

Bump Electro-migration test system

Type: AEM-2000

Reference → Semiconductor <http://www.espec.co.jp/english/products/market/da/semicon.html>
<http://www.espec.co.jp/english/products/market/it/semicon.html>
<http://www.espec.co.jp/english/products/market/auto/semicon.html>

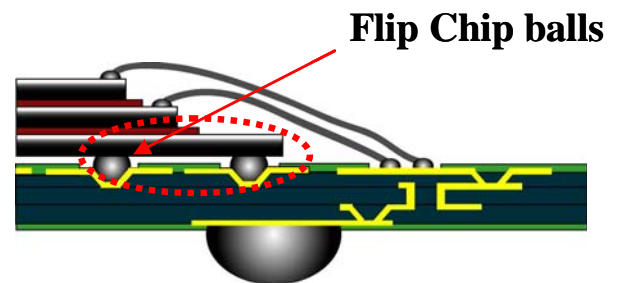


As the physical limits of IC devices properties arise, the market demand turns toward the development of high-density products, and by extension, the development of microminiaturization and multi-functionality. The core market focuses on chips with various functions such as embedded packages or 3-D stacks. Within stacks technology, C4 (Controlled Collapse Chips Connection) which includes Bump ball and Cu pillar bump, can see its reliability improved thanks to the electro migration test; one evaluation among others in the reliability testing field. Our electro migration system for Bump applies a high stress current (2A) on the solder balls to evaluate their failure resistance. As the UBM and the connection path on the device density become smaller, the density of the current increases. Tests of high accuracy, such as TCR, can be hold to prevent T_j (temperature junction) temperature increase to impact on the lifetime of the sample.

DUT (Device under test)

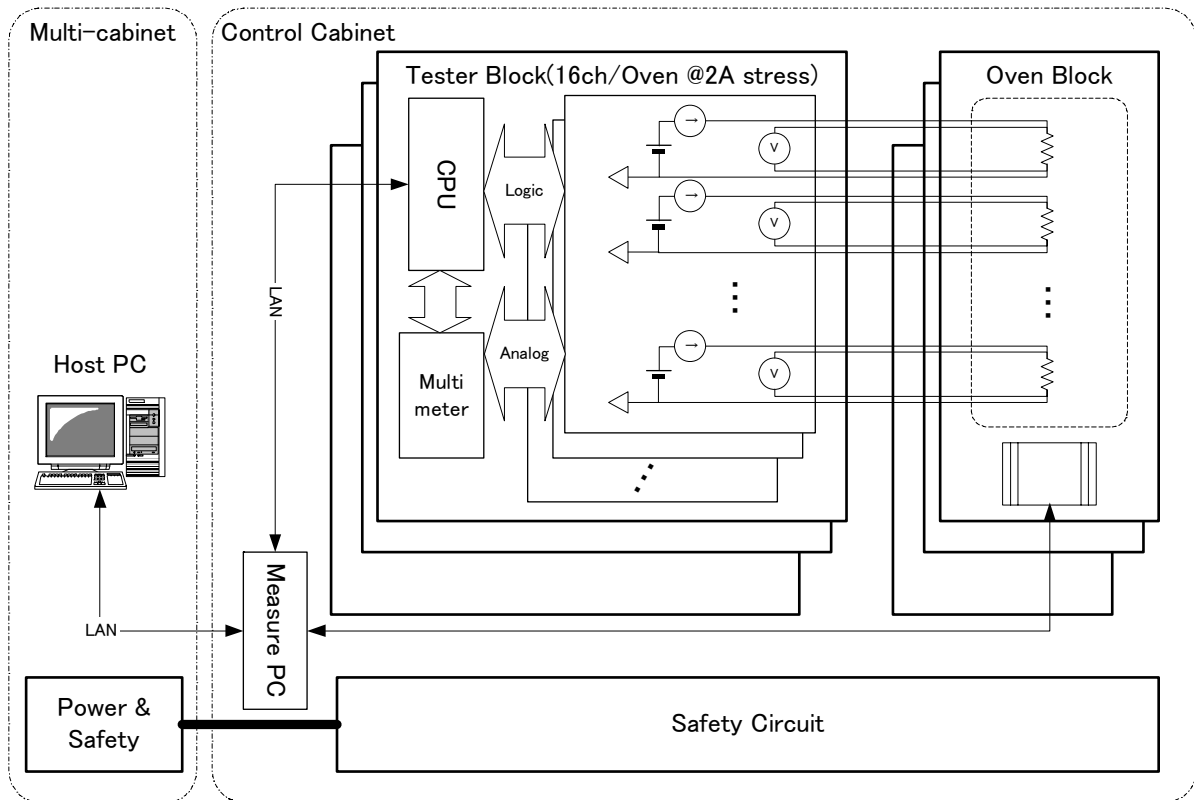
Flip Chip assembly

Packages technology is becoming a key area of development, and in this way affects the quality of semiconductor products and microminiaturization. Solder bump 's high-speed is only 10 % of wire bond's inductance and, to improve capacities, flip chip's mounting technology is essential. Recently, overheating of semiconductor devices (due to high-frequency and current consumption) has become an issue. In order to avoid it, products using Cu pillar Bump with high thermal conductivity need to be developed.



