

SEMI M29-1296 (Reapproved 1110) SPECIFICATION FOR 300 mm SHIPPING BOX

This Standard was technically approved by the Silicon Wafer Global Technical Committee. This edition was approved for publication by the global Audits and Reviews Subcommittee on August 27, 2010. Available at www.semi.org in November 2010; originally published December 1996; previously published November 2003.

NOTICE: This Standard or Safety Guideline has an Inactive Status because the conditions to maintain Current Status have not been met. Inactive Standards or Safety Guidelines are available from SEMI and continue to be valid for use.

NOTICE: The section symbol (§) is used to reference a numbered section, paragraph, or header and all subordinate paragraphs, headers, and embedded material (i.e., EXCEPTIONs, lists) therein. The paragraph symbol (§) is used to reference a particular numbered paragraph and embedded material therein. When duplicated (i.e., §§ and §§) the symbols are used to reference more than one section or paragraph, respectively.

NOTICE: Paragraphs entitled 'NOTE:' are not an official part of this Standard or Safety Guideline and are not intended to modify or supersede the official Standard or Safety Guideline. These have been supplied by the global technical committee to enhance the usage of the Standard or Safety Guideline.

1 Purpose

1.1 This Specification defines a container for safe transportation of 300 mm wafers from a wafer maker to a receiving dock of an IC maker site.

2 Scope

2.1 This Specification additionally defines the parts necessary for a shipping box among cassettes specified in SEMI E57 and SEMI E1.9, within the range of the specifications in SEMI E57 and SEMI E1.9.

2.2 This Specification also defines the size of a box containing a shipping cassette containing 300 mm wafers.

2.3 Although, as for material, use of plastic is a premise, actual material names are not defined for free selection based on progress of maker's technologies.

2.4 Although this Specification directs a high-performance shipping box, this does not concretely define the performance on particle generation and sealing capability.

2.5 As for the count of contained wafers, this defines two sorts, that is, 13 and 25 wafers.

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 E1.9 — Mechanical Specification for Cassettes Used to Transport and Store 300 mm Wafers

SEMI E57 — Mechanical Specification for Kinematic Couplings Used to Align and Support 300 mm Wafer Carriers

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

4 Terminology

4.1 Definitions

4.1.1 *box bottom* — a lower half of an outer box.

4.1.2 *box top* — an upper half of an outer box.

4.1.3 *cassette* — a cassette defined in SEMI E57 and SEMI E1.9.

4.1.4 *clamp* — a part to fix a box top and a box bottom mutually.

- 4.1.5 *clamping indent* — a groove formed with a box top and a box bottom. The groove which a clamp hooks for setting.
- 4.1.6 *front retainer* — a retainer which is attached in a front side of a cassette, the front side which is defined in SEMI E1.9.
- 4.1.7 *gasket area* — an area where gaskets are attached so as to reduce air flow in a shipping box which is generated by the difference between internal pressure and external pressure.
- 4.1.8 *orientation mark* — a mark expressed on a part for confirmation of cassette direction.
- 4.1.9 *outer box* — a container part of a shipping box, surrounding the whole objects so as to protect a shipping cassette, except gasket and clamps.
- 4.1.10 *poka-yoke* — a device applied to a rib so as not to be set in an incorrect direction in order to avoid an orientation failure when the part is set.
- 4.1.11 *rear retainer* — a retainer which is attached in a rear side of a cassette, the rear side which is defined in SEMI E1.9.
- 4.1.12 *retainer* — a part to be attached to a shipping cassette for retaining wafers in transportation so that the wafers do not move. There are two types, that is, a front retainer and a rear retainer.
- 4.1.13 *retainer hook* — a projection formed on a shipping cassette for attaching a retainer.
- 4.1.14 *setting hole* — a hole formed in a retainer for attaching the retainer. This makes a pair with a retainer hook.
- 4.1.15 *shipping box* — a whole container containing a shipping cassette. This is composed of a shipping cassette, an outer box, retainers, gasket, and clamps.
- 4.1.16 *shipping cassette* — a cassette additionally defined herein for shipping among cassettes.
- 4.1.17 *stacking rib* — a rib formed on a top surface of a box top and on a bottom surface of a box bottom so as not to collapse when shipping boxes are stacked. A rib positioned on the top is called a top rib, and a rib on the bottom a bottom rib.
- 4.1.18 *supporting rib* — a rib inside an outer box for supporting a cassette.

