VT-X700, VT-X900

OMRON

Best quality @min.Q-cost

High speed automated X-ray CT inspection system

For **SEMICONDUCTOR**

VT-X700, VT-X900

VT-X700

VT-X900

reali**zing**

Omron's unique **Automated inspection** capability ensures process quality in a mass-production environment by using **Submicron CT imaging** with a variety of **Metrology** data.
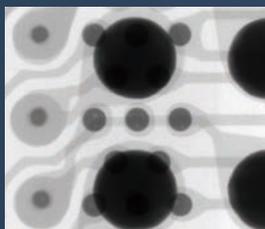
Trends

- Downsizing package
- Higher density with stacked layer
- Variety of device combination (SiP)

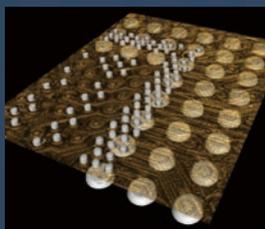## Technology

Omron's proven 3D-CT technology leads through
- Fast and Quantitative metrology
- Stable Imaging with Sub-Micron Magnification
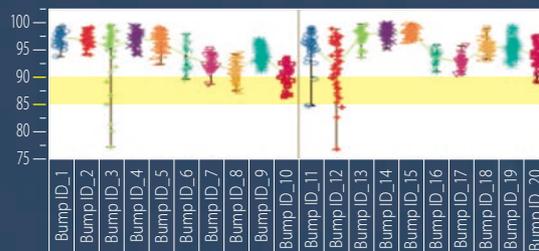- Recipe-based Automated Inspection

Traditional X-Ray analysis

Doesn't differentiate between stacked bumps

Omron's 3D rendering image

Sharp image to both top and bottom bumps

Variety of data output

Quantify the process condition

Automated Inspection and Metrology in mass production environment

Application

- Package on package (PoP)
- System in package (SiP)
- Flip Chip micro bump
- Micro-bump on Wafer
- Micro-bump on Lead Frame

- Build in mass-production condition
- Initial quality confirmation after lot change over
- Monitor mass-production quality
- Root cause analysis of defects

Metrology

3D-CT delivers automated inspection and output measurement results in parallel. Realizing quantitative understanding without destroying the sample, enables first article inspection confirmation after lot change over and facilitates the monitoring of production equipment performance and the key metrics of production. Stored data can be used for root cause analysis, which can then be shared globally for process improvement through the cloud system.

Global cloud
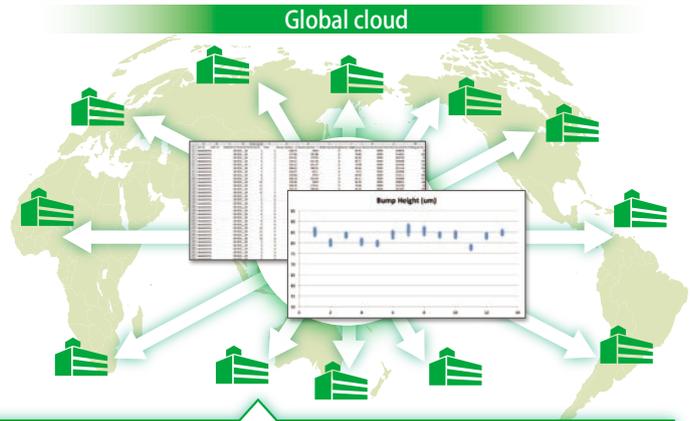
Image figure in the factory

Equipment — VT-X900 — Measurement data — Analysis results

Automated Inspection

Omron uses its own algorithm and inspection logic to measure the key features of the sample and compare it to the quality standard. Any features found outside the standard are indicated including a fault type. Defects found on Double sided boards or stacked devices are identified by layer.
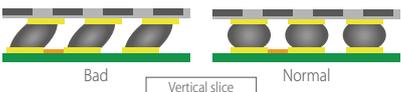
Inspection logic example

Non-Contact-Open Inspection
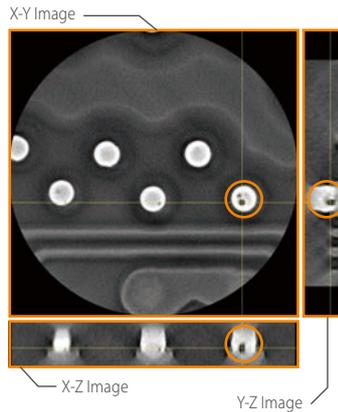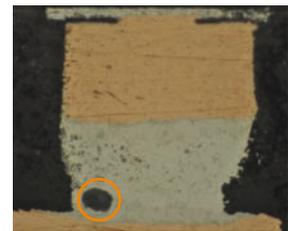Solder wet fault and/or open fault is detected.

Bad — Vertical slice — Normal
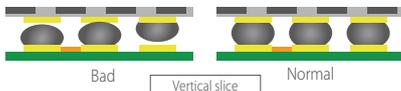
Alignment Inspection
The joint area position shift fault of a solder bump on the die and substrate is detected.

