IPC-6018B

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Qualification and Performance Specification for High Frequency (Microwave) Printed Boards

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IPC-6018B

Qualification and Performance Specification for High Frequency (Microwave) Printed Board

Developed by the IPC High Speed/High Frequency Board Performance Subcommittee (D-22) of the High Speed/High Frequency Committee (D-20)

Supersedes:

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IPC-6018 – January 1998

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

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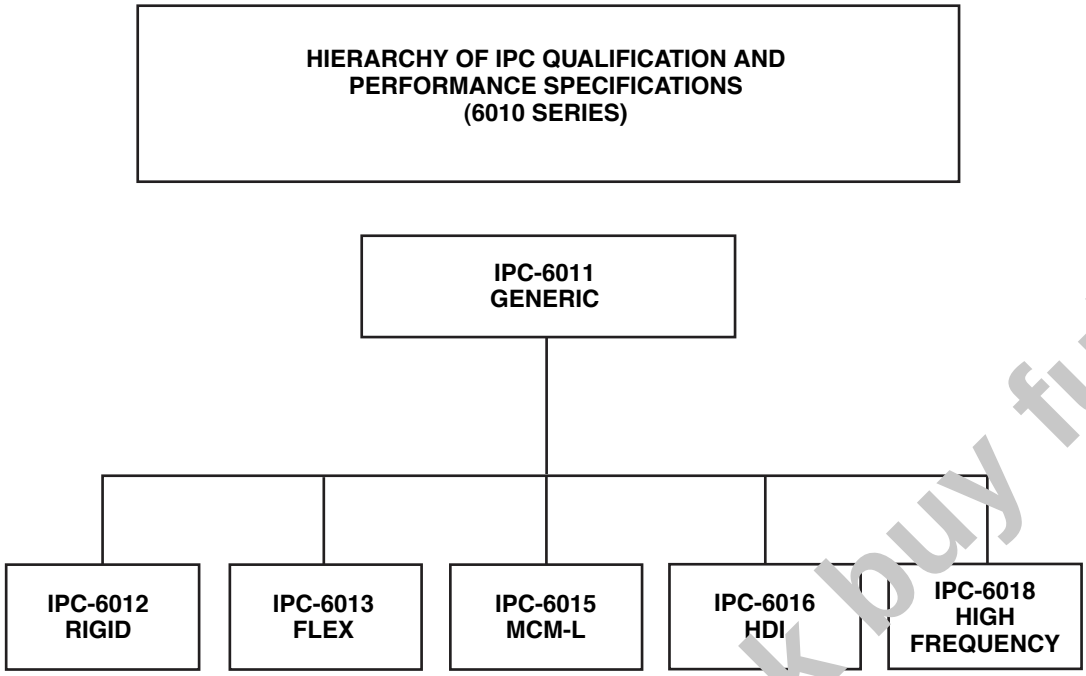

FOREWORD

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 user 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.

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Acknowledgment

Any document involving a complex technology draws material from a vast number of sources. While the principal members of the High Speed/High Frequency Board Performance Subcommittee (D-22) of the High Speed/High Frequency Committee (D-20) 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.

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Qualification and Performance Specification for High Frequency (Microwave) Printed Boards

1 SCOPE

1.1 Scope This specification covers end product inspection and test of high frequency (microwave) printed boards for microstrip, stripline, mixed dielectric and multilayer stripline applications with or without buried/blind vias, and metal cores.

The printed board may contain embedded active or passive circuitry with distributive capacitive planes, capacitive or resistive components conforming to IPC-6017. The printed board may contain build up High Density Interconnect (HDI) layers conforming to IPC-6016.

1.2 Purpose The purpose of this specification is to provide requirements for qualification and performance of high frequency (Microwave) printed boards.

1.3 Performance Classification and Types

1.3.1 Classifications This specification establishes acceptance criteria for the performance classification of high frequency printed boards based on customer and/or end-use requirements. Printed boards are classified by one of three general Performance Classes as defined in IPC-6011.

1.3.1.1 Requirement Deviations Requirements deviating from these heritage classifications **shall** be as agreed between user and supplier (AABUS).

1.3.1.2 Space and Military Avionics Deviations Space and Military Avionics performance classification deviations are defined and listed in Appendix A of this specification. These are commonly referred to as Class 3/A.

1.3.2 Printed Board Type This specification will define eight types of high frequency (microwave) printed boards.

Type 1 — Single Sided
Type 2 — Double Sided
Type 3 — Homogeneous Dielectric Multilayer Construction
Type 4 — Mixed Dielectric Multilayer
Type 5 — Homogeneous Dielectric Multilayer with blind and/or buried vias
Type 6 — Mixed Dielectric Multilayer with blind and/or buried vias
Type 7 — Metal and/or composite backed printed boards, single sided or double sided
Type 8 — Multilayer metal and/or composite backed or core printed boards with or without 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.

The procurement documentation should specify the thermal stress test method to be used to meet the requirement of 3.6.1. Selection **shall** be from those depicted in 3.6.1.1, 3.6.1.2 and 3.6.1.3. If not specified (see 6.1), the default **shall** be per Table 1-1.

During the selection process, the user should take into consideration the following when determining the appropriate thermal stress test method:

- Wave solder, selective solder, hand solder assembly processes (see 3.6.1.1)
- Conventional (eutectic) reflow processes (see 3.6.1.2)
- Lead-free reflow processes (see 3.6.1.3)

1.3.3.1 Selection (Default) The procurement documentation should specify the requirements that can be selected within this specification. Refer to Table 1-1 for a listing of default requirements.