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Cost-Effective Specialized Process Plates for Manufacturing Assembly Multi-Processes

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I. Overview

- Package costing is becoming critical in today's business world, with package costing involving both direct and indirect materials
- One of the typical and essential tooling being used in back-end assembly manufacturing is the process plate
- Process plates or top plates are used to control the carrier handling and to help transfer heat required during assembly processes, namely diebonding and wirebonding processes

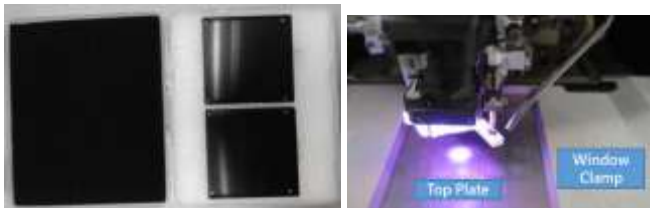

Fig. 1. Diebond process plates and wirebond top plate.

II. Problem Identification

- Process plates have high investment due to full metal structure to support thermal transfer, and is normally composed of aluminium metal and anodized top layer
- In addition, full metal structure results to planarity checking since mounting is not fully fixed to the heater or mother block
- Planarity problem also results to lower overall equipment utilization

Fig. 2. Process plate isometric view.

III. Process Design Augmentation and Improvement

- Package costing improvement is realized with the specialized multi-configuration process plates, with one option of having interchangeable top insert design to accommodate even more configurations of substrate and leadframe packages
- The augmented and improved process plate design offers cost-effectiveness and great flexibility for diebonding and wirebonding processes

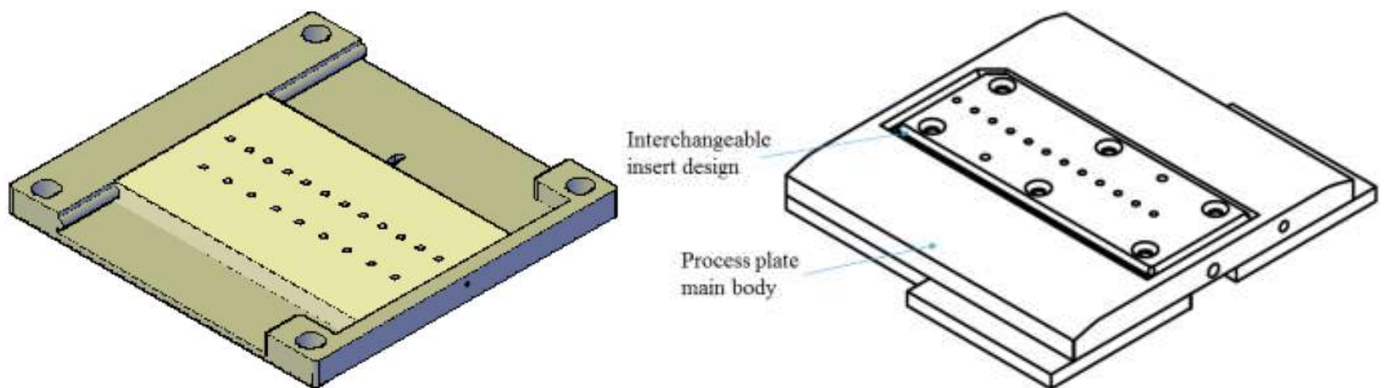

Fig. 3. Specialized process plates, one option with interchangeable top insert design.

- The specialized process plate ensures the integrity of the semiconductor substrate and/or leadframe package during diebonding and wirebonding processes with less mechanical conversion

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