5 Requirements

5.1 *Part Construction* — A shipping box defined herein is composed of the parts shown in Figure 1.

5.1.1 The appearance of this part is one of embodiments of this definition.

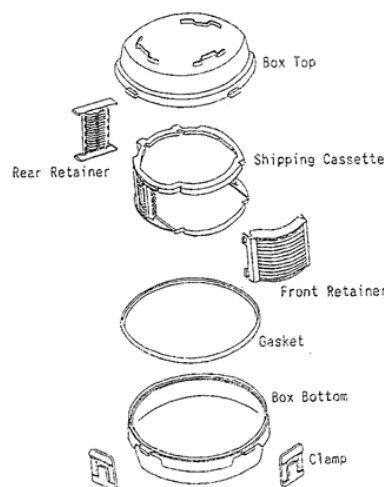


Figure 1
Components

5.2 Shipping Cassette

5.2.1 *Additional Dimensions* — Dimensions of a shipping cassette should conform to SEMI E57 and SEMI E1.9. However, in the above Documents, there are many Max. or Min. notations, and hence, they are not sufficient to design a shipping box. Therefore, in Figure 2 and Table 1, necessary dimensions are added within the ranges defined in the above Documents.

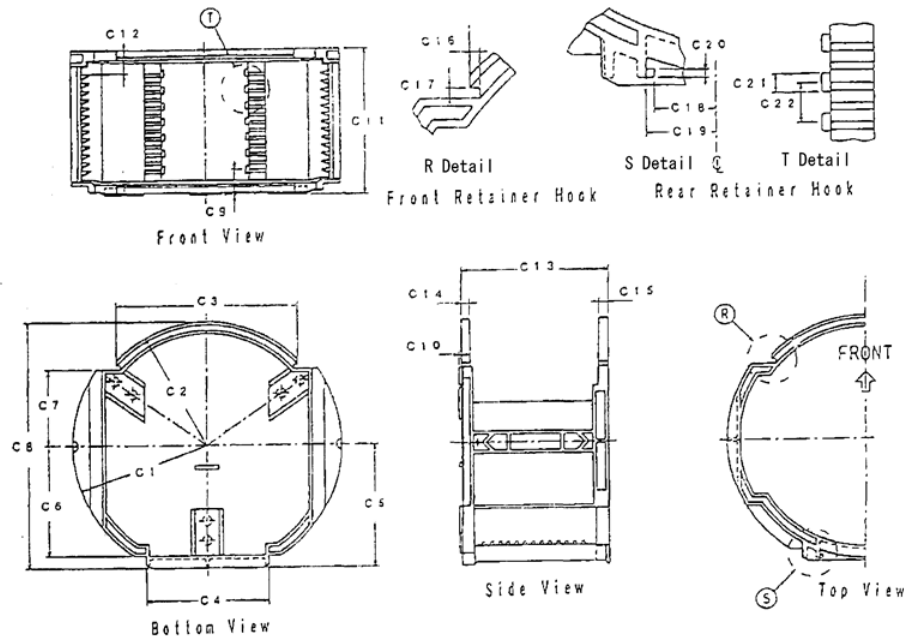


Figure 2
Additional Definition of Shipping Cassette

5.2.2 *Orientation Mark* — The orientation mark indicating the front side of a cassette is shown in Figure 3 and Table 1. This supports a user to manually set a cassette on a box bottom or a platform of equipment.

