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ESSENTIAL RATINGS AND CHARACTERISTICS OF SEMICONDUCTOR DEVICES AND GENERAL PRINCIPLES OF MEASURING METHODS

Part 4: ACCEPTANCE AND RELIABILITY

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

Australian Broadcasting Commission

Confederation of Australian Industry

Department of Defence

Department of Productivity

Department of Transport

Institution of Engineers Australia

Institution of Radio and Electronics Engineers, Australia

Telecom Australia

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To keep abreast of progress in industry, Australian standards are regularly reviewed. Suggestions for improvements to published standards, addressed to the head office of the Association are welcomed.

AUSTRALIAN STANDARD

ESSENTIAL RATINGS AND CHARACTERISTICS OF SEMICONDUCTOR DEVICES AND GENERAL PRINCIPLES OF MEASURING METHODS

Part 4

ACCEPTANCE AND RELIABILITY

AS C366, Part 4—1978

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PREFACE

This standard is one part of a series being 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 147-4—1977, and acknowledgement is made of the assistance received from this source. Such changes as have been made are of an editorial nature only.

The purpose of the standard is to specify criteria and conditions which will permit the comparison of data relative to acceptance and reliability testing of semiconductor devices and integrated circuits. The standard specifies conditions for electrical tests, for different temperature conditions and different durations. Failure-defining characteristics and failure criteria are specified for each device category.

Presentation of reliability information from tests on semiconductor devices is not, however, covered by this standard.

This standard may require reference to:

AS C366	Essential Ratings and Characteristics of Semiconductor Devices and General Principles of Measuring Methods Part 0—General and Terminology
AS 1211	Reliability of Electronic Equipment and Components Part 1—Terminology
AS 1852	International Electrotechnical Vocabulary
AS	Presentation of Reliability Data on Electronic Components or Parts*

*In course of preparation.

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STANDARDS ASSOCIATION OF AUSTRALIA

Australian Standard for ESSENTIAL RATINGS AND CHARACTERISTICS OF SEMICONDUCTOR DEVICES AND GENERAL PRINCIPLES OF MEASURING METHODS

Part 4—ACCEPTANCE AND RELIABILITY

SECTION 1. SCOPE, DEFINITIONS AND GENERAL REQUIREMENTS

1.1 SCOPE. This Part of the standard specifies conditions for electrical tests, for different temperature conditions and for different durations. Failure-defining characteristics and failure criteria are specified for each device category. This permits the comparison of data relative to acceptance testing and reliability testing of semiconductor devices and integrated circuits.

1.2 DEFINITIONS. In general, the terminology used in this Part is defined in AS C366, Part 0, or AS 1211, Part 1, and complies with AS 1852.†

For the purpose of this Part the following definitions apply:

1.2.1 Semiconductor—a conducting material with resistivity usually in the range between metals and insulators in which the electrical charge carrier concentration increases with increasing temperature over a specific temperature range.

1.2.2 Semiconductor device—an electronic device, the essential characteristics of which are due to the flow of charge carriers within a semiconductor.

1.2.3 Integrated circuit—a circuit in which a number of circuit elements are inseparably associated and electrically interconnected such that for testing, sale and maintenance, it is considered indivisible.

1.2.4 Digital integrated circuit—an integrated circuit which is designed to operate by means of digital signals at the inputs and the outputs.

1.2.5 Digital signal—a physical quantity having a value within a finite number of non-overlapping ranges of values.

NOTES:

1. The physical quantity may be voltage, current, impedance etc.
2. For convenience each range of values can be represented by a single value, e.g. the nominal value.

1.3 GENERAL REQUIREMENTS. Clauses 2.1 and 3.1 are applicable to all device categories usually covered by the terms 'semiconductor device' and 'digital integrated circuit' as defined in Clause 1.2.

Presentation of reliability information from tests on semiconductor devices is not covered by this standard. For information on relevant methods see AS .....*

*AS ...., Presentation of Reliability Data on Electronic Components or Parts (in course of preparation).