"; on new drawings this area will be called "Pin #1 Mark Area" or "Index and Pin #1 Mark Area". The index area is that area of the package having a unique feature located in the vicinity of the actual pin #1. This unique feature may be either a mechanical or marked feature.

All package outline drawings will require a Pin #1 ID mark. This mark will be shown located in an area at a corner of the package body adjacent to the actual pin #1 location and on the side opposite to the seating plane. Refer to Page 3.

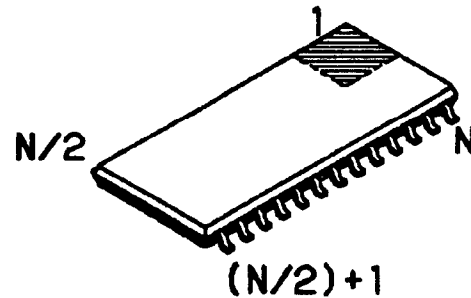
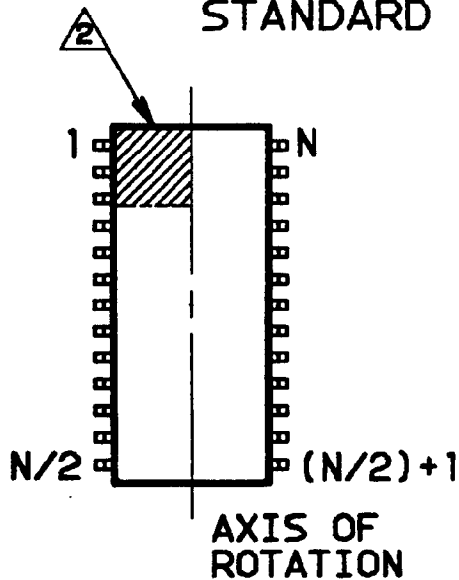
The reverse-bend part will have its leads bent upwards with regards to the conventional method of lead forming, where the leads are bent down toward the seating plan. For depicting the reverse-bend part in contact with the seating plane, the component will be rotated around an axis coincident with the body-width centerline. Refer to the figures on Page 3.

The pin-numbering convention will always be determined when looking down on the component with its leads in contact with the seating plane. For standard-bend product, Pin #1 will be located counterclockwise from the Pin #1 Mark area and the lead-numbering will be counterclockwise. For reverse-bend product, Pin #1 will be located clockwise from the Pin #1 Mark area and the lead-numbering will be clockwise. Refer to figures on Page 3.

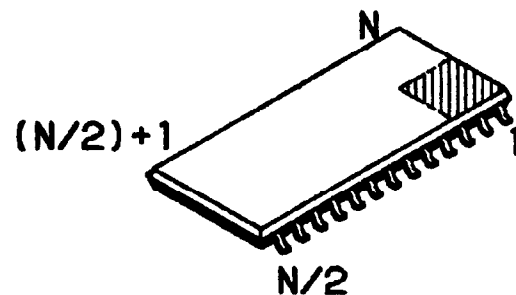
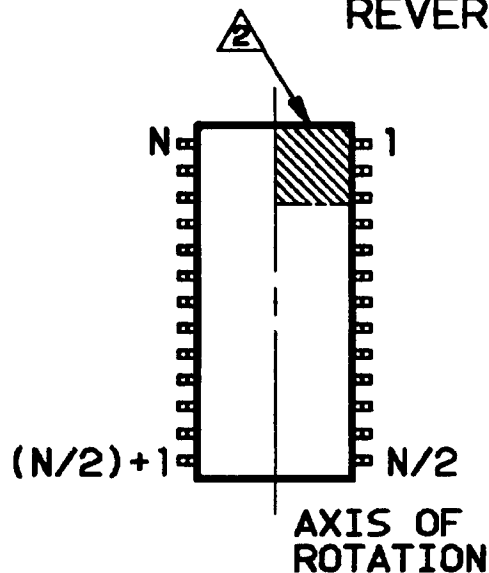
All new outline drawings for standard-bend product shall be required to follow this policy. For new outline drawings where there will be the reverse-bend option, the outline shall reflect both the standard- and reverse-bend numbering convention defined in this policy.

Existing outline drawings that allow alternative Pin #1 ID areas will not be affected, but new variations shall not be added to these outlines until such time as the optional areas are removed through the customary JC-11 balloting process. New variations of an existing outline configuration shall be required to follow the new policy, however, and shall, when approved for publication, be published under a separate outline number unless the parent outline has been brought into conformance with this policy. Reference to the parent outline will be included in this new outline publication.

STANDARD LEAD FORM



REVERSE-BEND



NOTES:

- 1 REVERSE COMPONENT ROTATED 180° WITH REGARDS TO AXIS OF ROTATION.
 2 THE LEAD 1 IDENTIFIER MUST BE LOCATED IN THE CROSS HATCHED AREA. THE SIZE AND SHAPE OF THE LEAD 1 IDENTIFIER ARE OPTIONAL AND MAY BE EITHER A MOLDED OR MARKED FEATURE.

APPLICATION NOTE:

FOR THE REVERSE-BEND COMPONENTS, THE FUNCTION OF LEADS 1 THROUGH N/2 ARE EQUIVALENT RESPECTIVELY TO LEADS 1 THROUGH N/2 ON THE STANDARD PART, AND LEADS (N/2)+1 THROUGH N ARE EQUIVALENT RESPECTIVELY TO LEADS (N/2)+1 THROUGH N ON THE STANDARD PART.

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