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IEEE Standard Terminology for Semiconductor Memory

IEEE Std 662-1980

Documents



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IEEE Standard Terminology for Semiconductor Memory

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IEEE Computer Society

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and its Committee on Solid State
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Foreword

(This Foreword is not a part of IEEE Std 662-1980, IEEE Standard Terminology for Semiconductor Memory.)

In ten short years, from 1970 to 1980, the semiconductor memory field has grown from a laboratory project to one of the largest single segments of the semiconductor industry. Along with this growth, came a chaotic proliferation of conflicting symbols, terms, and language used to communicate information on device characteristics.

This standard grew out of a realization by a group of semiconductor memory pioneers that the communication chaos was starting to inhibit the orderly growth of the industry. They met with Reese Brown, the chairman of the Memory Standards Subcommittee, and formed a working group. This group consisted of David House, *Chairman*, Gordon Goodrich, Robert E. Huston, Robert Nevala, John Springer, and Andrew G. Vardi. They met monthly and over a period of two years they hammered out a standard which met the original goal of providing standard symbols and terminology to allow non-ambiguous communication of memory device characteristics. To assist them in reviewing the work, they circulated the document drafts for review to a group of over 20 other engineers who represented a broad cross section of the semiconductor memory industry, both users and manufacturers.

The terminology introduced in the standard has already been adopted by a number of supplier and users of semiconductor memory. The publication of the standard and subsequent publicity should further expand its acceptance.

At the time it approved this standard the IEEE Subcommittee on Computer Memory Standards had the following membership:

J. Reese Brown, Jr, *Chairman*

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This standard was prepared by a working group of the IEEE Computer Memory Standards Subcommittee. The membership of the working group were:

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IEEE Standard Terminology for Semiconductor Memory

1. Purpose

The purpose of this standard is to provide guidelines under which data sheets for new semiconductor memories are to be generated. Adherence to these guidelines should produce data sheets that are concise and consistently define the operation and characteristics of semiconductor memory devices. It is not intended that data sheets already in existence be changed to this format. However, data sheets being generated for the first time for new products should adhere to this standard.

2. Product Description

Product description consists of information typically (but not necessarily) contained on the front pages of a memory data sheet. It should include all of the following information:

- (1) Product name and number
- (2) Manufacturer's name
- (3) Summary of product features and advantages
- (4) Description of product
- (5) Identification of technology used
- (6) Logical block diagram
- (7) Pin assignments
- (8) Function tables
- (9) Logic symbol
- (10) Input/output definitions
- (11) Description of device operation

2.1 Logic Definitions. Care should be taken in all definitions and descriptive information to consistently define logic states, particularly in the use of the terms TRUE/FALSE, HIGH/LOW, Active/Inactive, and ONE/ZERO. A logic TRUE is by definition a logic ONE and is logically Active; it may be electrically a HIGH or a LOW. Conversely, a logic FALSE is by definition a logic ZERO and is logically Inactive and may be an electrical HIGH or LOW. For positive logic a logic TRUE is a HIGH and a logic FALSE is a LOW while the opposite is true for negative logic. For positive logic, a nonbarred signal is TRUE (Active) when HIGH, and a barred signal is TRUE (Active) when LOW. Positive logic is assumed unless otherwise stated. See Table 1.

HIGH is defined as the most positive and LOW as the most negative logic level.

Since it is very common to mix active HIGH and active LOW inputs/outputs on a single memory device, care should be taken not to confuse HIGH with logic ONE. It is recommended that input and output levels be referred to as HIGH and LOW. When it becomes necessary to describe the logical operation of a device, the preferred terms are TRUE and FALSE. The use of ONE (1) and ZERO (0) should be avoided on the data sheet.

2.2 Logic Diagrams. The logic diagram should logically and functionally define the operation of the memory device. Drawings should adhere

Table 1
Logic Signal Polarity Definitions

Logical Terms				Electrical Terms	
				Positive Logic	Negative Logic
Active	≡	True	1	HIGH	LOW
Inactive	≡	False	0	LOW	HIGH