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Design and Assembly Process Implementation for Bottom Termination Components (BTCs)

Developed by the Bottom Termination Components (BTC) Task Group (5-21h) of the Assembly and Joining Committee (5-20) of IPC

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

Contact:

IPC

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Design and Assembly Process Implementation for Bottom Termination Components (BTCs)

1 SCOPE

This standard describes design and assembly guidance for implementing bottom termination components (BTCs). The focus of the information contained herein is on critical design, materials, assembly, inspection, repair, quality and reliability issues associated with BTCs.

This standard applies only to BTCs, which are components with planar terminations under the body with or without wettable side terminations or flanks. Examples of BTCs include small-outline no-lead (SON), dual-flat no-lead (DFN), quad-flat no-lead (QFN), land grid array (LGA), etc. (see Section 4).

1.1 Purpose The purpose of this standard is to provide useful and practical information to those who use or are considering using BTCs. The target audiences for this document are physical designers, process engineers, reliability engineers and managers who are responsible for design, assembly, inspection and repair processes of printed boards and printed board assemblies. Information described in this standard enables high-quality and highly reliable BTC assembled devices operating within an electronic system.

This document also describes how to successfully implement robust design and assembly processes for printed board assemblies using BTCs as well as ways to troubleshoot some common anomalies which can occur during BTC assembly. For accept/reject criteria and requirements for BTC assemblies, see J-STD-001 and IPC-A-610.

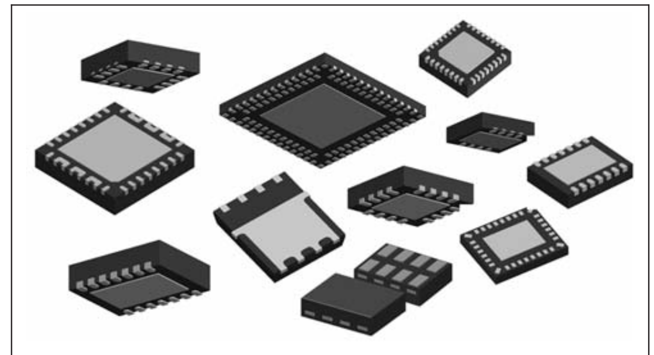

Figure 1-1 Various Forms of BTCs

Figure 1-1 provides an example of various forms of BTCs.

1.2 Classification IPC standards recognize that electrical and electronic assemblies are subject to classifications by intended end-item use. Three general end-product classes have been established to reflect differences in manufacturability, complexity, functional performance requirements and verification (inspection/test) frequency. It should be recognized that there may be overlaps of equipment between classes.

CLASS 1 General Electronic Products
Includes products suitable for applications where the major requirement is function of the completed assembly.

CLASS 2 Dedicated Service Electronic Products
Includes products where continued performance and extended life is required, and for which uninterrupted service is desired but not critical. Typically, the end-use environment would not cause failures.

CLASS 3 High Performance/Harsh Environment Electronic Products
Includes products where continued high performance or performance-on-demand is critical, equipment downtime cannot be tolerated, end-use environment may be uncommonly harsh, and the equipment must function when required, such as life support or other critical systems.

1.3 Measurement Units All dimensions and tolerances in this specification are expressed in hard SI (metric) units. Users of this specification are expected to use metric dimensions. All dimensions ≥ 1.0 mm will be expressed in mm. All dimensions < 1.0 mm will be expressed in µm.

1.4 Definition of Requirements The words **shall** or **shall not** are used in the text of this document wherever there is a requirement for materials, preparation, process control or acceptance. The word ''should'' reflects recommendations and is used to reflect general industry practices and procedures for guidance only.