

SEMI M9.6-95^E

STANDARD FOR ROUND 125 mm DIAMETER POLISHED MONOCRYSTALLINE GALLIUM ARSENIDE WAFERS

^E This standard was editorially modified in January 2006 to correct a typographical error. A changes was made to Table 2.

The complete specification for this product includes all general requirements of SEMI M9.

Table 1 Dimension and Tolerance Requirements

Property	Dimension	Tolerance	Units
DIAMETER	125.0	± 0.3	mm
THICKNESS, CENTER POINT	625	± 25	μm
PRIMARY ORIENTATION FLAT DIAMETER ^A	121.0	± 0.3	mm
SECONDARY FLAT DIAMETER ^B	123.5	± 0.3	mm

^A Actual Primary Orientation Flat Length depends on allowed variation in the wafer diameter and the orientation flat diameter. Variation in Primary Orientation Flat Length is calculated assuming that the end points of Primary Orientation Flat will have curvature of a circle of radius $R = 0$ or $R = 3$ mm; this circle will be tangent to the orientation flat and also tangent to the wafer circumference. Calculated nominal linear length of Primary Orientation Flat (the straight part of the flat) are 44.00 mm in a case of $R = 0$ mm and 42.90 respectively on a case of $R = 3$ mm.

^B Actual Secondary Flat Length also depends on allowed variation in the wafer diameter and the Secondary Flat Diameter. Variation in Secondary Flat Length is calculated. Calculated nominal linear lengths of the Secondary Flat (the straight part of the flat) are 27.22 mm in the case of $R = 0$ mm, and 26.25 mm, respectively, in the case of $R = 3$ mm.

Table 2 Orientation and Flat-Location Requirements

Property	Requirement
PRIMARY FLAT ORIENTATION	$(0\bar{1}\bar{1}) \pm 1.0^\circ$, under an Arsenic facet. The primary flat shall be perpendicular to the “V” etch figure. ^C
SECONDARY FLAT ORIENTATION	$90^\circ \pm 5^\circ$ counterclockwise from the primary flat.
SURFACE ORIENTATION	
A.	$(100) \pm 0.5^\circ$ (see Figure 1 in M9.)
B.	(100) off $2^\circ \pm 0.5^\circ$ towards the (110) plane which is between the primary and secondary flats (see Figure 3 in M9.)
ORTHOGONAL MISORIENTATION	$\pm 5^\circ$ (see Figure 5 in M9.)

^A The frame of reference is the (100) plane of the crystal. It is the wafer normal that is tilted towards the (110) plane of the crystal.

^B See Table 1.

^C Using A-B, bromine-methanol, ammonium hydroxide: hydrogen peroxide etch. See Figures 1 through 4. Figure 1 also shows the orientation of the V-groove figure relative to the KOH etch pits.

NOTICE: These standards do not purport to address safety issues, if any, associated with their use. It is the responsibility of the user of these standards to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use. SEMI makes no warranties or representations as to the suitability of the standards set forth herein for any particular application. The determination of the suitability of the standard is solely the responsibility of the user. Users are cautioned to refer to manufacturer’s instructions, product labels, product data sheets, and other relevant literature respecting any materials mentioned herein. These standards are subject to change without notice.

The user’s attention is called to the possibility that compliance with this standard may require use of copyrighted material or of an invention covered by patent rights. By publication of this standard, SEMI takes no position respecting the validity of any patent rights or copyrights asserted in connection with any item mentioned in this standard. Users of this standard are expressly advised that determination of any such patent rights or copyrights, and the risk of infringement of such rights, are entirely their own responsibility.

SUPERSEDED