IoT, 5G and automotive electronics carry many electronic components such as capacitors and resistors. These device performances are temperature-dependent, which makes temperature reliability test a must.

Capacitor temperature characteristic evaluation test
AMQ

Inductor evaluation/electromigration evaluation
AEM

Multi-layer chip inductors used for IoT, 5G and in-vehicle applications are subject to damage due to wire breakage caused by electric currents and heat generated over long-term use. Supplying a constant current to the conductor coil at a high temperature allows service life evaluation.

Sensor burn-in
RBS

Sensors are used in various places. Screening is conducted to prevent products with initial failures from being sent to the market. * In-vehicle sensors, in particular, require screening because they may affect human life.

Digital + Communication
High-speed and high-bandwidth communication
Memory Flash
CPU SSD RF

AI(Cloud)
High-performance computer
High-capacity storage

LiDAR, mill-wave sensor, CCD, biometrics, motion sensors, location sensors

Key devices
Semiconductors
(Memory device, flash memory and power device, FPGA and RF device)
Sensor
(CMOS, LiDAR, current sensor and G3)
Parts
(Capacitor, inductor and resistor)

Changes in environmental factors
DC high voltage and large current
Increased self-heat generation
(Device miniaturization, FOWLP and 3D mounting)
Guaranteed device performance under a wide range of temperatures

* Specifications, external appearance and other descriptions are subject to change without notice due to product improvements. We apologize in advance for the inconvenience.

* We can make suggestions to meet your requirements.
## Semiconductor manufacturing processes and evaluation tests

### Wafer manufacturing process (pre-processing)
- Wiring process
- Inspection process
- Packaging (post-processing)
- FOWLP
- Assembly process
- Screening process
- Wafer manufacturer
  - TDB2 evaluation test (wafer evaluation) AMM-TDBB-W
  - AMM-TDBB-C AMI
  - RBC RBS RMM MBI
- Semiconductor manufacturer
  - AEM
- AMM-TDBB performs process management by measuring the time-dependent breakdown of the insulating film of wafers and products.

### Material manufacturer
- Sealing materials/substrate/isolation materials/coater materials/multi-layer board
- Insulation resistance evaluation test (electro-chemical migration)
- Conductor resistance evaluation test (joint reliability test)

### Reliability test
- 1-2 TDB2 evaluation test (package evaluation)
- Burn-in test
- Electromigration evaluation test
- Reverse bias test (power device)
- Power cycle test (power device)
- Insulation resistance evaluation test (electro-chemical migration)
- Conductor resistance evaluation test (joint reliability test)

### Semiconductor manufacturer/foundry
- 1-1 TDB2 evaluation test (wafer evaluation) AMM-TDBB-W
- AMM-TDBB-C AMI
- RBC RBS RMM MBI
- AMM-TDBB performs process management by measuring the time-dependent breakdown of the insulating film of wafers and products.

### Electronic component manufacturer
- Capacitor/inductor/resistor/sensor/multi-layer board
- AMI
- RBC RBS RMM MBI
- Insulation resistance evaluation test (electro-chemical migration)

### Product shipment
- AMM-TDBB performs process management by measuring the time-dependent breakdown of the insulating film of wafers and products, and by evaluating electrical characteristics.

### Burn-in test (memory/logic/in-vehicle device/sensor)
- AMM-W
- Screening is conducted to prevent semiconductor products with initial failures from being sent to the market.

### Power cycle test (power device)
- RBC-PST
- The self-heat generation cycle that occurs when a power device is turned ON or OFF can cause disconnection of wiring and damage to heat dissipation circuits. Power cycle tests are conducted to improve the reliability of products.

### Application system
- Direct current measurement system

### Application configuration
- Standard 21 channels (maximum 150 channels per rack)

### Test control unit
- Standard 40 channels (maximum 280 channels per rack)

### Channel configuration
- Standard 21 channels (maximum 150 channels per rack)
- Test control unit
- Standard 40 channels (maximum 280 channels per rack)

### Voltage/current application range
- Voltage ±150 V/Current ±100 mA
- Number of DUT processes
- Max. 108 DUTs (package)
- Max. 324 DUTs (wafer)

### Stress voltage
- Voltage specified for each device is supplied.

### Chamber
- Temperature chamber (150°C) Temperature and humidity chamber

### Stress current source
- Output range +0.1 mA to 200 mA, 1 A

### Stress cycle range
- 100 to 200°C

### Stress current range
- Output range +0.1 mA to 200 mA, 1 A

### Burn-in test (memory/logic/in-vehicle device/sensor)
- AMM-W
- Screening is conducted to prevent semiconductor products with initial failures from being sent to the market.

### AMM-TDDB
- This system predicts the life of a product by measuring the time until wire breakage by supplying a current to the devices. The system can also be used for the reliability evaluation of C4 semiconductor packages.

### Reverse bias test (power device)
- AMR
- When the voltage of a power device is shut off, the inductors in the circuit generate surge voltage, which may damage the device. A reverse bias test is conducted to improve the reliability of the product.

### Conductance resistance evaluation test (joint reliability test)
- AMI
- AMI improves reliability of products by measuring the disconnection caused by the deformation in substrates due to changes in the ambient environment or by the strain between self-heat generation and the ambient environment.

### Insulation resistance evaluation test
- Electro-chemical migration
- AMI improves the reliability of products by measuring insulation deterioration and leakage current in a voltage resistance test or under various voltage conditions and environments such as insulation deterioration due to moisture absorption.
Capacitor temperature characteristic evaluation test

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**Measurement method**

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<tr>
<th>Type of measurement</th>
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<th>Setting range</th>
<th>Setting resolution</th>
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**Output current**

Output current (10 A system)

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