



*The Institute for
Interconnecting
and Packaging
Electronic Circuits*

IPC-D-322

Guidelines for Selecting Printed Wiring Board Sizes Using Standard Panel Sizes

ANSI/IPC-D-322

September 1984

A standard developed by the Institute for Interconnecting
and Packaging Electronic Circuits

Reaffirmed September 1991

2215 Sanders Road
Northbrook, Illinois
60062-6135

Tel 847 509.9700

Fax 847 509.9798

URL: <http://www.ipc.org>

Documents

Document Sharing Hub

Standardization

In May 1995 the IPC's Technical Activities Executive Committee adopted Principles of Standardization as a guiding principle of IPC's standardization efforts.

Standards Should:

- Show relationship to DFM & DFE
- Minimize time to market
- Contain simple (simplified) language
- Just include spec information
- Focus on end product performance
- Include a feed back system on use and problems for future improvement

Standards Should Not:

- Inhibit innovation
- Increase time-to-market
- Keep people out
- Increase cycle time
- Tell you how to make something
- Contain anything that cannot be defended with data

Notice

IPC Standards and Publications are designed to serve the public interest through eliminating misunderstandings between manufacturers and purchasers, facilitating interchangeability and improvement of products, and assisting the purchaser in selecting and obtaining with minimum delay the proper product for his particular need. Existence of such Standards and Publications shall not in any respect preclude any member or nonmember of IPC from manufacturing or selling products not conforming to such Standards and Publications, nor shall the existence of such Standards and Publications preclude their voluntary use by those other than IPC members, whether the standard is to be used either domestically or internationally.

Recommended Standards and Publications are adopted by IPC without regard to whether their adoption may involve patents on articles, materials, or processes. By such action, IPC does not assume any liability to any patent owner, nor do they assume any obligation whatever to parties adopting the Recommended Standard or Publication. Users are also wholly responsible for protecting themselves against all claims of liabilities for patent infringement.

The material in this standard was developed by the Standard Board Sizes Task Group (D-31a) of the Institute for Interconnecting and Packaging Electronic Circuits.



*THE INSTITUTE FOR
INTERCONNECTING
AND PACKAGING
ELECTRONIC CIRCUITS*

IPC-D-322

Guidelines for Selecting Printed Wiring Board Sizes Using Standard Panel Sizes

Developed by the Standard Board Sizes Task Group
of the Institute for Interconnecting and Packaging
Electronic Circuits

Users of this standard are encouraged to participate in the
development of future revisions.

Contact:

IPC
2215 Sanders Road
Northbrook, Illinois
60062-6135
Tel 847 509.9700
Fax 847 509.9798

 **Documents**
Document Sharing Hub

Acknowledgment

Any standard involving a complex technology draws material from a vast number of sources. While the principle members of the Standard

Board Sizes Task Group of the IPC Printed Board Design Committee are shown below, it is not possible to include all of those who assisted in

the evolution of this Standard. To each of them, the members of the IPC extend their gratitude.

Standard Board Sizes Task Group

Chairman
R. Bean
Beacon Technology

Printed Board Design Committee

Chairman
M. P. Gilmore
Dynachem

Technical Liaison of the IPC Board of Directors

J. Endee
Photocircuits

Standard Board Sizes Task Group

G. T. Allen, Computer Consoles
D. Caponigro, Racal-Milgo
L. Caward, Computer Consoles
J. Chamblin, Honeywell
J. Cordum, NCR
B. L. Doughty, Wang Labs
M. Dry, Emerson Electric
M. Eley, Tektronix
B. Englehardt, Photonics
J. P. Geraghty, Raytheon
K. Hafften, Bureau of Engraving
L. C. Hymes, General Electric Medical Systems

