



PRECISION IS OUR PROFESSION

Catalog No. E11018(3)

Introduction to Precision Measuring Instrument Solutions

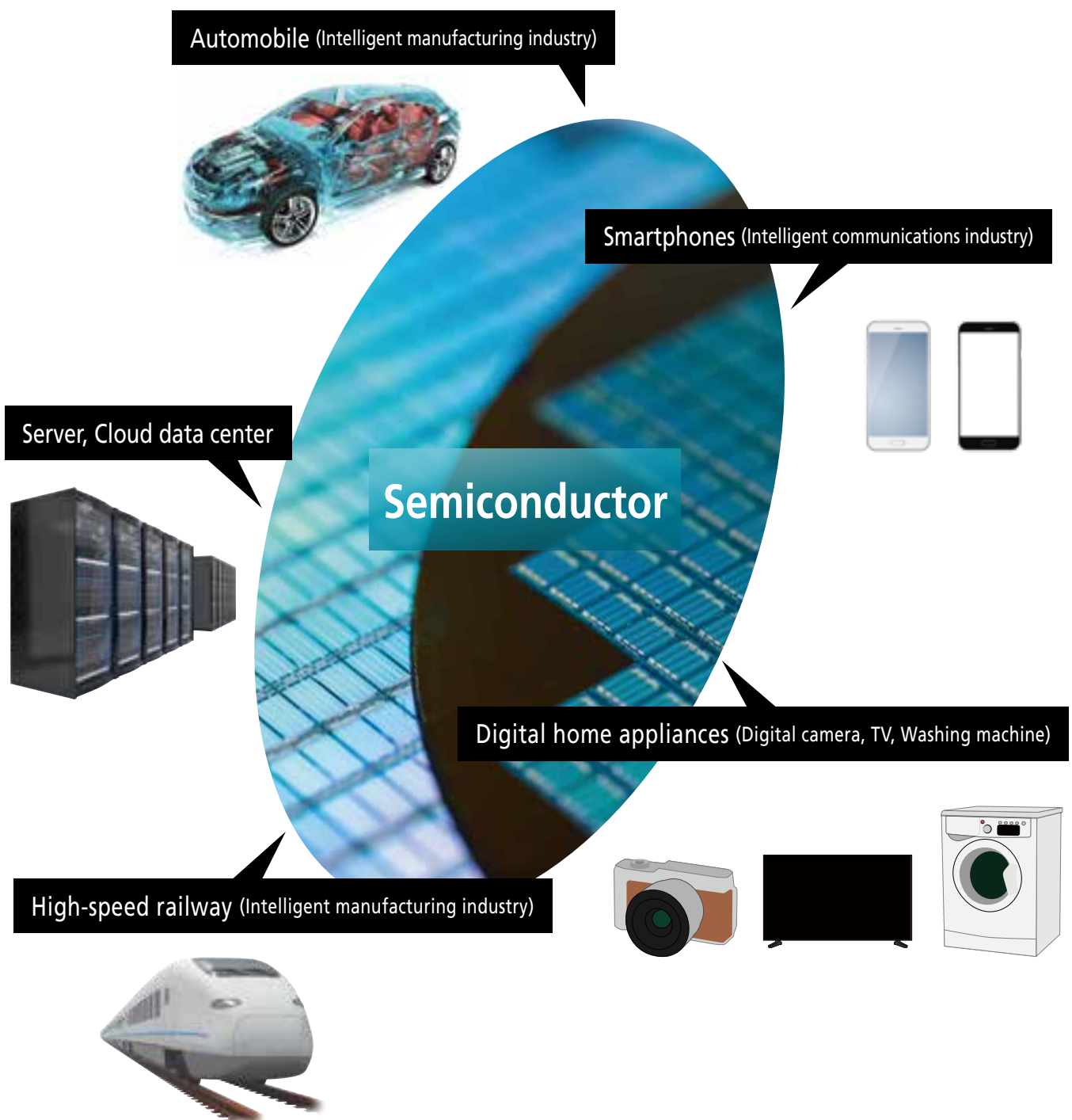
— Semiconductor Industry Measurements —

Mitutoyo

Measurement Solutions for Semiconductor Manufacturing Processes

Measurement solutions for a wide range of fields in the semiconductor manufacturing industry, which is growing rapidly following a shift to production of electric vehicles, expansion of services in line with the implementation of 5G, etc.

