SEMI E1-0697 (Reapproved 1102)[E]
SPECIFICATION FOR 3 INCH, 100 mm, 125 mm, AND 150 mm PLASTIC AND METAL WAFER CARRIERS

This Standard was technically approved by the Physical Interfaces & Carriers Global Technical Committee. This edition was approved for publication by the global Audits and Reviews Subcommittee on July 21, 2002. Available at www.semi.org in November 2002; originally published in 1979; previously published June 1997.

[E] This Standard was editorially modified in March 2003 to reflect the editorial modification of SEMI E1.5.

1 Scope

1.1 This Specification covers the dimensional requirements for plastic and metal wafer carriers used for the processing and handling of 3 inch, 100 mm, 125 mm, and 150 mm diameter wafers. The specification has two classifications: General Usage and Auto Transport Usage. General Usage is a basic guideline that covers 3 inch, 100 mm, 125 mm, and 150 mm wafer sizes. Auto Transport Usage is intended to meet the in-use requirements for the interface of wafer carriers with automated wafer processing equipment. Auto Transport Usage covers the 125 mm and 150 mm sizes.

1.2 To meet these specifications, carriers must be manufactured within the dimensional limits and be dimensionally stable within the specification when used in accordance with manufacturers' recommendations.

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.

NOTE 1: Recommended usage should be agreed to between user and supplier, since wafer carriers are manufactured from a number of different materials by several manufacturing methods.

2 Terminology

2.1 For a pictorial explanation of most of the selected definitions, see Figure 1. Figure 1 symbols are defined in Table 1.

2.2 *Definitions*

2.2.1 *bar* — (see "crossbar")

2.2.2 *bar end* — the end surface of the carrier that has only one crossbar.

2.2.3 *bar radius* — the radius nearest the bar end of the carrier on the crossbar. (See Figure 1, D5b, Type II.)

2.2.4 *bar web* — the mass of material for structural support which may or may not be present on the crossbar. (See Figure 1, D5a, Type II.)

2.2.5 *bar width* — the distance or thickness of the bar when measured perpendicular to the top face. (See Figure 1, D5b.)

2.2.6 *cassette* — (see "wafer carrier")

2.2.7 *crossbar* — the mass of material connecting the two sides of the carrier at the bar end of the carrier.

2.2.8 *edge perimeter distance* — the distance from the edge of the wafer to the top face of the carrier. (See Figure 1, D7.)

2.2.9 *end wall* — the wall of the carrier opposite the bar end of the carrier.

2.2.10 *flange* — mass of material on the exterior and perpendicular to the side walls.

2.2.11 *hole* — the area for the pin on another carrier to enter for transferring wafers. (See Figure 1, C8.)

2.2.12 *lot* — (see "hole")

2.2.13 *parallelism tolerance* — the minimum and maximum dimension allowance for the opposite pockets to vary in relation to their distance from the crossbar end of the carrier. (See Figure 1, D1.)

SUPERSEDED

Documents Document Sharing Hub

Full document details: SEMI E1-0697-1102RE

2.2.14 *pin* — the mass of material which enters the hole or slot of another carrier for transferring wafer. (See Figure 1, C7.)

2.2.15 *pin and hole center distance from pocket centerline* — the distance from centerline of either the pin or hole to the closest pocket centerline. (See Figure 1, C9.)

2.2.16 *pocket* — the area in which the wafer is located in the carrier.

2.2.17 *pocket centerline* — the imaginary line which bisects each pocket.

2.2.18 *pocket depth* — the distance from the pocket flat to its own pocket nose, not to the opposite pocket. (See Figure 1, C2.)

2.2.19 *pocket flat* — the width of the pocket along the vertical walls at its narrowest distance. (See Figure 1, C3.)

2.2.20 *pocket nose* — the top of the mass of material between adjacent pockets.

2.2.21 *pocket nose radius* — the radius on the pocket nose.

2.2.22 *pocket size* — the distance between opposite pocket flats. (See Figure 1, C4.)

2.2.23 *pocket spacing* — the distance between pocket centerlines. (See Figure 1, B2.)

2.2.24 *pocket width* — the width of the pocket at its widest distance. (See Figure 1, C1.)

2.2.25 *top face* — the plane or surface of the carrier from which side wafers enter into or out of the carrier.

2.2.26 *track clearance* — the unobstructed area between the two carrier sides on the bar end. (See Figure 1, D6; Figure 1a, D6a, D6b, D6c.)

2.2.27 *wafer carrier* — a device for the holding of wafers for various processing steps in semiconductor manufacturing.

2.2.28 *wafer tilt* — the possible unparallel position of the wafer in relation to the bar end of the carrier when the carrier is resting on the bar end. (Not shown in Figure 1.)

2.2.29 *wafer transfer* — the act of relocating wafers from one carrier into another. This can be accomplished by several methods.

Table 1 Symbols Outline General Usage

Figure 1 Reference	*Description*
	Overall Dimensions
A1	Length
A2	Width (with/without flange)
A3	Height (excluding pin)
	Capacity
B1	Pockets per carrier
B2	Pocket spacing
B3	Center distance from the 1st to last pocket
	Detail Dimensions
C1	Pocket width
C2	Pocket depth
C3	Pocket flat
C4	Pocket size
C5	Pin and hole location (width)
C6	Pin and hole location (length)
C7	Pin diameter and height

SUPERSEDED

Documents
Document Sharing Hub
Full document details: SEMI E1-0697-1102RE