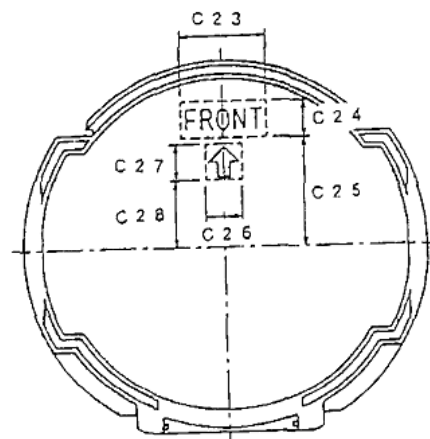


Figure 3
Orientation Mark of Shipping Cassette

Table 1 Dimensions of Shipping Cassette

Unit: mm

Location	Standardized Dimension		Corresponding to SEMI E1.9
	13 Wafers	25 Wafers	
C1	166 ± 0.5	←	r5
C2	153.5 ± 0.5	←	r6
C3	224 ± 1	←	x6 + x6
C4	152 ± 0.5	←	x5 + x5
C5	155 ± 0.5	←	y16
C6	139.5 ± 0.5	←	y23
C7	94 ± 0.5	←	y15
C8	308.5 ± 1	←	r6 + y16
C9	31 ± 0.5	←	z8 – z1
C10	3 ± 0.5	←	
C11	182 ± 1	302 ± 1.5	
C12	29.5 ± 0.5	←	z18
C13	179 ± 3	299 ± 4	
C14	10 ± 1	←	
C15	11 ± 1	←	
C16	5 ± 0.5	←	
C17	5 ± 0.5	←	
C18	51 ± 0.5	←	x1
C19	55 ± 0.5	←	
C20	4 ± 0.5	←	
C21	9 ± 0.5	←	
C22	20 ± 0.5	←	
C23	70 ± 10	←	
C24	30 ± 10	←	
C25	90 ± 10	←	
C26	30 ± 10	←	
C27	30 ± 10	←	
C28	55 ± 10	←	

5.3 Box Top

5.3.1 *Outer Dimensions* — Outer dimensions of a box top are shown in Figure 4 and Table 2.

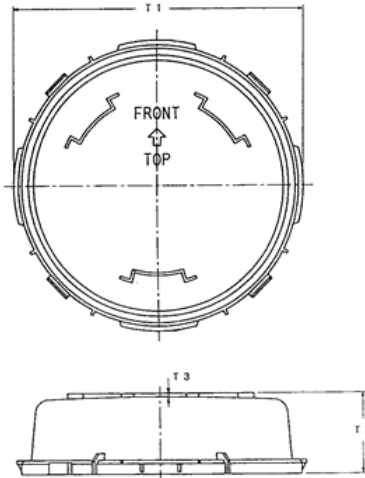


Figure 4
Outer Dimensions of Box Top

5.3.2 *Supporting Rib and Poka-yoke Rib* — Positions of a supporting rib for supporting a shipping cassette inside a box top and a poka-yoke (fool-proof) rib for avoiding setting the box top in a wrong orientation are shown in Figure 5 and Table 2.

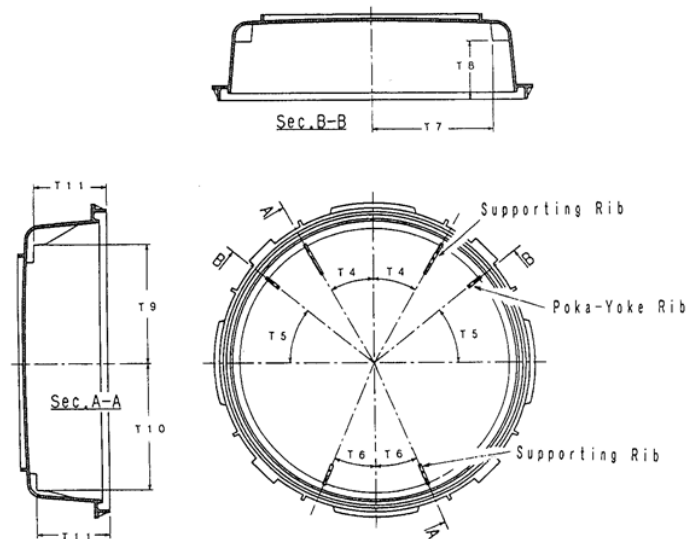


Figure 5
Supporting Rib and Poka-Yoke Rib of Box Top

5.3.3 *Gasket Area* — It is required to provide a gasket in an area shown in Figure 6 and Table 2 if the gasket is provided.

5.3.4 *Clamping Indent* — Figure 7 and Table 2 show dimensions of a concave part for receiving a clamp. Refer to Figure 8 and Table 2 for horizontal positions.