



IPC/JEDEC J-STD-609A-2010

Marking and Labeling of Components, PCBs and PCBAs to Identify Lead (Pb), Lead-Free (Pb-Free) and Other Attributes

A joint standard developed by the Marking, Symbols and Labels for Identification of Assemblies, Components and Devices Task Group (4-34b) of the Materials Identification Subcommittee (4-34) and JEDEC Committee JC14.4 Quality Processes and Methods

Supersedes:

IPC/JEDEC J-STD-609 -
May 2007
JESD97 - May 2004
IPC-1066 - January 2005

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

Contact:

JEDEC
Solid State Technology Association
3103 North 10th Street, Suite 240-S
Arlington, VA 22201-2107
Tel 703 907.0026
Fax 703 907.7501

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

Table of Contents

1	SCOPE	1	5	MARKING/LABELING CATEGORIES	5
1.1	Purpose	1	5.1	PCB Base Material Categories	5
2	REFERENCE DOCUMENTS	1	5.1.1	Halogen-free Base Material	5
2.1	IPC	1	5.2	PCB Surface Finish Categories	5
2.2	JEDEC	1	5.2.1	Pb-containing	5
2.3	IEC	1	5.2.2	Pb-free	5
2.4	European Parliament	2	5.3	Second (2 nd) Level Interconnect Categories	5
2.5	ANSI	2	5.3.1	Pb-containing	5
3	TERMS AND DEFINITIONS	2	5.3.2	Pb-free	5
3.1	2D code label (matrix)	2	5.4	Conformal Coating Categories	6
3.2	2Li (or 2LI)	2	6	COMPONENT MARKING AND LABELING	6
3.3	base materials	2	6.1	Component Marking	6
3.4	component	2	6.2	Lowest Level Shipping Container Labeling	7
3.5	halogen-free board	2	7	PCB/ASSEMBLY MARKING AND LABELING	7
3.6	homogeneous material	2	7.1	PCB Marking	7
3.7	intct (or INTCT)	2	7.1.1	PCB Shipping Container Labeling	7
3.8	linear bar code label	2	7.2	Assembly Marking	7
3.9	material category	2	7.2.1	Assembly Shipping Container Labeling	7
3.10	maximum component temperature	2	7.3	Solder Category Marking Sequence	7
3.11	Pb-free; lead free	2	7.4	Location	7
3.12	Pb-free symbol	2	7.5	Size	7
3.13	second (2 nd) level interconnect	2	7.6	Color	7
3.14	second (2 nd) level interconnect component label	3	7.7	Font	7
3.15	second (2 nd) level interconnect terminal finish or material	3	7.8	Method	7
4	SYMBOLS, LABELS, AND MARKS	3	7.9	Marking Sequence	7
4.1	Material Category Symbol	3	7.10	Re-marking Changes in PCBA Materials	8
4.1.1	Size and Location	3	8	MARKING AND/OR LABELING OF Pb-CONTAINING COMPONENTS, PCBs, AND PCB ASSEMBLIES	8
4.1.2	Color	3	8.1	Marking and Labeling of Components	8
4.1.3	Font	3	8.2	Marking and Labeling of PCBs	8
4.2	Pb-free Symbol	3	8.3	Marking and Labeling of PCB Assemblies	8
4.3	Second (2 nd) Level Interconnect Component Label	4	9	SUMMARY OF MARKING AND LABELING REQUIREMENTS	9
4.3.1	Size	4	Appendix A	Example Alloys and Associated Material Codes	10
4.3.2	Color	4	Appendix B	Material Code Flow Chart	11

Figures

Figure 3-1	Examples of Materials that Comprise the 2 nd Level Interconnect	3
Figure 4-1	Example of Mark Indicating Material Category 2 and the Optional Circle, Ellipse, Underline or Parentheses	3
Figure 4-2	Pb-Free Symbol	3
Figure 4-3	Example of 2 nd Level Interconnect Component Label Indicating a Pb-Containing Material	4
Figure 4-4	Example of 2 nd Level Interconnect Component Label Indicating a Pb-Free e2 Material with a Maximum Component Temperature of 260°C	4
Figure 4-5	Example of 2 nd Level Interconnect Component Label Utilizing the Pb-free Symbol Indicating Both Pb-Free Material with Category and Maximum Component Temperature Indicated on an Adjacent Label	4
Figure 6-1	Example of Component Marking	6
Figure 7-1	Example of Board/Assembly Markings	8

Tables

Table 9-1	Marking and Labeling Summary	9
-----------	------------------------------------	---

Marking and Labeling of Components, PCBs and PCBAs to Identify Lead (Pb), Lead-Free (Pb-Free) and Other Attributes

1 SCOPE

This standard applies to components and assemblies that contain Pb-free and Pb-containing solders and finishes. This standard describes the marking of components and the labeling of their shipping containers to identify their 2nd level terminal finish or material, and applies to components that are intended to be attached to boards or assemblies with solder or mechanical clamping or are press fit. This standard also applies to 2nd level terminal materials for bumped die that are used for direct board attach.

This standard applies to boards/assemblies, to identify the type of Pb-free or Pb-containing solder used. This standard documents a method for identifying board surface finishes and Printed Circuit Board (PCB) resin systems. This standard applies to PCB base materials and for marking the type of conformal coating utilized on Printed Circuit Board Assemblies (PCBAs). Material and their containers previously marked or labeled according to JESD 97, IPC-1066, or previous versions of this standard need not be remarked unless agreed upon by the supplier and customer.

Labeling of exterior surfaces of finished articles, such as computers, printers, servers, and the like, is outside the scope of this standard. However, internal PCBs and PCBAs are covered by this standard. Labeling of retail packages containing electronic products is also outside the scope of this standard.

1.1 Purpose This standard provides a marking and labeling system that aids in assembly, rework, repair and recycling and provides for the identification of:

- 1) those assemblies that are assembled with Pb-containing or Pb-free solder;
- 2) components that have Pb-containing or Pb-free 2nd level interconnect terminal finishes and materials;
- 3) the maximum component temperature not to be exceeded during assembly or rework processing;
- 4) the base materials used in the PCB construction, including those PCBs that use halogen-free resin;
- 5) the surface finish of PCBs; and
- 6) the conformal coating on PCBAs.

2 REFERENCE DOCUMENTS

2.1 IPC¹

IPC-T-50 Terms and Definitions for Interconnecting and Packaging Electronic Circuits

IPC-CC-830 Qualification and Performance of Electrical Insulating Compound for Printed Wiring Assemblies (Conformal Coating)

IPC-4101 Specification for Base Materials for Rigid and Multilayer Printed Boards

2.2 JEDEC²

JESD88 JEDEC Dictionary of Terms for Solid State Technology

2.3 IEC³

IEC 61249-2-21 Materials for printed boards and other interconnecting structures - Part 2-21: Reinforced base materials, clad and unclad - Non-halogenated epoxide woven E-glass reinforced laminated sheets of defined flammability (vertical burning test), copper-clad

1. www.ipc.org

2. www.jedec.org

3. www.iec.ch