

Definition of Dimensional Properties, Terminology and Methods

Diameter

The linear dimension across the surface of a wafer. Measurement is performed manually with ANSI certified digital calipers on each individual wafer (See Figure 1).

Thickness, Center Point

Measured with ANSI certified non-contact tools at the center of each individual wafer.

Flat Length

Linear dimension of the flat measured with ANSI certified digital calipers on a sample of one wafer per ingot (See Figure 1).

Surface Orientation

Denotes the orientation of the surface of a wafer with respect to a crystallographic plane within the lattice structure. In wafers cut intentionally "off orientation", the direction of cut is parallel to the primary flat, away from the secondary flat. Measured with x-ray goniometer on a sample of one wafer per ingot in the center of the wafer.

Orthogonal Misorientation

In wafers cut intentionally "off orientation", the angle between the projection of the normal vector to the wafers surface onto a $\{0001\}$ plane and the projection on that plane of the nearest $\langle 11\bar{2}0 \rangle$ direction.

Primary Flat

The primary flat is the $\{10\bar{1}0\}$ plane with the flat face parallel to the $\langle 11\bar{2}0 \rangle$ direction.

Primary Flat Orientation

The flat of the longest length on the wafer, oriented such that the chord is parallel with a specified low index crystal plane. Measured on one wafer per ingot using Laue back-reflection technique with manual angle measurement.

Secondary Flat Orientation

A flat of shorter length than the primary orientation flat, whose position with respect to the primary orientation flat identifies the face of the wafer.

Marking

For silicon face polished material, the carbon face of each individual wafer is laser marked with OCR compatible font, similar to definitions and characteristics in SEMI M12 (See Figure 1). For carbon face polished material, the silicon face of each individual wafer is laser marked (See Figure 2).

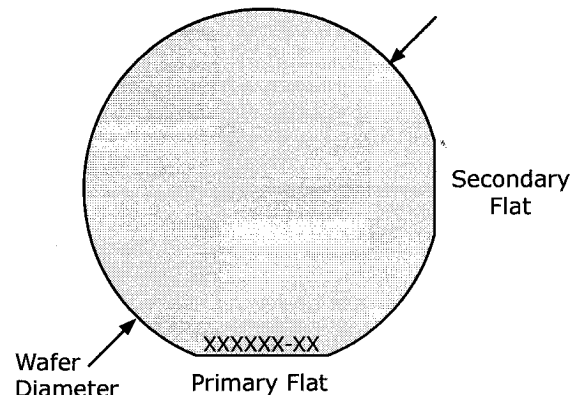


Figure 1. Diameter, Primary and Secondary Flat Locations, and Marking Orientation, Carbon Face Up for Silicon Face Polished Wafers

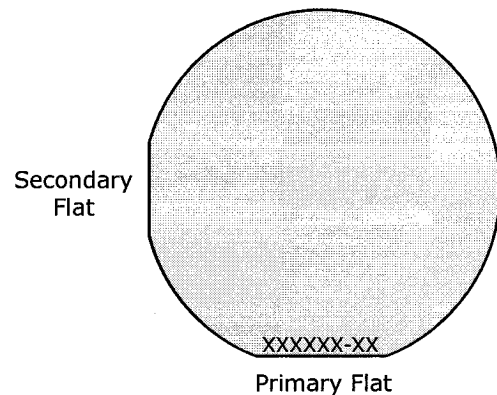


Figure 2. Primary and Secondary Flat Locations, and Marking Orientation, Silicon Face Up for Carbon Face Polished Wafers