

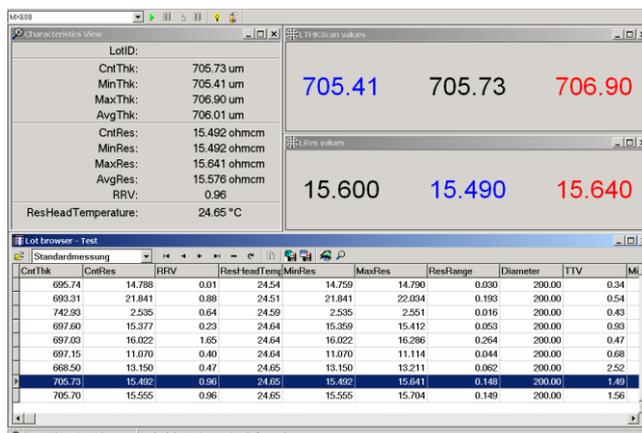
MX6012

Contactless 300 mm Wafer Gauge for Resistivity, Thickness and P/N



Operation and Mechanical Structure

The gauge is a compact desktop instrument for the contactless measurement of thickness and resistivity of silicon wafers. For the measurement, the wafer is moved automatically into the interior of the instrument. On its way there, it passes one resistivity and one thickness sensor. The center of the wafer will be always measured. Up to 15 additional points for each half scan can be individual defined. Optionally an identical scan after 90° rotation. At one point from top, the dopant type is determined by means of a contactless P/N sensor. The yielded values are sent to a WINDOWS computer via the instruments serial interface. There, results are computed, and displayed on the screen, the software also provides lot data management and printout options (s. MXNT description).



The screenshot displays the software interface with several data windows:

- Characteristics View:** Shows LotID, thickness (Thk) and resistivity (Res) statistics, and ResHeadTemperature.
- TTV Scan values:** Displays three thickness values: 705.41, 705.73, and 706.90.
- TTV Res values:** Displays three resistivity values: 15.600, 15.490, and 15.640.
- Lot browser - Test:** A table listing multiple test results with columns for Thk, Res, RRV, ResHeadTemp, Min/Max Res, ResRange, Diameter, and TTV.

LotID	Thk (um)	Res (ohmcm)	RRV	ResHeadTemp (°C)	MinRes	MaxRes	ResRange	Diameter	TTV
705.73	705.73	15.492	0.96	24.65	15.492	15.641	0.148	200.00	1.49
705.70	705.70	15.555	0.96	24.65	15.555	15.704	0.149	200.00	1.56

Measurement Principles

Thickness	Capacitive Sensors
Resistivity	Eddy Current Principle
Dopant Type	Surface Photo Voltage System

Technical Specifications

Wafer Diameters.....	200 + 300 mm
Thickness.....	600 – 900 µm
Max. Warp	100 µm
Resistivity.....	0.001 – 200 Ohm-cm
Type check	0.020 – 200 Ohm-cm

Thickness Measurement

Accuracy ¹	+/- 0.3 µm
TTV Accuracy	+/- 0.1 µm
Precision ²	0.05 µm

Restivity Measurement

Accuracy ¹	0.001 – 80 Ohm-cm	+/- 1 % ³
	200 Ohm-cm.....	+/- 5 %
Precision ²	0.001 – 80 Ohm-cm	0.2 %
	200 Ohm-cm	2 %

Edge Exclusion

max. FQA (8").....	180 mm
max. FQA (12").....	280 mm

Throughput

1 Point (center)	5 sec.
5 Points (1 scan).....	10 sec.
9 Points (2 scans)	20 sec.

Particle Performance

All moving parts are below the wafers
 Backside contact material is PEEK
 (maybe an exhaust and laminarflow necessary)

Dimensions

Width.....	400 mm
Depth	900 mm
Hight.....	280 mm

¹ Deviation of real value, average of repeated measurements are within these limits, at calibration temperature +/- 2 K, gradient < 1 K/h

² Repeatability including handling, 1 sigma STD of repeated measurements is within these values

³ Depends on quality of calibration samples