

**AIEE
No. 426
Apr. 1958**

***Proposed Standard*
for
GRAPHICAL SYMBOLS
for
SEMICONDUCTOR DEVICES**

(Published for trial use)



AIEE No. 426

**Published by
AMERICAN INSTITUTE OF ELECTRICAL ENGINEERS
33 West Thirty-ninth Street, New York 18, N. Y.**

ACKNOWLEDGEMENT

The Institute wishes to acknowledge its indebtedness to those who have so freely given of their time and knowledge and have conducted experimental work on which many of its publications are based.

To obtain conformity, this proposed standard was prepared by the Semiconductor Devices Symbols Task Group in conjunction with the IRE Symbols Committee (No. 21), (Mr. Terhune, Chairman) whose valuable assistance is gratefully acknowledged.

J. P. Jordan, *Chairman*

S. J. Angello, *Vice-Chairman*

C. F. Spitzer	H. W. Welch
H. I. Oshry	C. A. Maynard
E. A. Sack	J. R. Hyneman
H. Epstein	C. S. Peet
R. L. Bright	L. M. Vallese
A. C. Sheckler	G. A. Richardson
J. B. Angell	D. G. Scorgie

Joint AIEE-IRE Semiconductor Devices Subcommittee

S. J. Angello	R. L. Pritchard
J. M. Early	B. J. Rothlein
J. P. Angell	J. S. Saby
R. L. Bright	H. N. Sachar
A. C. Clarke	A. C. Sheckler
A. Coblenz	A. P. Stern
W. H. Lapham	W. J. Mayo-Wells
B. R. Lester	R. M. LeLacheur
L. T. Macgill	K. A. Pullen, Jr.
H. T. Mooers	W. J. Happel
C. W. Mueller	

Semiconductor Devices Symbols Task Group

S. K. Ghandhi, *Chairman*

J. M. Goldey B. J. Rothlein

FOREWORD

These standards are supplementary to, and should be used in conjunction with American Standard Y32.2, Graphical Symbols for Electrical Diagrams. The following are some points of general philosophy underlying their development:

1. The symbol structure should reflect the past, i.e., the symbols should, within a logical framework, revert in their simplest forms to those commonly in present case.
2. The symbol structure should look to the future, i.e., it should be capable of extension to the many new semiconductor devices that may become available.
3. The symbol structure should indicate physical properties when this is possible without overcomplication.

Section 2 illustrates the application of the ancillary symbols of Section 1 to a variety of semiconductor devices. For Methods of Test and Letter Symbols for Semiconductor Devices, see AIEE Standard No. 425.

Proposed Standard for GRAPHICAL SYMBOLS for SEMICONDUCTOR DEVICES

Section 1 ANCILLARY SYMBOLS

This section sets forth the basic rules and symbol elements for the construction of graphical symbols for semiconductor devices. See paragraph 1.17 for full details of graphical symbols.

- 1.1 Semiconductor region with one ohmic connection.
(In the illustration, the horizontal line indicates the base region and the vertical line indicates the ohmic connection.)



- 1.2 Semiconductor region with a plurality of ohmic connections. (In the illustrations, the horizontal lines indicate base regions and the vertical lines indicate ohmic connections.)



- 1.3 Transition between *P* and *N* regions (either *P* to *N* or *N* to *P*). (Slant lines indicating transitions shall be appreciably shorter than collector and emitter lines. Note that the transition is along the horizontal line and that no ohmic connection is made to the slant line. See 2.9 and 2.11 as examples.)



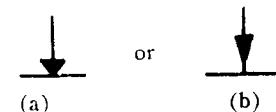
- 1.4 Intrinsic (*I*) region between regions of dissimilar conductivity type. (Slant lines indicating transitions shall be appreciably shorter than collector and emitter lines. Note that the transition is along the horizontal line and that no ohmic connection is made to the slant line. See 2.14 and 2.15 as examples.)



- 1.5 Intrinsic (*I*) region between regions of similar conductivity type. (Slant lines indicating transitions shall be appreciably shorter than collector and emitter lines. Note that the transition is along the horizontal line and that no ohmic connection is made to the slant line. See 2.16 and 2.17 as examples.)



- 1.6 *P* region on *N* region (rectifying junction).



- 1.7 *P* emitter on *N* region. (The slant line with arrowhead represents the emitter and the horizontal line represents the *N* region.)

