(Identical to IEC 749-1984)

AS 2547.3.1—1986
UDC 621.382.2/.3:621.3.08

Australian Standard®
2547.3.1—1986

SEMICONDUCTOR DEVICES—
Part 3.1—MECHANICAL AND CLIMATIC TEST METHODS

STANDARDS ASSOCIATION OF AUSTRALIA
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This Australian standard was prepared by Committee TE/12, Semiconductors and Devices. It was approved on behalf of the Council of the Standards Association of Australia on 24 April 1986 and published on 4 August 1986.

The following interests are represented on Committee TE/12:

Department of Defence

Department of Industry, Technology and Commerce

Confederation of Australian Industry

Institution of Radio and Electronics Engineers, Australia

Telecom Australia

AUSTRALIAN STANDARD

SEMICONDUCTOR DEVICES—
Part 3.1
MECHANICAL AND CLIMATIC TEST METHODS

AS 25[illegible] 3.1—1986

First published as AS C366.5 - 1978

First published as AS2547.3.1 - 1986

PUBLISHED BY THE STANDARDS ASSOCIATION OF AUSTRALIA
STANDARDS HOUSE, 80 ARTHUR ST, NORTH SYDNEY, N.S.W.

ISBN 0 7262 4251 9

PREFACE

This standard was prepared by the Association's Committee on Semiconductors and Devices. It is reproduced from IEC 749—1984 and is one of the standards prepared by IEC/TC 47, Semiconductor Devices.

This standard is one of a series of standards published under the generic specification AS 2547. This standard supersedes:

- the existing AS 2547 series (published in 1982 and 1983 and identical to equivalent parts of IEC 147 published between 1966 and 1981);
- AS C366, Part 4—1978 and Part 5—1978 (equivalent to IEC 147-4, IEC 147-5 and IEC 147-5A);
- AS C367 (endorsement of IEC 148—1969);
- AS 1967 (identical to IEC 147-1D and 1E).

The purpose of IEC 747 is to reorganize into a device oriented publication, the material originally presented in the IEC 147* series and IEC 148† on semiconductor devices and letter symbols representing them is now republished as follows:

(a) Specific requirements for integrated circuits—now IEC 748.

(b) Mechanical and climatic test methods—now IEC 749.

It was in view of the above reorganization that Committee TE/12 agreed to integrate the entire series into one series of Australian standards using the generic designation AS 2547. The relationship with the three IEC standards is as follows:

(i) Part 1.1 onwards—identical with the IEC 747 series.

(ii) Part 2.1 onwards—identical with the IEC 748 series.

(iii) Part 3.1—identical with IEC 749.

For the purpose of this Australian standard and all other standards in this AS 2547 series, the text of the reproduced IEC Publications should be modified as follows:

A. *Terminology.* The words 'Australian Standard' should replace the words 'IEC Publication' wherever they appear.

B. *Cross-references.* The reference to IEC Publications should be replaced by references to the appropriate Australian Standards as follows:

Reference to IEC Publications		*Appropriate Australian Standard*	
IEC 27	Letter symbols to be used in electrical technology	AS 1046	Letter Symbols for Use in Electrotechnology
IEC 50	International Electrotechnical Vocabulary	AS 1852	International Electrotechnical Vocabulary
IEC 191	Mechanical standardization of semiconductor devices	AS C379	Mechanical Standardization of Semiconductor Devices
IEC 319	Presentation of reliability data on electronic components	AS 2350	Presentation of Reliability Data on Electronic and Similar Components
IEC 747	Semiconductor devices. Discrete devices and integrated circuits	AS 2547	Semiconductor Devices
747.1	Part 1—General	1.1	Discrete Devices—General
747.2	Part 2—Rectifier diodes	1.2	Discrete Devices—Rectifier Diodes
747.3	Signal (including switching) and regulator diodes	1.3	Discrete Devices—Signal (Including Switching) and Regulator Diodes
747.4	R.F. Diodes	1.4	Discrete Devices—R.F. Diodes
747.5	Optoelectronic devices	1.5	Discrete Devices—Optoelectronic Devices
747.6	Thyristors	1.6	Discrete Devices—Thyristors

* IEC 147, Essential ratings and characteristics of semiconductor devices and general principles of measuring methods.

† IEC 148, Letter symbols for semiconductor devices and integrated microcircuits.

747.7	Bipolar transistors	1.7	Discrete Devices—Bipolar Transistors
747.8	Field-effect transistors	1.8	Discrete Devices—Field-effect Transistors
747.9	Miscellaneous devices	1.9	Discrete Devices—Miscellaneous Devices
747.10	Generic specification for discrete devices and integrated circuits (QC 700 000)	1.10	Generic Specification for Discrete Devices and Integrated Circuits (QC 700 000)
747.11	Sectional specification for discrete devices (QC 750 000)	1.11	Sectional Specification for Discrete Devices (QC 750 000)
IEC 748	Semiconductor Devices. Integrated circuits	AS 2547	Semiconductor Devices.
IEC 748.1	General	2.1	Integrated Circuits—General
IEC 748.2	Digital integrated circuits	2.2	Integrated Circuits—Digital
IEC 748.3	Analogue integrated circuits	2.3	Integrated Circuits—Analogue
IEC 748.4	Interface integrated circuits	2.4	Integrated Circuits—Interface
IEC 749	Semiconductor devices. Mechanical and climatic test methods	3.1	Mechanical and Climatic Test Methods

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STANDARDS ASSOCIATION OF AUSTRALIA

Australian Standard
for
SEMICONDUCTOR DEVICES

PART 3.1—MECHANICAL AND CLIMATIC TEST METHODS

CHAPTER I: GENERAL

1. Scope and purpose

This standard lists test methods applicable to semiconductor devices (discrete devices and integrated circuits) from which a selection may be made. However, additional test methods may be required for non-cavity devices.

Note. — A non-cavity device is a device in which enclosing or encapsulating material is in intimate contact with all exposed surfaces of the active element, and no void space is included in the device design.

This standard has taken into account, wherever possible, I E C Publication 68: Basic Environmental Testing Procedures.

2. Object

To establish uniform preferred test methods with preferred values for stress levels for judging the environmental properties of semiconductor devices.

In case of contradiction between this standard and a relevant specification, the latter shall govern.

3. Terms, definitions and letter symbols

Reference is made to I E C Publications 68: Basic Environmental Testing Procedures; 747: Semiconductor Devices — Discrete Devices and Integrated Circuits; and 748: Semiconductor Devices — Integrated Circuits.

4. Standard atmospheric conditions

Reference: I E C Publication 68-1, fifth edition (1982), Part 1: General and Guidance.

Unless otherwise specified, all tests and recoveries shall be carried out under standard atmospheric conditions for testing, as defined in I E C Publication 68-1, Sub-clause 5.3:

temperature:	15 °C to 35 °C;
relative humidity:	45% to 75%, where appropriate;
air pressure:	86 kPa to 106 kPa (860 mbar to 1060 mbar).