Feature

- High current flow and high accuracy of applied stress system
Max 2A/18V stress current to meet testing capacity
- Optimized DUT board for bump EM evaluation
Easy load of DUT mounted on printed circuit boards in testing boards' racks.
- TCR test (**temperature coefficient of resistance**)
Possibility to perform a test with 4 pattern of current sequences, in order to accurately measure a temperature sample.
- WSB Test
Possibility of early lifetime evaluation by setting a WSB circuit inside the sample. With $30 \mu V$ variation the smallest part of the bump's failure progression can be followed.
- 1 DUT Multi Measurement Function is added. (Enable to measure 2 voltage per 1 current source)
- Possibility to use with EM system power device as well.
If the TEG board is changed, the EM system power device can be used as well.



specification

Evaluation pattern	<ul style="list-style-type: none"> · Electro migration (stress current application) test · TCR test · WSB test 	
Stress current	Output range	1mA to 1A / 2A / 5A
	Accuracy	Less than $\pm 1\%$
	Compliance voltage	0 to +18V
Oven specifications	Temperature control range	+65°C to +200°C
	Temperature fluctuation range	$\pm 0.5^\circ\text{C}$ (+65°C to +250°C)
	Temperature distribution	$\pm 2.5^\circ\text{C}$ (+65°C to +250°C)

Reference → Semiconductor <http://www.espec.co.jp/english/products/market/da/semicon.html>
<http://www.espec.co.jp/english/products/market/it/semicon.html>
<http://www.espec.co.jp/english/products/market/auto/semicon.html>



If you have any questions or your request, please contact to our customer center.
<http://www.espec-global.com/>

<http://www.espec.co.jp/english/index.html>

Digital Consumer Electronics



- LCD/PDP <http://www.espec.co.jp/english/products/market/da/pdp.html>
- PCB <http://www.espec.co.jp/english/products/market/da/print.html>
- Secondary battery <http://www.espec.co.jp/english/products/market/da/secondbattery.html>
- Digital camera <http://www.espec.co.jp/english/products/market/da/digicame.html>
- DVD/HDD/Storage <http://www.espec.co.jp/english/products/market/da/dvd.html>
- Semiconductor <http://www.espec.co.jp/english/products/market/da/semicon.html>
- LED <http://www.espec.co.jp/english/products/market/da/daled.html>
- Printer / Copier <http://www.espec.co.jp/english/products/market/da/ppc.html>

Information Technology



- Optical module/Optical devices <http://www.espec.co.jp/english/products/market/it/light.html>
- Semiconductor <http://www.espec.co.jp/english/products/market/it/semicon.html>
- Capacitors <http://www.espec.co.jp/english/products/market/it/condensor.html>
- Secondary battery <http://www.espec.co.jp/english/products/market/it/secondbattery.html>
- Mobile phones <http://www.espec.co.jp/english/products/market/it/mobile.html>
- Personal computers <http://www.espec.co.jp/english/products/market/it/pc.html>
- PCB <http://www.espec.co.jp/english/products/market/it/print.html>

Automobile



- In-vehicle sensors <http://www.espec.co.jp/english/products/market/auto/sensor.html>
- LED <http://www.espec.co.jp/english/products/market/auto/autoled.html>
- Secondary battery <http://www.espec.co.jp/english/products/market/auto/secondbattery.html>
- CCD <http://www.espec.co.jp/english/products/market/auto/ccd.html>
- Power devices <http://www.espec.co.jp/english/products/market/auto/power.html>
- Car navigation system <http://www.espec.co.jp/english/products/market/auto/carnavi.html>
- ECU <http://www.espec.co.jp/english/products/market/auto/ecu.html>
- Semiconductor <http://www.espec.co.jp/english/products/market/auto/semicon.html>
- PCB <http://www.espec.co.jp/english/products/market/auto/print.html>

New Energy



- Fuel cell <http://www.espec.co.jp/english/products/market/new/fuelbattery.html>
- Solar battery <http://www.espec.co.jp/english/products/market/new/solarbattery.html>
- Power devices <http://www.espec.co.jp/english/products/market/new/power.html>
- Secondary battery <http://www.espec.co.jp/english/products/market/new/secondbattery.html>