Industries Using Semiconductors



Measurement Solutions for Upstream Semiconductor Manufacturing Processes

A/N MARK (SEMI standards): Width, Position, Dot diameter and depth
Vision Measuring System QUICK VISION Pro, Non-contact 3D Measuring System Hyper QVWLI



Parts for CVD equipment: Ceramic heater, Silicone ring
 Flatness, Cross-sectional form analysis, Surface roughness
Coordinate Measuring Machine, Surface Roughness Measuring Instrument, Contour Measuring Instrument, Non-contact Laser Probe-equipped CNC Vision Measuring System QVH4 Pro



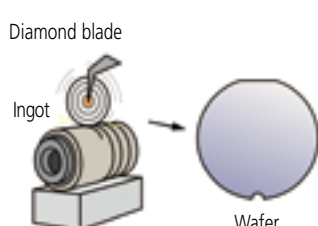
Parts for CVD equipment: Shower head Nozzle hole inside diameter, Roundness, True position, Surface texture analysis (3D Roughness)
Vision Measuring System QUICK VISION Pro with STREAM function, Non-contact 3D Measuring System Hyper QVWLI



Upstream Process

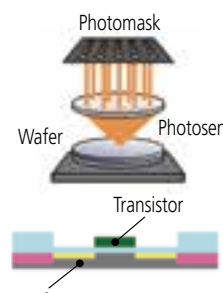
Wafer manufacture

Diamond blade
 Ingot → Wafer



Pattern formation to Element formation

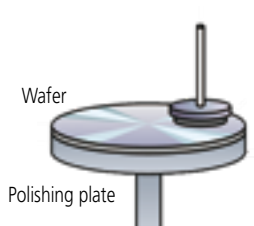
Photomask
 Wafer
 Photosensitizer
 Transistor
 Wafer



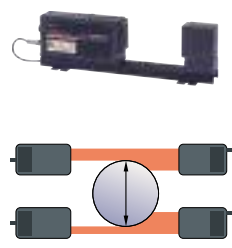
**Flattening
 CMP (Chemical Mechanical Polishing)**

Wafer
 Polishing plate

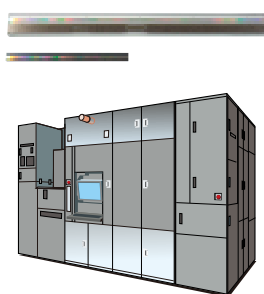
Repetition



External diameter of ingot
Laser Scan Micrometer



Lithography equipment
High-accuracy Linear Scale



Wafer thickness
High-accuracy Linear Gage LGH, High-accuracy / resolution Measuring Machine Litematic VL-50

Back-surface roughness
Surface Roughness Measuring Instrument

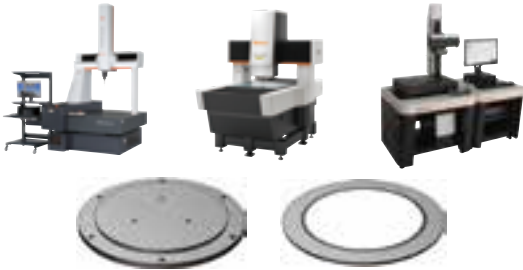


Parts for CMP equipment: Polishing pad
 Groove width, Groove depth, Groove pitch, Surface roughness
Vision Measuring System QUICK VISION Pro, Surface Roughness Measuring Instrument



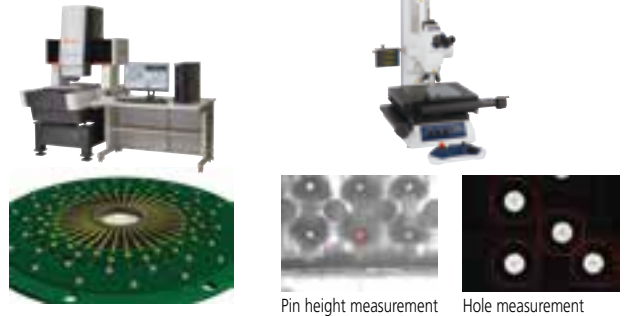
Parts for etching equipment: Electrostatic chuck, Silicone ring Flatness, Cross section, Surface roughness

Coordinate Measuring Machine, Surface Roughness Measuring Instrument, Contour Measuring Instrument, Non-contact Laser Probe-equipped CNC Vision Measuring System QVH4 Pro

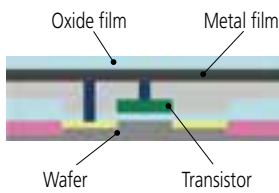


Probe card, IC test socket

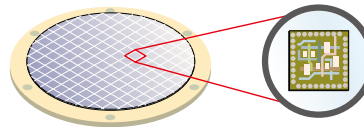
Vision Measuring System QUICK VISION Pro with STREAM function, Measuring Microscope



Wiring formation



Wafer inspection



To Downstream Process

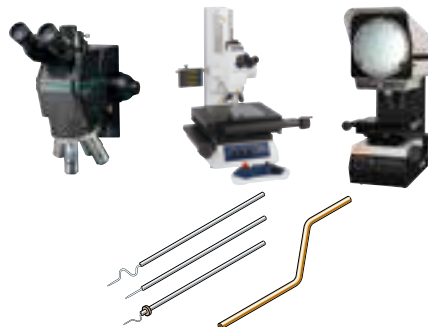
Parts for etching equipment: Shower head Nozzle hole inside diameter, Roundness, True position, Surface texture analysis (3D Roughness)

