

SEMI G97-0116

SPECIFICATION FOR ADHESIVE TRAY USED FOR THIN CHIP HANDLING

This Standard was technically approved by the Assembly & Packaging Global Technical Committee. This edition was approved for publication by the global Audits and Reviews Subcommittee on December 4, 2015. Available at www.semiviews.org and www.semi.org in January 2016.

1 Purpose

1.1 The purpose of this Document is to establish a standard for the specification of adhesive trays for thin chip handling.

2 Scope

2.1 This Document covers thin chip handling adhesive trays.

2.2 This Document specifies the size and various properties of the adhesive trays.

2.3 This Standard may be used as a specification for procurement of adhesive trays.

NOTICE: SEMI Standards and Safety Guidelines do not purport to address all safety issues associated with their use. It is the responsibility of the users of the Documents to establish appropriate safety and health practices, and determine the applicability of regulatory or other limitations prior to use.

3 Referenced Standards and Documents

3.1 *SEMI Standards and Safety Guidelines*

None.

3.2 *ISO Standards*¹

ISO 2248 — Packaging — Complete, Filled Transport Packages — Vertical Impact Test by Dropping

ISO 13355 — Packaging — Complete, Filled Transport Packages and Unit Loads — Vertical Random Vibration Test

NOTICE: Unless otherwise indicated, all documents cited shall be the latest published versions.

4 Terminology

4.1 *Abbreviations and Acronyms*

4.1.1 *3DS IC* — three-dimensional stacked integrated circuit

4.2 *Definitions*

4.2.1 *adhesive strength* — the measure of the maximum tensile stress needed to detach or unstick a chip from an adhesive tray.

4.2.2 *adhesive trays* — trays which have adhesion layer to hold thin chips. Adhesive trays are used for manufacturing, shipping and storage of thin chips.

4.2.3 *thin chip* — IC chips equal to or less than 0.1 mm thickness.

5 Test Methods

5.1 *Measurement*

5.1.1 *Adhesive Tray Dimensions* — Use Vernier caliper or other measurement scale with the accuracy at least 0.05 mm.

¹ International Organization for Standardization, ISO Central Secretariat, 1, ch. de la Voie-Creuse, CP 56, CH-1211 Geneva 20, Switzerland; Telephone: +41.22.749.01.11, Fax: +41.22.733.34.30, <http://www.iso.org>

5.1.2 *Parallelism of Adhesive Surface* — The parallelism shall be obtained by measuring nine different points (p1~p9) of an adhesive surface to the datum line 2. The points to be measured shall be at an arbitrary point within 10 mm × 10 mm range, which is at the center, the four corners and the middle points of each edge. Obtain the difference (P) between minimum and maximum heights. See Figure 1.

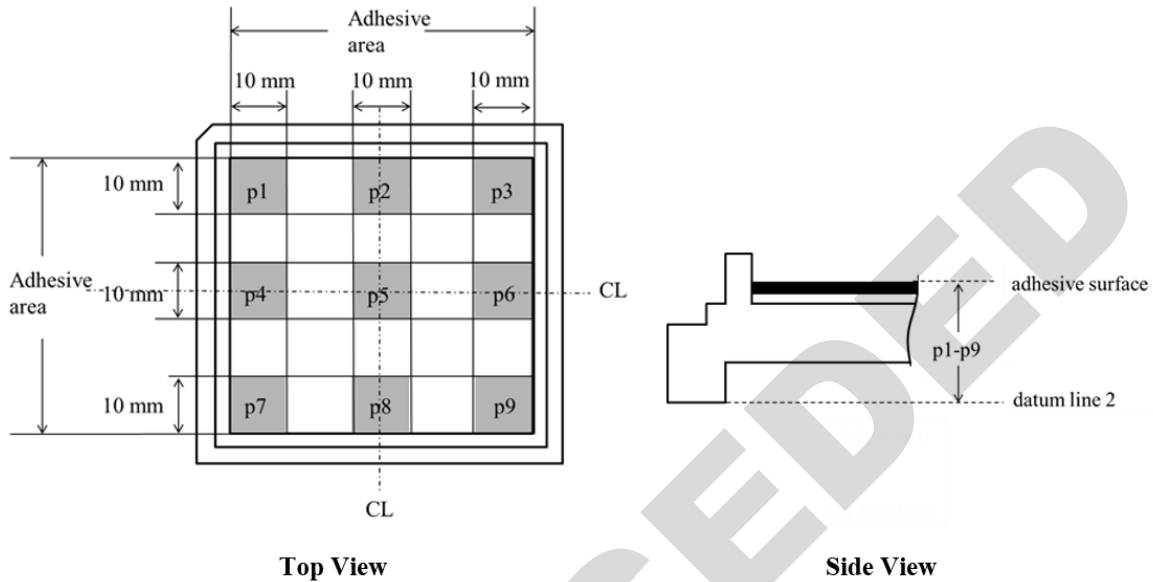


Figure 1
Measuring Points of Adhesive Surface

5.2 Adhesive Strength Test

5.2.1 *Apparatus* — For test apparatus, see Figure 2.

