IPC-4103B

Specification for Base Materials for High Speed/ High Frequency Applications

Developed by the High Speed/High Frequency Base Materials Subcommittee (D-23) of the High Speed/High Frequency Committee (D-20) of IPC

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

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Specification for Base Materials for High Speed/High Frequency Applications

1 GENERAL

1.1 Scope This specification covers the requirements for high speed/high frequency performance plastic substrates to be used for fabrication of printed boards for microstrip, stripline, and high speed digital electrical and electronic circuits. This specification applies to the plastic substrate thickness defined in the specification sheets as measured over the dielectric only. As a general guideline, laminates controlled by this specification usually have a dissipation factor of less than 0.005.

1.2 Type Designation The following system identifies clad and unclad plastic laminate and bonding layer materials for conventional and enhanced part number call out. Conventional laminate part numbers reflect traditional specification values, and are consistent with the callouts in Table 1-1. Enhanced laminate part numbering would include the conventional part number in Table 1-1 as well as the enhanced information in Table 1-2. Bonding layer part numbers are covered in Table 1-3.

Table 1-1 provides an example for conventional laminate part numbers where IPC-4103 is referenced as follows: 4103AL001C11500C1/C1AA.

Table 1-1 Conventional Laminate Example

4103	A	L	001	C
Specification Number	Specification Revision	Material Designator (see 1.2.1)	Specification Sheet (see 1.2.1)	Dielectric Permittivity Range (see 1.2.2)
1	**1500**	**C1/C1**	**A**	**A**
Dielectric Permittivity Tolerance (see 1.2.3)	Nominal Laminate Thickness (see 1.2.4)	Metal Cladding Type and Nominal Weight/Thickness (see 1.2.7)	Thickness Tolerance (see 1.2.5)	Metal Foil Indentations (see 1.2.6)

Table 1-2 provides an example for enhanced laminate part numbers where IPC-4103 is referenced. In addition to the conventional Table 1-2, the following designators could be used to define an enhanced material part number such as: 4103AL001C11500C1/C1AAX1A1A.

Table 1-2 Enhanced Laminate Example

X	1	A	1	A
Test Frequency (see 1.2.8)	Dielectric Loss (see 1.2.9)	Resin (see 1.2.10)	Filler (see 1.2.11)	Reinforcement (see 1.2.12)

Table 1-3 provides an example for bonding layer part numbers where IPC-4103 is referenced as follows: 4103AB520CE1080BRCSCVC1.

Table 1-3 Bonding Layer Example

4103	A	B	520	C
Specification Number	Specification Revision	Material Designator (see 1.2.1)	Specification Sheet (see 1.2.1)	Dielectric Permittivity Range (see 1.2.2)
E	**1080**	**B**	**RC**	**SC**
Reinforcement Type (see 1.2.13)	Reinforcement Style (see 1.2.13)	Resin System (see 1.2.10)	Resin Content Test Method (see 1.2.14)	Flow Parameter (see 1.2.14)
VC	**1**			
Optional Test (see 1.2.14)	Filler (see 1.2.11)			