SEMI M9.1-0813 (Withdrawn 0822)
SPECIFICATION FOR ROUND 50.8 mm POLISHED MONOCRYSTALLINE GALLIUM ARSENIDE WAFERS FOR ELECTRONIC DEVICE APPLICATIONS

This Standard was technically approved by the Compound Semiconductor Materials Global Technical Committee. This edition was approved for publication by the global Audits and Reviews Subcommittee on January 4, 2022. Available at www.semiviews.org and www.semi.org in August 2022. Originally published in 1984; previously published August 2013.

NOTICE: This Document was balloted and approved for withdrawal in 2022.

1 Purpose

1.1 This Specification defines properties of 50.8 mm monocrystalline GaAs wafers, in agreement with presently established industry practice. It uniquely defines those mechanical parameters that do not need, for technical reasons, a choice of different values.

2 Scope

2.1 The parameters defined include the values and tolerances of wafer diameter, thickness and surface orientation. The position and length of primary and secondary flats are also specified.

2.2 The complete Specification of this product includes the requirements of SEMI M9, excluding those that are not relevant to this Specification.

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 M9 — Specification for Polished Monocrystalline Gallium Arsenide Wafers

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

4 Physical Requirements

Table 1 Dimension and Tolerance Requirements

Property	*Dimension*	*Tolerance*	*Units*
DIAMETER[#1]	50.8	±0.5	mm
THICKNESS, CENTER POINT	450	±25	µm
PRIMARY FLAT LENGTH	16	±2	mm
SECONDARY FLAT LENGTH	8	±2	mm

#1 The diameter standard means that the dimension is centered to this value.

Table 2 Orientation and Flat Location Requirements

Property	*Requirement*
PRIMARY FLAT ORIENTATION	$(01\bar{1})$ ± 0.5°[#1], under an Arsenic facet. The primary flat shall be perpendicular to the 'V' etch figure.[#2]
SECONDARY FLAT ORIENTATION	90° ± 5° counterclockwise from the primary flat.

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Property	*Requirement*
SURFACE ORIENTATION[#3]	
A.	(100) ± 0.5° (Refer to Figure 1 in SEMI M9.)
B.	(100) off 2° ± 0.5° toward the (110) plane, which is between the primary and secondary flats. (Refer to Figure 3 in SEMI M9.)
ORTHOGONAL MISORIENTATION	±5° (Refer to Figure 5 in SEMI M9.)

#1 Refer to Table 1 in SEMI M9.

#2 Using A-B, bromine-methanol, ammonium hydroxide: hydrogen peroxide etch. Refer to Figures 1 and 3 in SEMI M9. Figure 1 also shows the orientation of the V-groove figures relative to KOH etch pits.

#3 The frame of reference is the (100) plane of the crystal. It is the wafer normal that is tilted toward the (110) plane of the crystal.

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