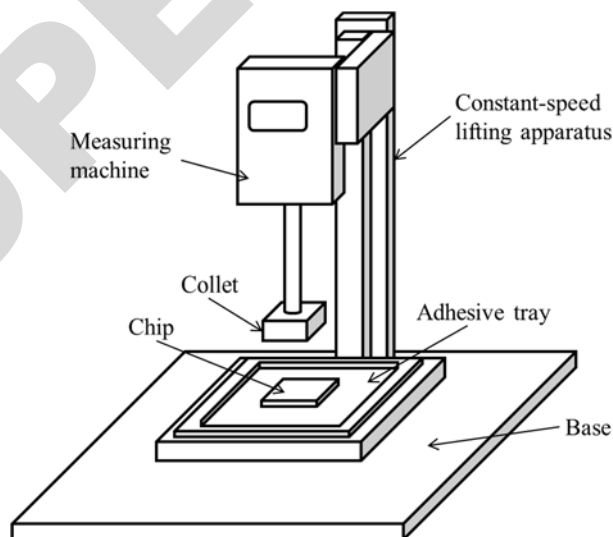


Figure 2
Schematic View of Apparatus

5.2.1.1 *Construction* — Test apparatus (load cell), constant speed lifting and lowering apparatus, collet and base.

5.2.1.2 *Collet* — Used for suction contact or adherence to hold a chip.

5.2.1.3 *Size of Collet* — A collet which is the same size as or slightly larger than a chip shall be used. The collet shall not come into contact with the adhesive area of the tray.

5.2.2 *Adhesive Tray* — Adhesive trays shall be fixed on the base with an appropriate method.

5.2.3 *Chip* — See Table 1.

5.3 Test Method

5.3.1 Pressing and Fixing Chip

5.3.1.1 *Pressing* — A chip shall be pressed to the adhesive surface of the tray and fixed by the collet. When pressing, the pressure shall not be sufficient to damage the chip.

5.3.1.2 *Pressure* — The pressure shall be between 0.1 N/cm^2 to 10.0 N/cm^2 .

5.3.1.3 *Fixing* — After pressing the chip, the collet shall be removed and the chip shall be fixed on a tray.

5.3.1.4 *Settling Time* — After fixing the chip shall be kept on the tray for at least one minute.

5.3.2 Peeling

5.3.2.1 *Collet Position* — Place the collet on the chip. Hold the chip by the collet. The chip shall be suctioned or adhered by the collet. See Figure 3 for side view and sizes.

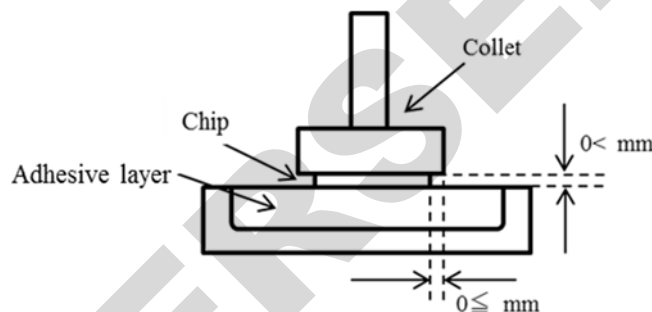


Figure 3
Collet Position

5.3.2.2 *Suction Power* — Suction power shall not be sufficient to damage the chip.

5.3.2.3 *Peel Off Speed* — Peel off the chip upwards at the speed of 300 mm/min.

5.4 *Adhesive Strength* — The maximum load obtained at the time the chip is peeled off from adhesive tray is considered the adhesive strength.

5.5 *Test Condition* — See Table 1.

Table 1 Adhesive Strength Test Conditions

Item	Conditions
Chip	Mirror-polished silicon chip Thickness: 0.05 mm Size: 8 mm × 8 mm
Adhesive Strength Test Position	Around the center of adhesive area
Measurements	Initial and one week after initial measurement