

ictor

SUPERSEDED BY

AS 2547 series 1986+

see also AS C 766

Technically identical to
IEC Pub 147-24-1979

AS 2547.2L—1982
UDC 621.382.2/3:621.3.08

↑
1.3

AS 2547.2L

Australian Standard 2547.2L—1982

**ESSENTIAL RATINGS AND
CHARACTERISTICS OF SEMI-
CONDUCTOR DEVICES AND GENERAL
PRINCIPLES OF MEASURING METHODS**

**Part 2L—GENERAL PRINCIPLES
OF MEASURING
METHODS—DIGITAL
INTEGRATED
CIRCUITS**



STANDARDS ASSOCIATION OF AUSTRALIA
Incorporated by Royal Charter



Represented on the committee which was responsible for the preparation of this standard were the following:

Confederation of Australian Industry
Department of Defence
Department of Science and Technology
Department of Transport
Institution of Radio and Electronics Engineers, Australia
Telecom Australia

This standard, prepared by Committee TE/12, Semiconductors and Devices, was approved on behalf of the Council of the Standards Association of Australia on 21 April 1981, and was published on 3 May 1982.

To keep abreast of progress in industry, Australian standards are subject to continuous review and are kept up-to-date by the issue of amendments or new editions as necessary. It is important therefore that standards users ensure that their standards are up-to-date. Full details of all SAA publications will be found in the Annual List of Australian Standards; these details are supplemented by listings in the SAA monthly journal 'The Australian Standard'. Information on the Annual List and 'The Australian Standard' may be obtained from any sales office of the Association, where details are also available of the current status of individual standards. Suggestions for improvements to published standards, addressed to the head office of the Association, are welcomed.

AUSTRALIAN STANDARD

**ESSENTIAL RATINGS AND
CHARACTERISTICS OF SEMI-
CONDUCTOR DEVICES AND GENERAL
PRINCIPLES OF MEASURING METHODS**

**Part 2L
GENERAL PRINCIPLES OF
MEASURING METHODS—
DIGITAL INTEGRATED
CIRCUITS**

AS 2547.2L—1982

First published1982

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

ISBN 0 7262 2525 8



20 APR 1982

PREFACE

This standard is one of a series being prepared by the Association's Committee on Semiconductor Devices.

This standard is technically identical with and has been substantially reproduced from Chapter VI of IEC 147-2 (issued as IEC 147-2L). Acknowledgement is accordingly made to the International Electrotechnical Commission for this assistance.

The purpose of the standard is to describe static and dynamic measuring methods for digital integrated circuits. The dynamic measurements on digital circuits include the measurement of total current drawn from power supplies, power supplied through the clock, input and output impedance, times characterized by the circuit, and switching frequency of a sequential circuit. A list of the test methods is given in Appendix A; the methods are numbered according to a 'key' given in Appendix B, and the relevant method number is given in a 'box' after the title of each method.

This standard forms part of the series originally issued under the reference 'AS C366'. Some of these standards are endorsements of parts of IEC 147 and others have been prepared and published as Australian standards. The intention is to review those standards and progressively re-issue them under the reference 'AS 2547', retaining wherever practicable the IEC text and format. A related standard is AS 1967, Essential Ratings and Characteristics for Integrated Circuits.

Cross-reference: The reference to Publication 147-2 herein should be replaced by reference to AS C366, Part 2 (in course of being redesignated as AS 2547.2).

CONTENTS

	<i>Page</i>
SECTION ONE. STATIC MEASUREMENTS	
1 Static Characteristics of Digital Circuits	3
SECTION TWO. DYNAMIC MEASUREMENTS	
1 Total Current Drawn from the Power Supplies under Dynamic Conditions	4
2 Power Supplied through the Clock Line	5
3 Input and Output Impedances....	8
4 Times Characterizing the Circuit	14
5 Switching Frequency of a Sequential Circuit	26
APPENDICES	
A Measuring Methods for Digital Circuits	28
B Key to the Numbering of Measuring Methods....	29

© Copyright — STANDARDS ASSOCIATION OF AUSTRALIA 1982

Users of standards are reminded that copyright subsists in all SAA publications. No part of this publication may be reproduced, stored in a retrieval system in any form or transmitted by any means without prior permission in writing of the Standards Association of Australia.

STANDARDS ASSOCIATION OF AUSTRALIA

Australian Standard

for

ESSENTIAL RATINGS AND CHARACTERISTICS OF SEMICONDUCTOR DEVICES
AND GENERAL PRINCIPLES OF MEASURING METHODSPART 2L—GENERAL PRINCIPLES OF MEASURING METHODS—DIGITAL
INTEGRATED CIRCUITS

SECTION ONE — STATIC MEASUREMENTS

1. **Static characteristics of digital circuits**1.1 *General requirements*

The general requirements of Publication 147-2 apply, unless otherwise stated.

1.1.1 For each measurement, supply voltages or currents shall be within $\pm 1\%$ of the specified values, unless otherwise stated.

1.1.2 The ambient temperature of the device being measured shall be within $\pm 2^\circ\text{C}$ of the specified value, unless otherwise stated.

1.1.3 Where no electrical conditions are specified for a given terminal, it shall be left unconnected.

1.1.4 The reference point(s) for voltage measurements shall be stated.

Note. — The reference point for signal voltage measurements is not necessarily the same as that for supply voltages.

1.1.5 Where a device has internal memory or hysteresis, a pre-setting cycle may be required before each measurement.

1.1.6 The device shall be operated at a set of conditions within the range of "recommended operating conditions", unless otherwise stated.

1.1.7 Prior to carrying out the following measurements, it shall first be established that, for each combination of inputs, the output conforms to the details given in the relevant function table, except where this function table is verified by the measurements themselves.

1.2 *Specified conditions for static characteristics*1.2.1 *Measurement of output voltage or current*

The following conditions shall be stated (see note):

- a) ambient or reference-point temperature;
- b) values of supply voltages or currents;
- c) conditions at each input terminal;
- d) conditions at the output terminal selected for the measurement;
- e) conditions at all other output terminals.

Note. — The measuring conditions for a "low" output can be different from the measuring conditions for a "high" output.