Bad — Vertical slice — Normal
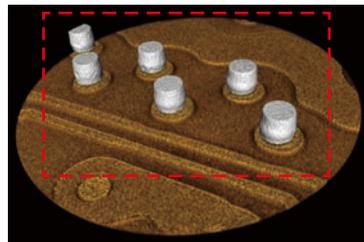
Inspection image

X-Y Image

X-Z Image

Y-Z Image

X-section image

Defect Analysis

3D rendering images can be generated by voxel data (3D volume data) output from system (software option). Virtual slices enable observing bump shape and defect condition without destroying the sample.

3D Analysis image

Vertical Slice

Horizontal Slice

Specifications*

■ Hardware configuration/function specifications

Item		Description	
Model		VT-X700-M	VT-X900
Imaging method		Parallel CT, 3D slice imaging	
Imaging resolution		10, 15, 20, 25, 30 μm	0.3, 0.5, 0.7, 1.0, 2.0, 3.0 μm
Max. Inspection area		330 mm x 255 mm	330 mm x 330 mm
Imaging device	Source	110 kV closed tube	110 kV open tube
	Detector	5M pixels flat panel detector	4M pixels I.I. camera
Tool specification	Dimension	1,550(W) x 1,650(D) x 1,620(H) mm	2,271(W) x 1,707(D) x 1,889(H) mm
	Weight	Approx. 2,900 kg	Approx. 3,300 kg
	Rated voltage	Single phase 200/210/220/230/240 VAC (±10%)	Single phase 200/208/220/230/240 VAC (±10%)
	Rated power	2.9 kVA	6.0 kVA
	Oil free air	0.4 to 0.6 MPa	0.4 to 0.6 MPa
	X-Ray leakage	< 0.5 μSv/hr	< 0.5 μSv/hr
Standard		CE, SEMI S2/S8, SECS/GEM, NFPA79, FDA	

*The specification subject to change without notice.

Dimensions

■ VT-X700-M

■ VT-X900
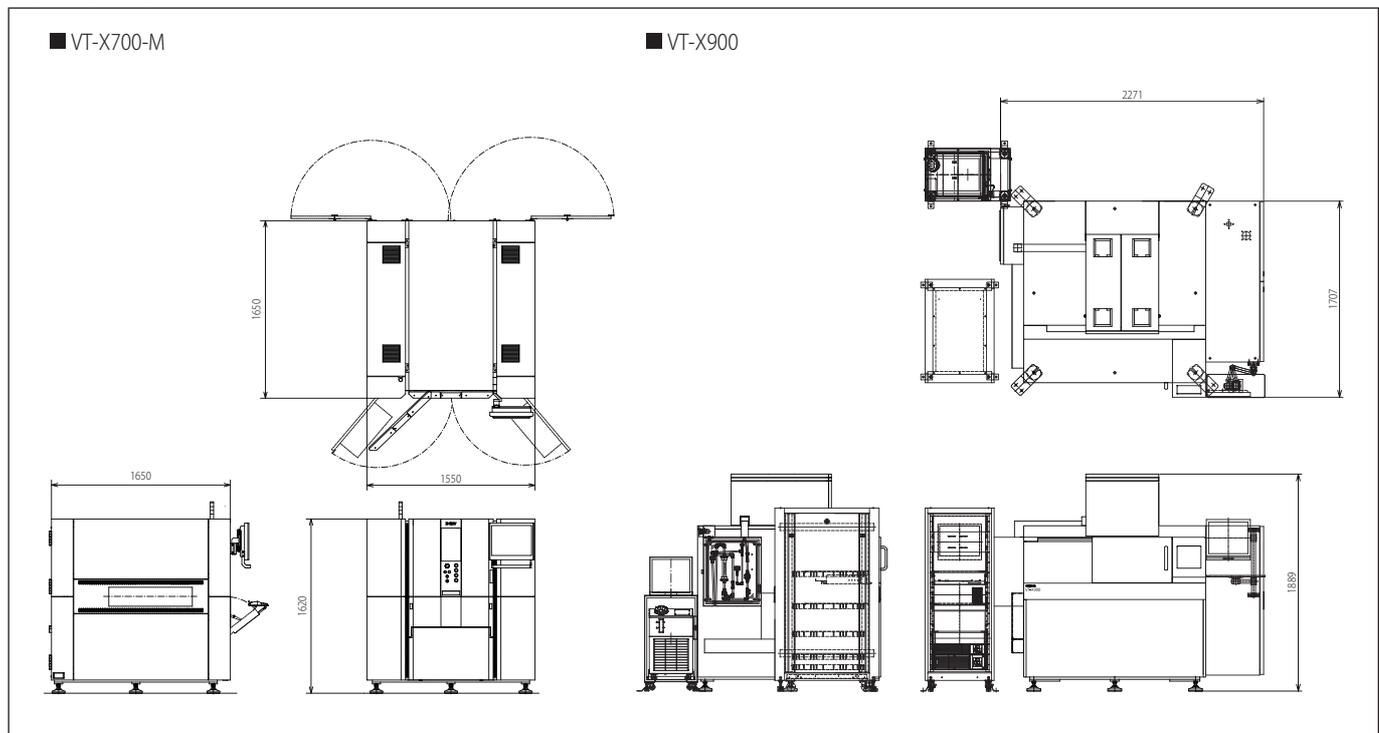
● **This document provides information mainly for selecting suitable models. Please read the Instruction Sheet carefully for information that the user must understand and accept before purchase, including information on warranty, limitations of liability, and precautions.**
● **This product may cause interference if used in residential areas.**

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