

Panasonic's advanced packaging technologies for thin substrates

May 27th, 2014

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Micro Electronics Division
Panasonic Factory Solutions Co., Ltd.**

Figures as of April 2013

Appliances



Eco Solutions



AVC Networks



Automotive & Industrial Systems



Automotive Industrial Manufacturing

Panasonic Welding Systems Co., Ltd.

Panasonic Factory Solutions Co., Ltd.

Head Office Osaka, JAPAN

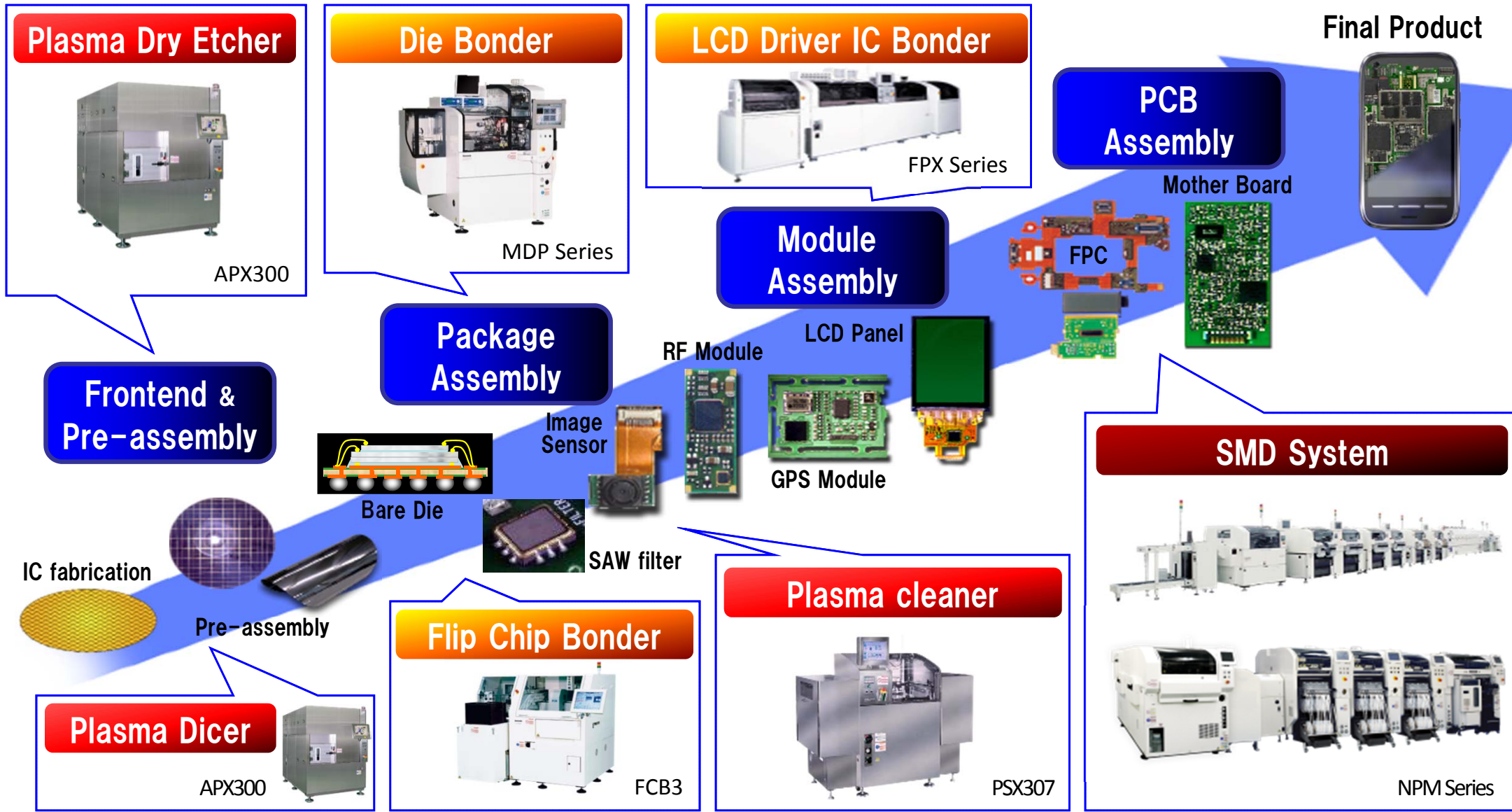
Establishment January 1, 2003

Funding 100% from Panasonic Corp.

Paid-in capital 15 billion yen

Employees 2,870 (World wide)

Business Area Electric Component Mounting
Microelectronics Systems etc..



