

Semiconductor Package and Material Reliability Evaluation Series

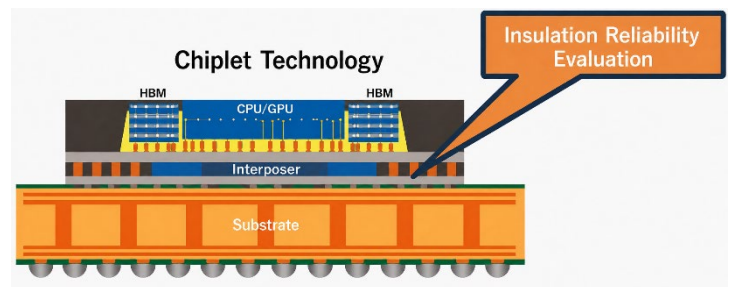
Low-Voltage Insulation Reliability Evaluation System AMI-SPM

High-Accuracy Detection of Insulation Degradation at Low Voltage

Market Background

Emerging Insulation Reliability Challenges in Advanced Packaging

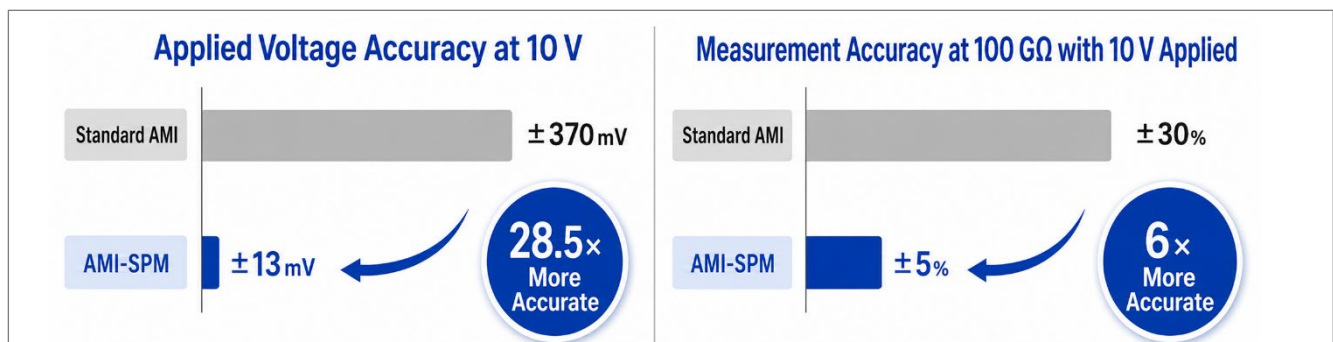
- Increasing demand for higher-speed, higher-density, and lower-power semiconductor packages
- Growing adoption of new insulation materials and advanced package architectures
- Miniaturization and increasing complexity of package interconnect structures
- More subtle insulation degradation under low-voltage operating conditions
- Need for highly sensitive insulation resistance and leakage current measurements
- Need for accurate reliability assessment of next-generation package materials and structures



Features

Detecting Small Leakage Currents Under Low-Voltage Stress

- Designed for insulation reliability testing with an applied voltage of up to 10 V
- High-precision measurement of insulation resistance and leakage current
- Detects small leakage currents associated with early insulation degradation
- Supports evaluation of fine-pitch wiring, advanced insulation materials, and new package structures
- Enables reliable assessment of advanced package insulation performance



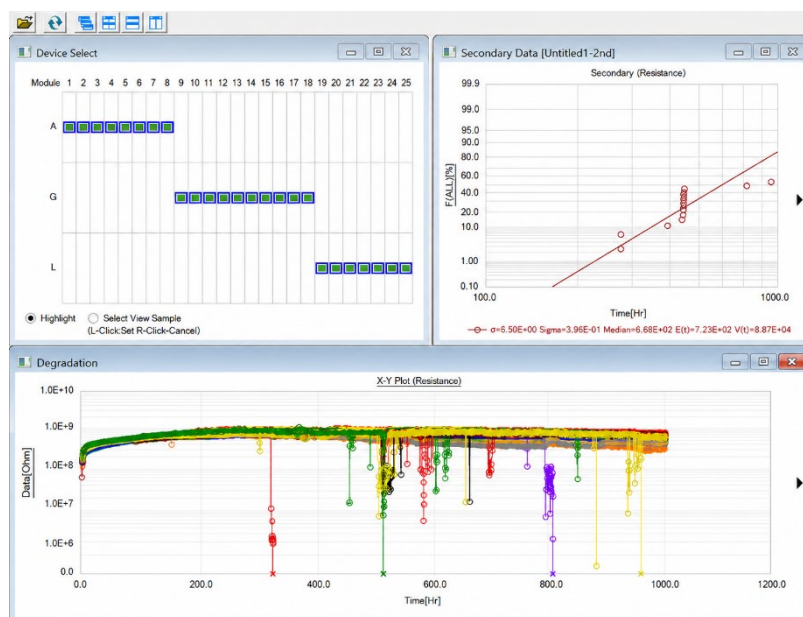
2 Key Features Supporting Efficient Reliability Evaluation

Accelerated Reliability Evaluation through HAST Chamber Integration

- Detects small leakage currents and changes in insulation resistance during accelerated testing
- Captures degradation behavior before catastrophic failure occurs
- Supports b-HAST and other accelerated reliability test methods
- Automated operation from test start to completion through chamber integration
- Improves testing efficiency and reduces operator workload

Real-Time Weibull Analysis During Testing

- Built-in statistical analysis software
- Real-time visualization and analysis of measurement data
- Supports Weibull and other statistical analyses during testing
- Enables real-time trend monitoring and timely evaluation
- Reduces post-test analysis effort
- Enables earlier assessment of reliability test results
- Helps accelerate development cycles



Real-time data updates during testing

Specifications

AMI-SPM / Specifications	
Channel configuration	25 to 300 ch/rack
Channel control	5 ch or 25 ch
Stress voltage	0 V DC or 10 mV to 10 V DC
Min. set voltage resolution	10 mV
Applied voltage accuracy	±(0.1% of set voltage + 3 mV)
Resistance measurement range (Ω)	2.0×10 ⁴ to 1.0×10 ¹² Ω or more (20 kΩ to 1 TΩ or more) at 10 V 2.0×10 ³ to 1.0×10 ¹¹ Ω or more (2 kΩ to 100 GΩ or more) at 1 V
Resistance Measurement accuracy (at 10 V)	±2%: 2.0×10 ⁴ to 1.0×10 ¹⁰ Ω (20 kΩ to 10 GΩ) ±5%: 1.0×10 ¹⁰ to 1.0×10 ¹¹ Ω (10 GΩ to 100 GΩ) ±30%: 1.0×10 ¹¹ to 1.0×10 ¹² Ω (100 GΩ to 1 TΩ)
Measurement voltage	10 mV to 10 V DC (10 mV increments)
Leak detection speed	Continuous detection in less than 100 μ sec
Leak detection setting range	1 to 500 μA (1 μA increments)

* Preliminary specifications. Specifications are subject to change without notice.