D. C. Jarvis, Lockheed Georgia
D. Kitchen, Eastman Kodak
H. B. Koons, Jr., AT&T Bell Laboratories
L. Kray, Data General
R. B. Lomerson, General Dynamics
S. Malkani, Northern Telecom
J. L. Mulcahy, Methode Electronics/East
T. M. Pallett, McDonnell Douglas
J. Paulus, Norplex Division
A. Ruman, Metropolitan Circuits

D. W. Rumps, Teletype
M. A. Savrin, Kulicke & Soffa Industries
P. P. Scalia, Taylor Instrument
W. G. Simons, U. S. Prolam
D. Stelmak, Tyco Laboratories
D. Svoboda, Teletype
J. E. Taylor, Graphico Precision
J. W. Welker, Synthane-Taylor
S. Witzman, Bell Northern Research
C. F. Wolff, AT&T Technology Systems

Guidelines for Selecting Printed Wiring Board Sizes Using Standard Panel Sizes

1.0 SCOPE

1.1 Purpose This specification defines guidelines for choosing sizes of printed wiring boards, using standard fabrication panel sizes.

1.2 Recommendation While this document should be helpful in establishing areas of concern in choosing a PWB size, the designer should consult with the manufacturer to verify that his capabilities, and restrictions, are similar to those used in this document.

1.3 Clarifications This document makes an assumption that the designer is free to choose any size board desired. This freedom is not true often due to the particular needs of the product being designed. However, an understanding of the principles in this guidelines can be of use to the designer because it affords an overview of manufacturing requirements to the design "community."

It should also be noted that the limits listed in this document are appraisals of what is generally available at most companies, using normal techniques. Under special conditions, using special tooling and equipment, many things are possible that far exceed what is normally done. These special designs are usually not desirable because of cost or reduced producibility.

The main emphasis of this document is toward rigid materials commonly available. Flexible and/or special materials often are available in differing sizes and may not apply to this analysis.

2.0 APPLICABLE DOCUMENTS

2.1 IPC

IPC-T-50—Terms and Definitions

2.2 Other References

IPC-D-300—Dimensions and Tolerances

IPC-D-320—End Product Specification for Single- and Double-Sided Printed Boards

IPC-ML-910—Design and End Product Specification for Rigid Multilayer Printed Boards

MIL-STD-275—Printed Wiring for Electronic Equipment

3.0 TERMS AND DEFINITIONS

3.1 The definitions of all other terms used herein shall be as specified in IPC-T-50.

3.2 Board Array An arrangement containing one or more printed wiring boards for the purpose of processing through assembly. Ultimately the individual boards are separated from the array for final system use.

4.0 CONSIDERATIONS

Throughout the process, there are certain restrictions that affect the producibility of printed wiring boards. These restrictions occur at the following points.

4.1 Laminate Material The largest size panel processed economically is a function of sheet laminate common in the market place. This dictates that recommended guidelines for panel sizes should be a submultiple of these common sheet sizes which currently are:

- 914 mm x 1219 mm (36" x 48")
- 1219 mm x 1829 mm (48" x 72")
- 1219 mm x 3858 mm (48" x 144")
- 1219 mm x 1067 mm (48" x 42")
- 914 mm x 1067 mm (36" x 42")

*Primarily for multilayer boards

Other choices imply cost penalties in wasted material, due to excess trim.

Restrictions in material usage apply equally to the fabricator using "mass lamination techniques," either in-house or at a laminate supplier.

Within some regions (Europe, Far East), other sheet sizes are commonly available. These sizes would allow further choices of products designed to be produced in those areas. Some of these common sizes are:

- 1000 mm x 1000 mm (39.4" x 39.4")
- 1000 mm x 1200 mm (39.4" x 47.2")
- 1055 mm x 1165 mm (41.5" x 45.9")

On dense circuits, where dimensional stability is important, orientation of the grain direction will have effects on part stability. The long dimension of the finished board should be parallel with the fill direction of the laminate sheet.

4.2 Primary Panel Size Factors of equipment, material, and human engineering do not presently accommodate full-size sheets. A panel size smaller than the full-size sheet is