ASSOCIATION CONNECTING
ELECTRONICS INDUSTRIES

IPC-6012B with Amendment 1

Qualification and Performance Specification for Rigid Printed Boards

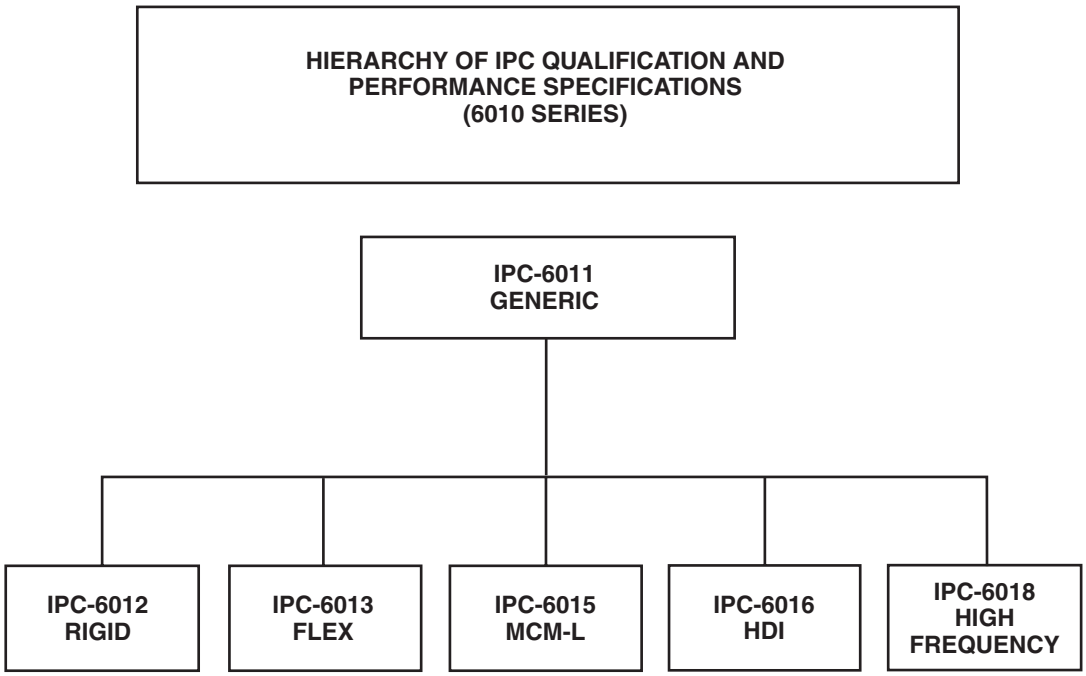
Developed by the Rigid Printed Board Performance Specifications Task Group (D-33a) of the Rigid Printed Board Committee (D-30) of IPC

Supersedes:
IPC-6012B - August 2004
IPC-6012A with
Amendment 1 - July 2000
IPC-6012A - October 1999
IPC-6012 - July 1996
IPC-RB-276 - March 1992

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

Contact:

IPC
3000 Lakeside Drive, Suite 309S
Bannockburn, Illinois
60015-1249
Tel 847 615.7100
Fax 847 615.7105



FOREWORD

This specification is intended to provide information on the detailed performance criteria of rigid printed boards. It supersedes IPC-6012B and was developed as a revision to those documents. The information contained herein is also intended to supplement the generic requirements identified in IPC-6011. When used together, these documents should lead both manufacturer and customer to consistent terms of acceptability.

IPC's documentation strategy is to provide distinct documents that focus on specific aspects of electronic packaging issues. In this regard, document sets are used to provide the total information related to a particular electronic packaging topic. A document set is identified by a four digit number that ends in zero (0) (i.e., IPC-6010).

Included in the set is the generic information, which is contained in the first document of the set. The generic specification is supplemented by one or multiple performance documents, each of which provide a specific focus on one aspect of the topic or the technology selected.

Failure to have all information available prior to building a board may result in a conflict in terms of acceptability.

As technology changes, a performance specification will be updated, or new focus specifications will be added to the document set. The IPC invites input on the effectiveness of the documentation and encourages user response through completion of ''Suggestions for Improvement'' forms located at the end of each document.

Table of Contents

Figures

Tables

Qualification and Performance Specification for Rigid Printed Boards

1 SCOPE

1.1 Statement of Scope This specification covers qualification and performance of rigid printed boards. The printed board may be single-sided, double-sided, with or without plated-through holes. The printed board may be multilayer with plated-through holes and with or without buried/blind vias. The printed board may be multilayer containing build up HDI layers conforming to IPC-6016. The printed board may contain active embedded passive circuitry with distributive capacitive planes, capacitive or resistive components. The printed board may contain a metal core or external metal heat frame, which may be active or nonactive. Revision level changes are described in 1.6.

1.2 Purpose The purpose of this specification is to provide requirements for qualification and performance of rigid printed boards.

1.3 Performance Classification and Type

1.3.1 Classification This specification recognizes that rigid printed boards will be subject to variations in performance requirements based on end-use. The printed boards are classified by one of three general Performance Classes. Performance classes are defined in IPC-6011. Requirements deviating from these heritage classifications may be established through the use of a Performance Specification Sheet. Requirement exceptions commonly used for Space and Military avionics are shown as the Performance Specification Sheet Class 3A for Space and Military Avionics, listed in the back of this document.

1.3.2 Board Type Printed boards without plated-through holes (Type 1) and with plated-through holes (Types 2-6) are classified as follows:

Type 1—Single-Sided Board
Type 2—Double-Sided Board
Type 3—Multilayer board without blind or buried vias
Type 4—Multilayer board with blind and/or buried vias
Type 5—Multilayer metal core board without blind or buried vias
Type 6—Multilayer metal core board with blind and/or buried vias

1.3.3 Selection for Procurement For procurement purposes, performance class **shall** be specified in the procurement documentation.

The documentation **shall** provide sufficient information to the supplier so that he can fabricate the printed board and ensure that the user receives the desired product. Information that should be included in the procurement documentation is shown in IPC-D-325.

1.3.3.1 Selection (Default) The procurement documentation should specify the requirements that can be selected within this specification; however, in the event selections are not made in the documentation, Table 1-2 **shall** apply.

1.3.3.2 Section System (Optional) The following product selection identifier system is provided for clarification of the build type.

Quality Specification, the generic quality specification.

Specification, the base performance specification.

Type, the product type per 1.3.2.

Plating Process, the plating process per 1.3.4.2.

Final Finish, the final finish code per 1.3.4.3.

Selective Finish, the selective finish code adder per 1.3.4.3, enter ''-'' when no selective finish is required.

Product Classification, the product classification per 1.3.1 or performance specification sheet.

Technology Adder, the technology adder as specified in Table 1-1. Add multiple codes as required.

Table 1-1 Technology Adder Examples

Technology Code	Technology
HDI	HDI build-up features per IPC-6016
VP	Via Protection
WBP	Wire Bondable Pads
AMC	Active Metal Core
NAMC	Nonactive Metal Core
HF	External Heat Frame
EP	Embedded Passives
VIP-C	Via-in-Pad, Conductive Fill
VIP-N	Via-in-Pad, Nonconductive Fill

Example: IPC 6011/6012/3/1/S/-/3/HDI/EP

1.3.4 Material, Plating Process and Final Finish

1.3.4.1 Laminate Material Laminate material is identified by numbers and/or letters, classes and types as specified by the appropriate specification listed in the procurement documentation.