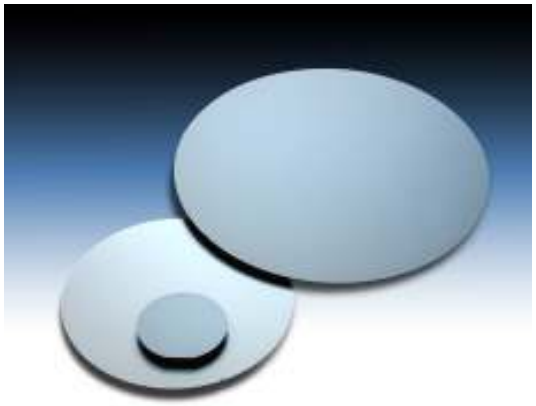
ELECTRICAL

VLSI Standards

Resistivity Standard

RESISTANCE NEED NOT BE FUTILE. Resistivity Standards (RS) span 4 decades and are designed for calibrating both contact and non-contact resistivity measuring instruments. The standard is created by sawing a doped single crystalline ingot into wafers, lapping and chemically cleaning them to VLSI Standards' specifications.

The Resistivity Standard, available in three wafer sizes, is shown in its matte finish.



PRODUCT DESCRIPTION

Resistivity Standards are bare silicon wafers available in 3 in, 8 in and 12 in sizes. The silicon is p-type (Boron) doped to nominal resistivity values, from 0.002 ohm.cm to 3 ohm.cm as available on the 3" model. For enhanced measurement on contact probes, the wafers are lapped and chemically polished. The increased surface roughness allows cleaner penetration through the native oxide layer and better contact.

Each wafer is certified at its center, NIST Traceable for accuracy. Certificates of Calibration are provided with each standard and report the resistivity, sheet resistance and thickness measurement values with calculated uncertainties.

PRODUCT SPECIFICATIONS

Wafer Size	Resistivity [Ohm.cm]	Sheet resistance [Ohms/□]	Thickness
76.2	0.002	0.04	508 µm
76.2	0.01	0.2	508 µm
76.2	0.03	0.6	508 µm
76.2	0.1	2	508 µm
76.2	0.3	6	508 µm
76.2	0.9	18	508 µm
76.2	3	60	508 µm

Wafer Size	Ohm.cm	Ohms/□	Thickness
200	0.01	0.14	710 µm
200	0.03	0.42	710 µm
200	0.1	1.4	710 µm
200	0.3	4.2	710 µm
200	1	14	710 µm
200	3	42	710 µm
200	30	423	710 µm

Wafer Size	Ohm.cm	Ohms/□	Thickness
300	0.02	0.25	760 µm
300	1.0	22	760 µm
300	10	140	760 µm

IMPORTANT

When performing calibration measurements with a 4-point-probe instrument, you must ensure that the probes and the silicon make solid, repeatable contact. Poor contact is revealed by a high standard deviation of multiple measurements taken from the same area or in some cases, zero-voltage readings. We recommend the use of tungsten carbide probes with a radius of 40 microns, a probe spacing of 1.6 mm, and a loading force of 200 grams per pin. This type of probe is often referred to in literature as "Probe Type E". Other probes with wider radii may not be able to break through the layer of native oxide on the wafer and may result in poor contacts.

Revision RS12292014
Specifications subject to change.

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