**AS 1102, Part 13—1979**
**UDC 003.62:621.3**

# Australian Standard 1102, Part 13—1979



## GRAPHICAL SYMBOLS FOR ELECTROTECHNOLOGY

# MICROWAVE TECHNOLOGY

**STANDARDS ASSOCIATION OF AUSTRALIA**
*Incorporated by Royal Charter*

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

Australian Electrical and Electronic Manufacturers Association

Australian Institute of Refrigeration, Air Conditioning and Heating Inc.

Confederation of Australian Industry

Department of Construction

Department of Defence

Department of Industry and Commerce

Department of Transport

Department of Productivity

Electricity Supply Association of Australia

Institute of Draftsmen, Australia

Institution of Radio and Electronics Engineers, Australia

Melbourne and Metropolitan Board of Works

Railways of Australia Committee

Queensland Chamber of Mines

The Technical Press

Telecom Australia

---

This standard, prepared by the Telecommunications and Electronics Committee TE/13, Joint TE/EL Committee on Symbols, Units and Quantities of Electrotechnology, was approved on behalf of the Council of the Standards Association of Australia on 6 December 1978, and was published on 1 July 1979.

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.

---

*This standard was issued in draft form for public review as DR 77186.*

AUSTRALIAN STANDARD

# GRAPHICAL SYMBOLS FOR ELECTROTECHNOLOGY

# Part 13 MICROWAVE TECHNOLOGY

## AS 1102, Part 13—1979

First published .....1979

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

ISBN 0 7262 1665 8

# PREFACE

This standard is one of a series being prepared by the Association's Committee on Symbols, Units and Quantities for Electrotechnology under the authority of both the Telecommunications and Electronics, and the Electrical Standards Board.

In its terminology, format and general treatment of the subject, this standard is technically identical with the recommendations of publications 117-11 and 117-11A of the International Electrotechnical Commission (IEC), and acknowledgement is made of the assistance received therefrom.

This Part is only one in a series forming a comprehensive standard on graphical symbols for use generally in the field of electrotechnology. The purpose of the Part is to specify symbols representing microwave elements and devices suitable for use in circuit diagrams. Symbols for various elements and functions may be combined to further describe the microwave devices for which general symbols are given. Examples illustrate certain of these particular applications, and the method to be followed for using symbols in diagrams and combining them with symbols specified in other Parts of this standard.

Some qualifying symbols and letter symbols necessary to identify the device are given in the standard but for a full understanding of the methods adopted reference is required to the following Australian standards:

| | |
|---|---|
| AS 1100 | Drawing Practice<br>Part 6—Letters, Numerals and Symbols |
| AS 1102 | Graphical Symbols for Electrotechnology<br>Part 1—General, Qualifying and Supplementary Symbols<br>Part 2—Conductors and Connecting Devices<br>Part 4—Electron Tubes and Rectifiers<br>Part 10—Signal Transmission Symbols |
| AS 1103 | Diagrams, Charts and Tables for Electrotechnology<br>Part 1—Definitions and Classifications<br>Part 3—Basic Principles for the Presentation of Elements of Electrical Diagrams<br>Part 4—Guiding Principles for the Presentation of Circuit Diagrams |
| AS 1046 | Letter Symbols for Use in Electrotechnology<br>Part 1—General<br>Part 2—Telecommunications and Electronics |

# CONTENTS

STANDARDS ASSOCIATION OF AUSTRALIA

# Australian Standard
# for
# GRAPHICAL SYMBOLS FOR ELECTROTECHNOLOGY

## PART 13—MICROWAVE TECHNOLOGY

## SECTION 1. SPECIFICATION

**1.1 SCOPE.** This standard specifies graphical symbols for microwave elements, devices and tubes, lasers and masers for use in electrical and electronic circuit diagrams. Examples of the use of the symbols are given in order to establish the method to be adopted in constructing further symbols.

This standard requires reference to AS 1102, Part 1 and Part 2, for a full understanding of the methods adopted. Some symbols are common to Part 4.

**1.2 GENERAL.**

**1.2.1 Relationship with IEC Symbols.** Symbols are identical with those internationally agreed within the IEC except where established usage in Australia makes unqualified acceptance of the symbol difficult. In such cases an alternative symbol may be shown, with the object of adopting the IEC proposal as soon as practicable. However, only one form of any symbol shall be used on a single diagram or series of drawings.

**1.2.2 Size of Symbols.** Precise dimensions and proportions of graphical symbols are difficult to specify. The size of the symbols and characters used in this standard is regarded as the minimum desirable for reproduction by the various methods in use.

The relative sizes of the symbols should be preserved except where it is necessary to enlarge a symbol to give it prominence in a diagram or to provide adequate space within or around it to show symbols for associated components, or for coding.

At all times, however, the relative proportions of the symbols should be maintained such that each symbol shall be unique and immediately recognizable.

**1.2.3 Drawing Practice.** In general, the drawing of graphical symbols for use on wiring or circuit diagrams should comply with the requirements of AS 1100 (in particular with Part 6), and AS 1103, Part 3 and Part 4.

**1.2.4 Qualifying and Supplementary Symbols.** Such symbols are added to component symbols where necessary in order to define more closely the item concerned as to type or function. For example Symbol 1.31 from AS 1102, Part 1, when added to Symbol 13.21 herein (the symbol for discontinuity, two-port) will produce Symbol 13.22 which indicates a variable discontinuity or matching device.

Supplementary symbols define the qualified component even more closely; for example, the variability symbol can be further qualified with a supplementary symbol indicating continuous variability or stepped variability.

Qualifying symbols may not be employed independently, but it should be noted that component symbols may be used as qualifying symbols where appropriate.

**1.2.5 Terminology.** The terms and definitions employed in this standard are given in AS 1103, Part 1.

**1.2.6 New Symbols.** If a symbol for a particular type of component is not shown as an example in this standard, it should be possible to produce it from the basic symbol and qualifying symbols. New symbols for specialized components should not be created.

**1.2.7 Symbol Orientation.** Orientation of a symbol, including mirror image reversal, does not change the meaning of a symbol.