Qualification and Performance of Polymer Thick Film Printed Boards

ANSI/IPC-TF-870
November 1989

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

2215 Sanders Road
Northbrook, Illinois 60062-6135
Tel 847 509.9700
Fax 847 509.9798
URL: http://www.ipc.org
Qualification and Performance of Polymer Thick Film Printed Boards

1.0 SCOPE
This specification covers the materials, qualification, certification, and performance requirements for multilayer Polymer Thick Film (PTF) printed, extrusion deposited, or otherwise applied conductor, insulator, and through-hole technology. Printed, extrusion deposited, or otherwise applied circuitry, shall meet all applicable requirements of this specification and the master drawing. Etched and plated conventional printed circuits may also be an integral part of this technology. This specification may also be used for procurement of single-sided and double-sided boards. See Figures 1, 2, and 3.

1.1 Construction
Printed boards shall be of the types shown as specified:

- Construction 1A  Single-Sided Board (Rigid)
- Construction 1B  Single-Sided Board (Flex)
- Construction 2B  Double-Sided Board (Rigid)
- Construction 2B  Double-Sided Board (Flex)
- Construction 3  Multilayer Board

1.1.1 Classes
This specification provides Classes (1, 2, and 3) for feature requirements to reflect progressive increases in sophistication, functional performance requirements and testing severity. The reference of a single class does not preclude working, invoking or allowing specific requirements defined in other classes.

Class 1—Consumer Products (Includes TV sets, toys, entertainment electronic and non-critical or industrial control devices).

Class 2—General Industrial (Includes computers, telecommunication equipment, sophisticated business machines, instruments and certain non-critical military applications).

Note: Reliability required in high humidity conditions should be considered.

Class 3—High Reliability (Includes that equipment where continued performance is critical, equipment downtime cannot be tolerated or the equipment is a life support item).

Note: Unless otherwise specified, Class 3 shall be used for military electronic equipment.

2.0 APPLICABLE DOCUMENTS

2.1 IPC
IPC-T-50  Terms and Definitions
IPC-CF-150  Copper Foil For Printed Wiring Applications
IPC-FC-250  Standard for Single- and Double- Sided Flexible Wiring with Interconnections
IPC-D-300  Printed Board Dimension and Tolerances
IPC-S-815  General Requirements for Soldering Electronic Interconnections
IPC-SF-818  General Requirements for Electronic Soldering Fluxes
IPC-SM-840  Qualification and Performance of Permanent Polymer Coating (Solder Mask) for Printed Boards
IPC-ML-950  Performance Specifications for Multilayer Printed Wiring Boards

2.1.1 Microsectioning
2.3.23 Solder Mask Cure (Permanancy) Thermally Cured Masks
2.3.38 Surface Organic Contaminant Detection Test (In-House Method)
2.4.22 Bow and Twist
2.4.27.2 Solder Mask Abrasion (Pencil Method)
2.4.28 Adhesion, Solder Mask (Non-Wetting Metals)
2.4.28.1 Adhesion, Solder Mask (Melting Materials)
2.4.29 Adhesion, Solder Mask Flexible Circuits
2.4.36 Rework Simulation, Plated-Through Holes
2.5.6.1 Dielectric Strength, Polymer Solder Mask, and/or Conformal Coatings
2.6.1 Fungus Resistance Printed Wiring Materials

1. Publications are available from the IPC, 2215 Sanders Road, Northbrook, IL 60062-6135
2. For convenience, reprints of the IPC-TM-650 Test Methods are provided at the end of this specification.