ASSOCIATION CONNECTING
ELECTRONICS INDUSTRIES

IPC-2615

Printed Board Dimensions and Tolerances

IPC-2615
July 2000 A standard developed by IPC

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1 PURPOSE

The purpose of this Standard is to establish acceptable principals and practices for dimensioning and tolerancing used to define end-product requirements for printed boards and printed board assemblies.

1.1 Scope This Standard covers dimensioning and tolerancing of electronic packaging as it relates to printed boards and the assembly of printed boards. The concepts defined in this Standard are derived from ASME Y14.5M-1994. Printed boards have such wide applications that there may be times where this standard does not address a specific case. In those cases, the user is referred to ASME Y14.5M 1994 for use of additional dimensioning and tolerancing concepts.

1.2 General This Standard covers dimensioning, tolerancing, and related practices for use on printed board drawings and in related documents. Uniform practices for stating and interpreting these requirements are established herein.

1.2.1 Units The International System of Units (Sl) is featured in this Standard.

1.2.2 Reference to This Standard Where drawings are based on this Standard, this fact shall be noted on the drawings or in a document referenced on the drawings. References to this Standard shall state ''IPC-2615 or per IPC-2615.''

1.2.3 Figures The figures in this Standard are intended only as illustrations to aid the user in understanding the principles and methods of dimensioning and tolerancing described in the text. The absence of a figure illustrating the desired application is neither reason to assume inapplicability nor basis for drawing rejection. In some instances figures show added detail for emphasis, in other instances figures are incomplete by intent. Numerical values of dimensions and tolerances are illustrative only.

1.2.4 Notes Notes herein in capital letters are intended to appear on finished drawings. Notes in lower case letters are explanatory only and are not intended to appear on drawings.

1.2.5 Reference to Gauging This document is not intended as a gauging standard. Any reference to gauging is included for explanatory purposes only.

1.3 References

1.3.1 IPC Specifications[1]

IPC-T-50 Terms and Definitions

IPC-D-310 Guidelines for Phototool and Artwork Generation

IPC-D-325 Documentation for Printed Boards and Printed Board Assemblies

IPC-D-330 Design Guide for Printed Boards and Printed Board Assemblies

IPC-2220 Design Standard Series for Printed Boards

IPC-6010 Performance Specification Series for Printed Boards

1.3.2 ANSI Standards[2] When the following American National Standards referred to in this Standard are superseded by a revision approved by the American National Standards Institute, Inc., the latest revision shall apply.

ANSI Y14.1-1980, Drawing Sheet Size and Format
ANSI Y14.2M-1979, Line Conventions and Lettering
ASME Y14.5M-1994, Geometric Dimensioning and Tolerancing
ANSI Z210.1-1976, Metric Practice

2 TERMS AND DEFINITIONS

The definition of terms shall be in accordance with IPC-T-50 and the following.

2.1 Actual Size The measured size.

2.2 Basic Dimension A numerical value used to describe the theoretically exact size, profile, orientation, or location of a feature or datum target. It is the basis from which permissible variations are established by tolerances on other dimensions, in notes, or in feature control frames (see 3.4.1).

2.3 Bilateral Tolerance A tolerance in which variation is permitted in both directions from the specified dimension.

2.4 Cumulative Tolerances The summation of all tolerances permitted between functionally related features:

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2. ANSI, 655 15th Street N.W., Suite 300, Washington, DC 20005-5794