

JIS

JAPANESE INDUSTRIAL STANDARD

**Method of Measurement of
Etch Pit Density of
Germanium Crystal**

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JAPANESE INDUSTRIAL STANDARD

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Method of Measurement of Etch Pit
Density of Germanium CrystalH 0610-1966
(Reaffirmed: 1983)1. Scope

This Japanese Industrial Standard specifies the method of measurement of etch pit density on the (111) face of germanium single crystal. The etch pit density capable of being measured shall be within a range of 0 to 100000 pieces per 1 cm^2 ⁽¹⁾.

Note ⁽¹⁾ The range of electric resistivity and the conductivity type are not limited.

2. Sample

A sample shall be cut off from the single crystal of approx. 15 to 30 mm in diameter or otherwise, having the sectional area equal thereto and, conform to the following specifications.

- (1) The surface has a precision within 3 degrees to the (111) surface and the sample is of a wafer state of 1 to 3 mm in thickness.
- (2) The measuring surface shall be free from flaws, stains, etc. which are clearly visible with the naked eyes ⁽²⁾.

Note ⁽²⁾ When those defects appear on the measuring surface, it shall be polished with abrasives of 30 μ max. in grain size. Further, in order to remove stains, it is necessary that the surface is degreased with organic solvent or detergent and washed by clean water.

3. Etching

3.1 Etching Ambience The peripheral temperature in etching of a sample, shall be as a rule $23^\circ\text{C} \pm 3$ degrees.

3.2 Etchant The etchant shall be as follows:

- (1) The etchant is prepared by mixing the following composition.

Hydrofluoric acid	1 part by volume
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Nitric acid	4 parts by volume
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This solution is prepared at a mixing precision of within $\pm 2 \%$ ⁽³⁾.

Note ⁽³⁾ It may be used just after mixing. Further, it can be stored for at least one month in a hermetically sealed polyethylene container at room temperature.