SEMI G74-0698
SPECIFICATION FOR TAPE FRAME FOR 300 mm WAFERS

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1 Purpose

1.1 The purpose of this Document is to standardize the specifications for 300 mm wafer tape frames used between the dicing process and the die-bonding process.

2 Scope

2.1 This Standard documents the dimensions, characteristics, and measurement methods for 300 mm wafer tape frames.

2.2 This Standard can be used as the specification sheet for tape frame upon purchasing.

2.3 This Standard uses the SI unit system.

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 *ANSI Standard*[1]

ANSI/ASME B46.1 — Surface Texture (Surface Roughness, Waviness, and Lay)

3.2 *ISO Standard*[2]

ISO 4287-1 — Surface Roughness – Terminology – Part 1: Surface and Its Parameters

3.3 *JIS Standards*[3]

JIS B 0601 — Geometrical Product Specifications (GPS) – Surface Texture: Profile Method – Terms, Definitions and Surface Texture Parameters

JIS Z 2245 — Rockwell Hardness Test – Test Method

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

4 Terminology

4.1 *Definitions*

4.1.1 *tape frame* — the frame which applies the wafer tape to the wafer and retains the wafer.

4.1.2 *wafer tape* — an adhesive plastic tape which retains the wafer or diced chip. It is used between the dicing process and the die-bonding process.

5 Ordering Information

5.1 Purchase orders for tape frames furnished to this Specification shall include quantity.

[1] American National Standards Institute, 25 West 43rd Street, New York, NY 10036, USA; Telephone: +1.212.642.4900, Fax: +1.212.398.0023, http://www.ansi.org

[2] International Organization for Standardization, ISO Central Secretariat, BIBC II, Chemin de Blandonnet 8, CP 401, 1214 Vernier, Geneva, Switzerland; Telephone: +41.22.749.01.11, http://www.iso.org

[3] Japanese Standards Association, 4-1-24 Akasaka, Minato-ku, Tokyo 107-8440, Japan; Telephone: +81.3.3583.8005, Fax: +81.3.3586.2014, http://www.jsa.or.jp

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6 Requirements

6.1 *Dimensions* — See Table 1.

Table 1 300 mm Tape Frame Dimensions

Symbol	*Dimension (mm)*	*Note*
ϕ A	350 ± 0.5	Inner diameter
ϕ B	400 ± 0.5	Outer diameter
C	380 +0/−0.5	Width between two cords
D	380 +0/−0.5	Width between two cords
E	170.4	Outline dimension
F	172	Outline dimension
G	86	Outline dimension
H	90	Outline dimension
I	120	
J	60	Partition out with diameter *N* as standard
tK	1.5 or (1.2)	Plate thickness
L	190	
M	190	Frame warpage
ϕ N	3.2	Pin diameter
P	100 ± 0.2	Diameter *N* position
Q	18 ± 0.2	Diameter *N* position
R	276	1 Notch position
S	19.6 ± 0.2	1 Notch position

#1 Plate thickness of 1.5 mm is recommended.

#2 No burrings on the edges.

#3 Surface Roughness: R_{max} ≤1 µm, R_a ≤0.1 µm; (surface indicated as Δ) unindicated Cut Surface Roughness: R_{max} ≤100 µm, R_a ≤25 µm.

6.2 *Surface Hardness* — HRc ≥47.

6.3 *Resiliency* — Must return to original shape, where the linear scale ruler reads 0, after one side is held firm and the other is bent with a force of 30 *N* for 60 seconds.

6.4 *Surface Roughness* — R_a ≤0.1 µm, R_{max} is within ≤1.0 µm.

6.5 *Flatness* — Within 0.3 mm.

7 Test Methods

7.1 *Dimensions* — To be measured with a measuring device, such as a caliper, with a precision of 0.05 mm.

7.2 *Surface Hardness* — To be measured according to the method in JIS Z 2245 with a Rockwell Hardness Tester.

7.3 *Resiliency* — Secure one side of the frame in a vice, and bend with a force of 30 *N* for 60 seconds. After that, release the frame and measure the change from the original shape with a linear scale ruler. The linear scale ruler should have a precision of at least 0.5 mm.

7.4 *Surface Roughness* — Measure with a surface roughness gauge. Surface roughness is measured perpendicular to the undulation and must be shown as roughness average (R_a) and maximum peak-to-valley roughness height (R_{max}). Refer to ISO 4287-1, JIS B 0601, and ANSI/ASME B46.1.

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