Vision Measuring System QUICK VISION Pro with STREAM function, Non-contact 3D Measuring System Hyper QVWLI



Wafer prober, Probe needle

Microscope Unit, Measuring Microscope, Profile Projector



Measurement Solutions for Downstream Semiconductor Manufacturing Processes

Cross-sectional observation
Chip thickness
LGH
Measuring Microscope



Lead frame
Width, Pitch, Height, Twisting action, etc.
Vision Measuring System, Measuring Microscope



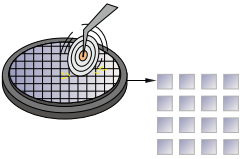
Lead width, Pitch, Height variation
Vision Measuring System, Measuring Microscope

Lead width, Pitch, Gap
Laser Scan Micrometer



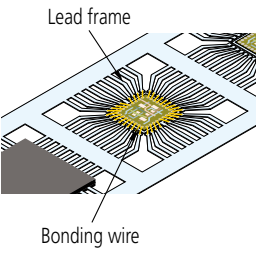
Downstream Process

Dicing



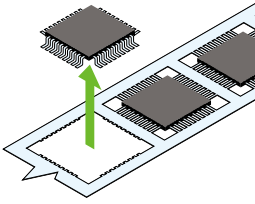
Die bonding to Wire bonding

Lead frame
Bonding wire

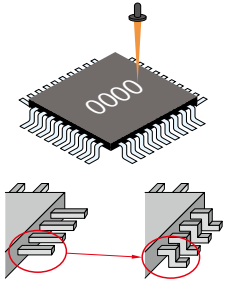


Encapsulation and Separation

Encapsulation and Separation



Marking to Lead forming



Height of burr on the back surface after dicing
Non-contact 3D Measuring System Hyper QVWLI, Measuring Microscope



Wire loop height
Vision Measuring System QUICK VISION Pro, Non-contact 3D Measuring System Hyper QVWLI, Measuring Microscope

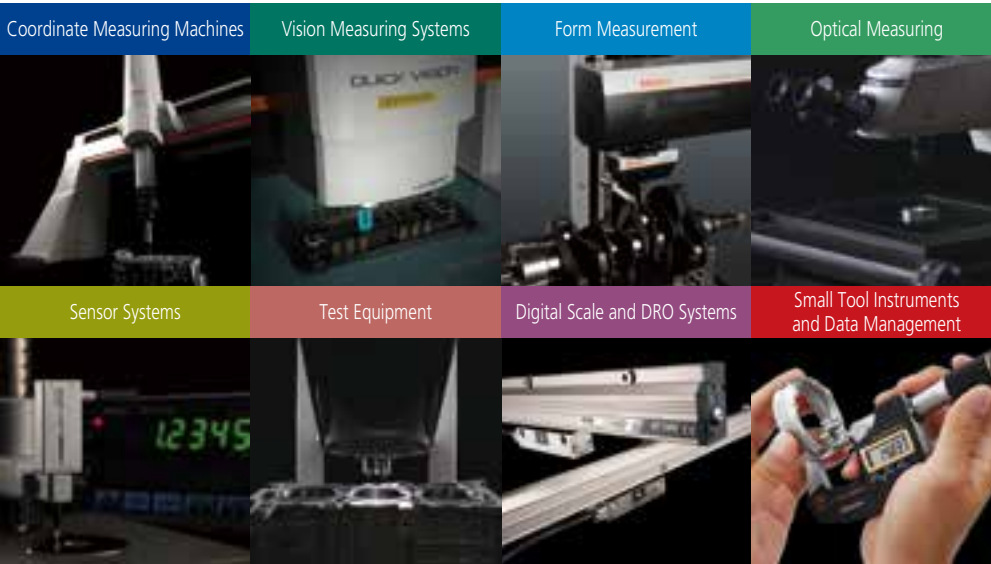




Solder ball height, Diameter, Pitch, Coplanarity of packaged circuit board
Non-contact Laser Probe-equipped CNC Vision Measuring System QVH4 Pro, Non-contact 3D Measuring System Hyper QVWLI, Measuring Microscope







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Mitutoyo is not only a manufacturer of top quality measuring products but one that also offers qualified support for the lifetime of the equipment, backed up by comprehensive services that ensure your staff can make the very best use of the investment.

Apart from the basics of calibration and repair, Mitutoyo offers product and metrology training, as well as IT support for the sophisticated software used in modern measuring technology. We can also design, build, test and deliver measuring solutions and even, if deemed cost-effective, take your critical measurement challenges in-house on a sub-contract basis.



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