

SEMI 3D19-0619

TEST METHOD FOR ADHESIVE STRENGTH OF ADHESIVE TRAY USED FOR THIN CHIP HANDLING

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1 Purpose

1.1 The purpose of this Standard is to establish the standard for the adhesive strength test method of adhesive tray used for thin chip handling and shipping.

2 Scope

2.1 This Standard covers measuring system (system configuration, die pick up tool).

2.2 This Standard states test method (die mount layout, measurement environment, peeling speed etc.).

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

SEMI G97 — Specification for Adhesive Tray Used for Thin Chip Handling

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 Summary of Test Method

5.1 Apparatus

5.1.1 For test apparatus, refer to Figure 1.

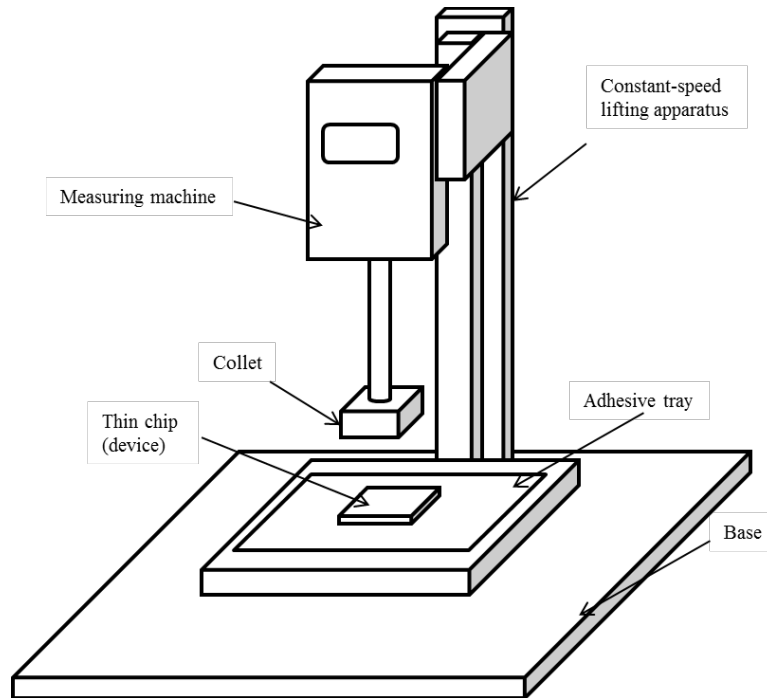


Figure 1
Schematic View of Apparatus

5.1.2 *Construction* — Test apparatus (load cell), constant speed lifting apparatus (up and down), pick-up collet and mounting base.

5.1.3 *Collet* — Use for attaching and/or holding a chip to measure the adhesive strength.

5.1.4 *Size of Collet* — Collet size is same size as or a little bit bigger than a chip. It shall not stick with the adhesive area of the tray.

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

5.1.6 *Chip* — Mirror-polished silicon chip thickness: 0.05 mm and size: 8 mm by 8 mm.

5.2 Method

5.2.1 Using the both-side adhesive tape, sample chip is attached on the collet drawn in Figure 2 to keep the adhesive force constantly.

1. clearance between collet and tray surface, $a > 0$
2. clearance between chip edge and collet edge, $b > 0$

5.2.2 Fix the collet with attached chip to strength measuring machine.

5.2.3 *Pressing and Fixing* — A chip attached to the collet shall be pressed and fixed to the adhesive surface of a tray. Pressing strength is less than chip broken strength to prevent the chip damage.

5.2.4 *Peeling* — Peel off the chip upwards at a constant speed such as 10 mm/min, 50 mm/min, 100 mm/min.

NOTE 1: The following speeds can be fixed between supplier and customer. Adhesive strength is preferable for measuring under several kinds of measurement speed.

1. 10 mm/min: to get the stable adhesive strength (recommend speed),
2. 100 mm/min: to get the actual strength to assume the pick-up mechanism on equipment (reference speed)