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MECHANICAL STANDARDIZATION OF SEMICONDUCTOR DEVICES

Part 3—GENERAL RULES FOR THE PREPARATION OF OUTLINE DRAWINGS OF INTEGRATED CIRCUITS

STANDARDS ASSOCIATION OF AUSTRALIA
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THE FOLLOWING SCIENTIFIC, INDUSTRIAL AND GOVERNMENTAL ORGANIZATIONS and departments were officially represented on the committee entrusted with the preparation of this standard:

Confederation of Australian Industry

Department of Defence

Department of Productivity

Department of Transport

Institution of Radio and Electronics Engineers Australia

Telecom Australia

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AUSTRALIAN STANDARD

MECHANICAL STANDARDIZATION OF SEMICONDUCTOR DEVICES

Part 3

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AS C379, Part 3—1978

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PREFACE

This standard was prepared by the Association's Telecommunications and Electronics Committee on Semiconductor Devices.

In its terminology, definitions and treatment of this subject, this standard is technically identical with IEC 191-3—1974, as supplemented by IEC 191-3A, and acknowledgment is made of the assistance received from this source.

Parts 1 and 2 of IEC 191 are endorsed as Parts 1 and 2 of AS C379. Such changes from the IEC publication as are necessary are of an editorial nature only.

The purpose of this Part of the standard is to extend the recommended practices for the preparation of drawings for semiconductor devices given in AS 379, Part 1, in order to provide general rules for the preparation of outline drawings of integrated circuits. Specific information is given on dimensions of integrated circuit packages, the mounting of packages into carriers and the numbering of case leads. Such drawings are intended to indicate the space which an integrated circuit package will require on a printed circuit board together with any other dimensional characteristic required to ensure mechanical interchangeability of electronically identical components.

The standard may require reference to—

AS 1100	Drawing Practice
AS 1377	Conversion Tables
AS 1967	Essential Ratings and Characteristics for Integrated Circuits
AS C366	Essential Ratings and Characteristics of Semiconductor Devices and General Principles of Measuring Methods
	Part 0—General and Terminology
	Part 1—Essential Ratings and Characteristics
AS C379	Mechanical Standardization of Semiconductor Devices
	Part 1—Preparation of Drawings
	Part 2—Dimensions
AS Z30	Interconversion of Inch and Metric Dimensions

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STANDARDS ASSOCIATION OF AUSTRALIA

Australian Standard for MECHANICAL STANDARDIZATION OF SEMICONDUCTOR DEVICES

PART 3—GENERAL RULES FOR THE PREPARATION OF OUTLINE DRAWINGS OF INTEGRATED CIRCUITS

1 SCOPE. This standard provides general rules for the preparation of outline drawings of integrated circuits for the purpose of ensuring mechanical interchangeability. Specific information is given on package dimensions, mounting and numbering of case leads.

2 TERMINOLOGY AND DEFINITIONS. For the purpose of this standard the following definitions apply.

2.1 Package outline drawing—the drawing of a package which specifies the dimensional characteristics and other closely associated features which are required for mechanical interchangeability.

2.2 Seating plane—a plane which designates the plane of contact of the package, including any stand-off, with the surface on which it will be mounted.

NOTE: This is often used as the reference plane.

2.3 Base plane—a plane drawn parallel to the seating plane through the lowest point of the package, excluding any stand-off.

2.4 Gauging plane—a plane perpendicular to the terminals, at which the position of the terminals is controlled.

NOTE: In some packages, two or more of the above-mentioned planes may coincide.

2.5 Terminal positions—one of a series of equally spaced locations on a circle or on a row which may or may not be occupied by a terminal.

2.6 Visual index—a reference feature, e.g. mark, chamfer, notch, tab, depression, which identifies the first terminal position.

2.7 Index area—the area in which a portion or all of the visual index must lie.

2.8 Mechanical index—a feature, e.g. tab, notch, flat, groove, which provides orientation during automatic handling.

Where possible, the mechanical index should coincide with the visual index.

2.9 Index centre line or datum line—a centre line through a visual index feature, e.g. tab, which is used to orientate the index with the first terminal position.

2.10 Grid reference corner—the first terminal position (viewed from the free end of the terminals) in an alphanumeric grid system.

2.11 Terminal cycle—a series of equally spaced terminal positions which are located on a circle.

3 REFERENCING OF PACKAGES. Cross-referencing or packages is achieved by using the examples shown in the following figures Appendix B:

(a) Form 1 (axial)—Figs B1, B2, B3, B4, B5 and B6.

(b) Form 2 (axial)—Figs B7, B8 and B9.

(c) Form 3 (axial)—Figs B10, B11 and B12.

(d) Form 4 (peripheral)—Figs B13, B14, B15, B16(a) and B16(b).

(e) Form 5 (special)—(see Note).

NOTE: This form, for which there are no examples given, refers to figures which are combinations of axial and peripheral or which, for other reasons, do not fit in the axial or peripheral categories, e.g. leadless packages.

4 TERMINAL IDENTIFICATION.

4.1 Numbering of Terminals. Where possible, device terminals should be identified according to Clauses 4.2 to 4.6, as appropriate. Appendix B should be consulted for examples.

4.2 Devices with Terminals Disposed in Linear Array. The terminals are considered as being viewed from their free ends. The terminal nearest the visual index shall be numbered as No 1, and the other terminals shall be numbered sequentially from terminal No 1. (See Fig. B2.)

4.3 Devices with Terminals Disposed on a Single Circular Array. The terminals are considered as being viewed from their free ends. The terminal, the centre of which is past the datum line of the visual index, shall be numbered as No 1, and the other terminals shall be numbered sequentially in a clockwise direction from terminal No 1. (See Figs B10 and B11.)

Where omission of one terminal in an otherwise equally spaced array identifies the datum line, the position of the omitted terminal should not be numbered; but in a fixed modular circuit array, any location of omitted terminal which does not define a datum line shall be numbered.

4.4 Devices with Terminals Disposed on Multiple Circular Arrays. The rules given in Clause 4.3 shall be applied as follows:

(a) The terminals located on the pitch circle of the largest diameter shall be numbered A1, A2, A3, etc.

(b) The terminals located on the other pitch circles of decreasing diameter shall be numbered progressively B1, B2, B3, etc, C1, C2, C3, etc. (See Fig. B12.)

4.5 Devices with Terminals Disposed on a Square or Rectangular Periphery. Visual identification of the top of the device should be provided. The means of identification of terminal position No 1 should also be provided. These identifications may be combined.

Each terminal shall be identified by the number of its position. Terminals may not necessarily be present in all the numbered positions, but those present shall have the number of the position.