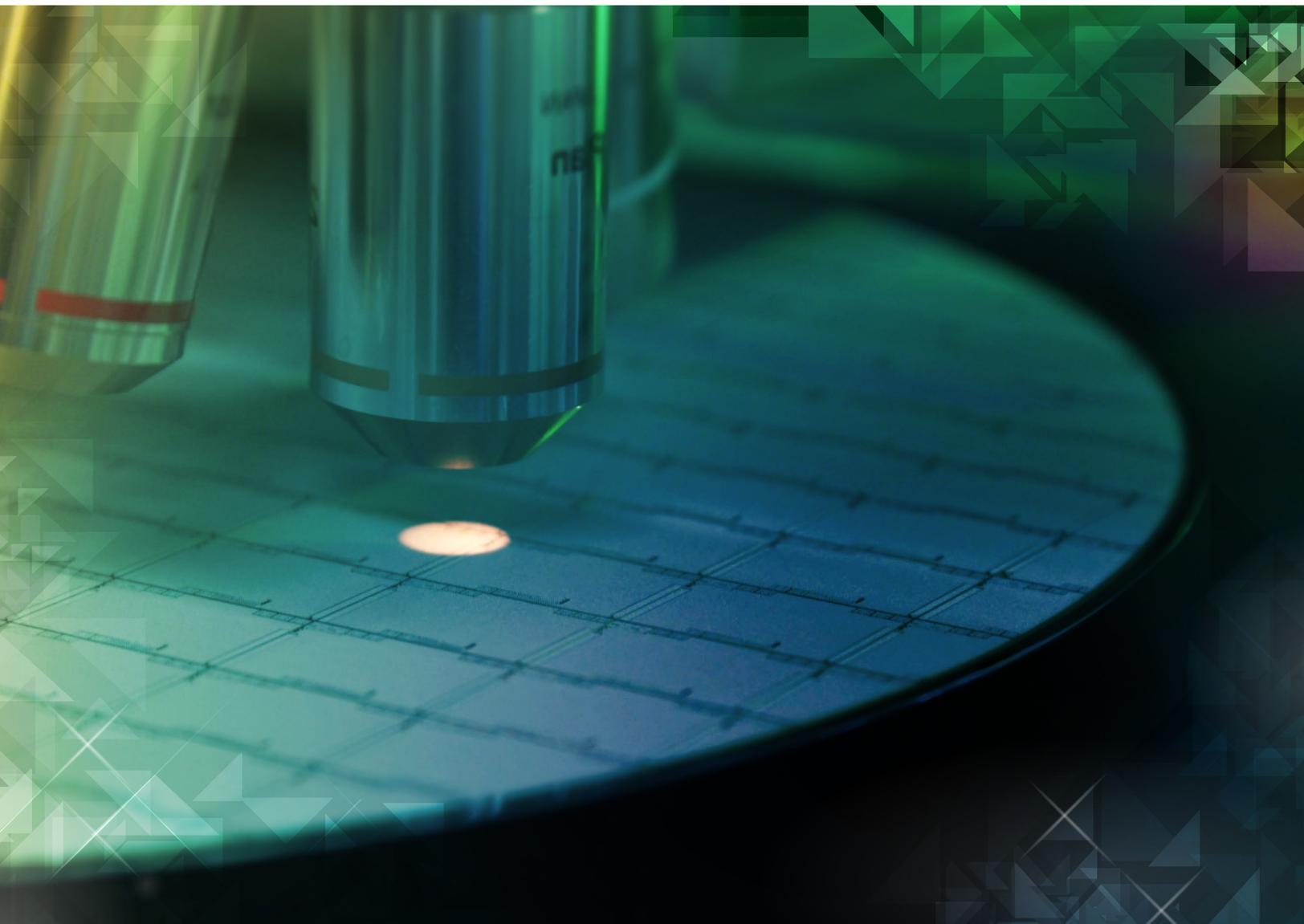


A stylized icon for QualityFIRST, consisting of a blue checkmark inside a circle with a yellow-to-orange gradient.

QualityFIRST

Delivering defect-free products and providing
flawless service beyond customer expectations



QualityFIRST Policy

Effectiveness and Efficiency Towards Continuous Improvement

Amkor delivers industry leading quality services to customers through our QualityFIRST initiative. QualityFIRST is embedded in our processes ensuring the same quality standards for all Amkor employees.

Amkor recognizes the need to extend the quest for quality beyond manufacturing. We embrace the principles and concepts of QualityFIRST and incorporate them in all areas of our business from new product development to manufacturing, administration, sales and customer service.

Automotive Quality

Automotive quality expectations have never been higher, and customers now measure defects in “number of quality incidents” instead of ppm or ppb. As the world’s largest OSAT for automotive ICs, we continuously strive to exceed customer requirements on a path towards Zero Defects.

Automotive Quality Systems

- ▶ Zero Defect Mindset
 - ▷ Amkor QualityFIRST culture
 - ▷ Management commitment to quality
- ▶ Automotive Quality Standard
 - ▷ IATF16949
 - ▷ AIAG
 - ▷ VDA 6.3
- ▶ Specific Requirements Beyond Automotive Quality Standard
 - ▷ Change management
 - ▷ Product based FMEA/Control plan

Automotive Reliability Capability

- ▶ Qualified Package Portfolio to AEC Standards
- ▶ Identified BOM/Process to Meet AEC Standards



- ▶ Automotive Process Controls
- ▶ Established Automotive Standard Process and Control Plans by Product Lines
 - ▷ 100% 3rd Optical Inspection (Opt)
 - ▷ Final Visual Inspection (FVI) by Automated Optical Inspection (AOI)
 - ▷ Auto X-ray, in-line O/S test
- ▶ Factory Automation
 - ▷ Data transfer
 - ▷ Unit level traceability
- ▶ Hands Free Operation
 - ▷ Handling, inspection
- ▶ Designated Resources
 - ▷ Machine, operator
- ▶ 5S, Foreign Material Control



Reliability Test and Failure Analysis

Reliability Test

Amkor provides short- and long-term reliability test services when qualifying new packages, processes, materials and equipment compliant with JEDEC and AEC-Q100, AEC-Q006 test conditions.

Component Level Reliability



High Temperature Storage Test



Temperature and Humidity Test



Temperature Cycling Test



Pressure Cooker Test (Autoclave)
Highly Accelerated Stress Test

Board Level Reliability



Temperature Cycling Test



Drop Test

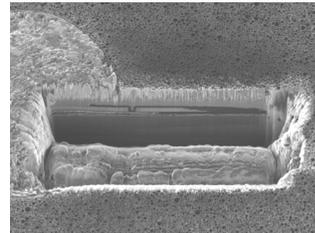


Cyclic Bend Test

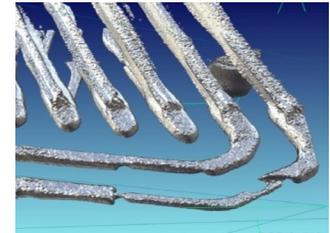
Failure Analysis

Amkor provides cutting-edge failure analysis (FA) service with advanced FA equipment and expertise.

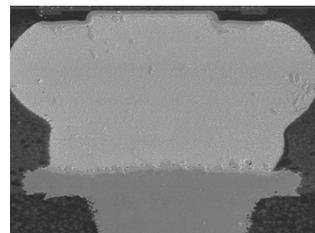
Category	Equipment
Scanning Electron Microscope	Field Emission SEM
	SEM
Electrical Measurement	Curve Tracer
	Time Domain Reflectometer (TDR)
	Probe Station
Defect Localization	Thermal Emission Microscope with OBIRCH
	3D (CT) X-Ray
	Scanning Acoustic Tomography (SAT)
Surface Analysis	EDX
De-capsulation	Laser Decapsulator
	Auto Chemical Decapsulator
	Plasma Decapper
Polishing, Cross-Section	Polishing Machine
	X-Section Machine
	Auto Precision Layering
Etcher	Reactive Ion Etcher with ICP
Mechanical	FIB
	Ion Miller



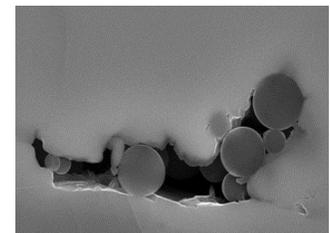
FIB



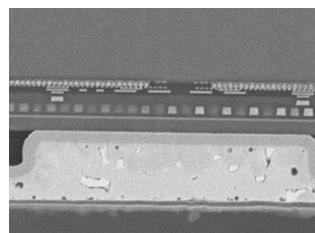
3D X-ray



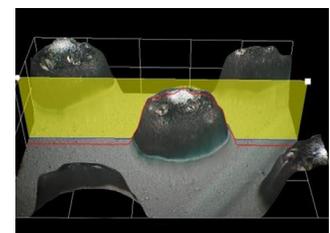
X-section + SEM



Ion Milling + SEM



X-section + SEM



3D Scope

Quality Systems and Certifications

Quality Systems

Amkor's Quality Management System (QMS) is established in conjunction with Standard Operating Procedures (SOP) and specifications providing comprehensive operating guidelines. These are modeled to industry and internationally accepted standards. Our systems, processes and worldwide manufacturing sites are equipped with the latest international quality and environmental certifications.

Factory Certifications

Factory	IATF16949	ISO9001	ISO14001	OHSAS18001	Sony Green Partner
Amkor China	✓	✓	✓	✓	✓
Amkor Korea	✓	✓	✓	✓	✓
Amkor Malaysia	✓	✓	✓	✓	✓
Amkor Philippines	✓	✓	✓	✓	✓
Amkor Portugal	✓	✓	✓	✓	✓
Amkor Taiwan	✓	✓	✓	✓	✓
Amkor Japan	✓	✓	✓	✓	✓



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