Bendable Smart Phone



Source) LG

Secured Plastic Card



Source) SAFE KEEPER CARD

Wearable for Healthcare

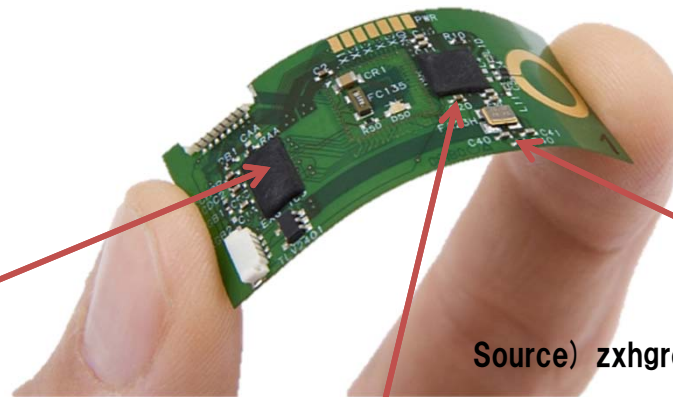


Source) Fitbit Flex

Flexibility + “more Functions in Small Volume”

Mounting “thin-Si die/component” on “thin-substrate” is essential !

Key requirements



Source) zxhgroup.com

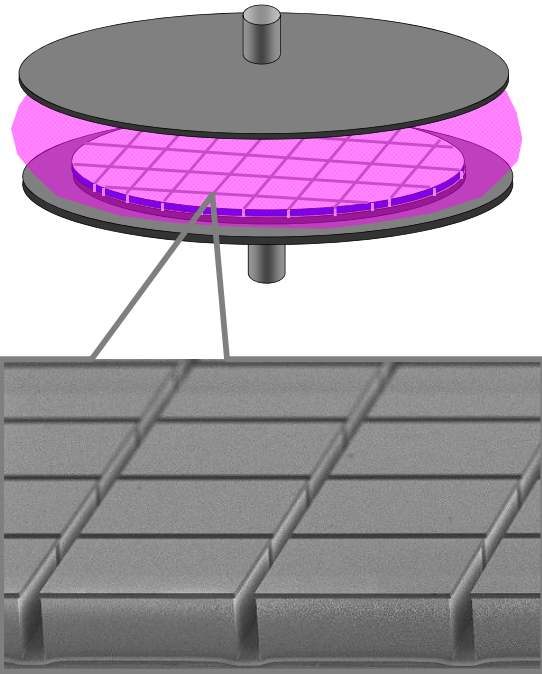
**Strength
of thin-die**

**Reliability
of Interconnect**

**Support
thin-substrate**

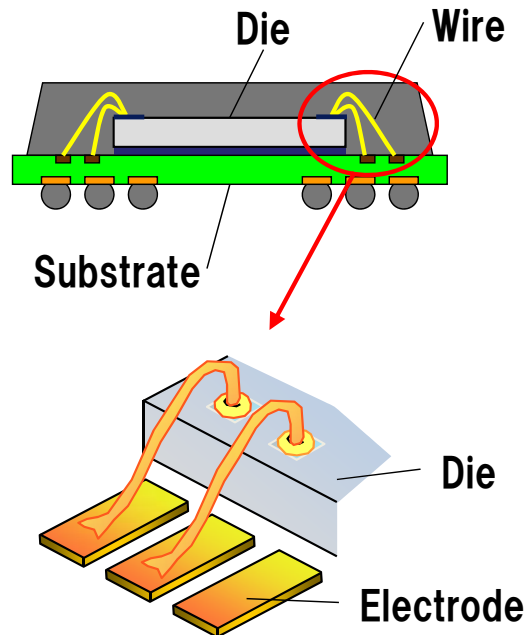
**Strength
of thin-die**

Plasma Dicing



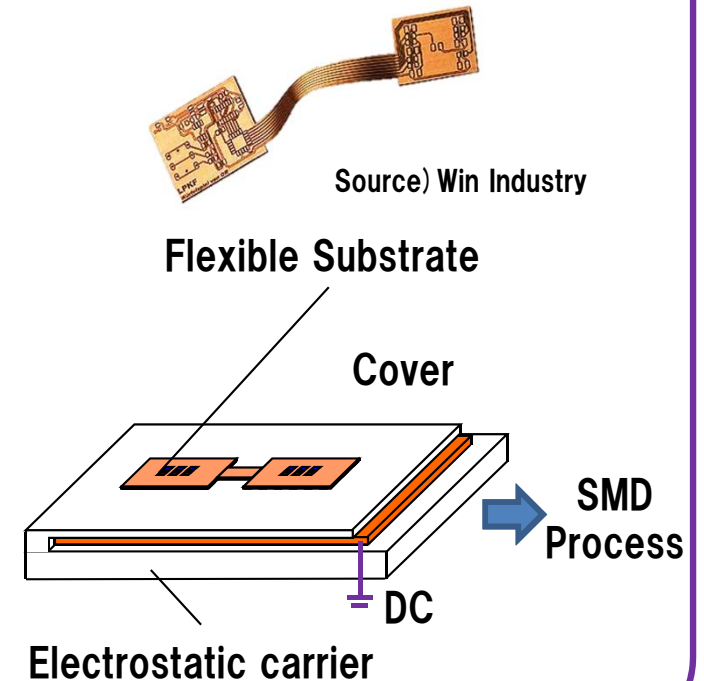
**Reliability
of Interconnect**

Plasma Cleaning

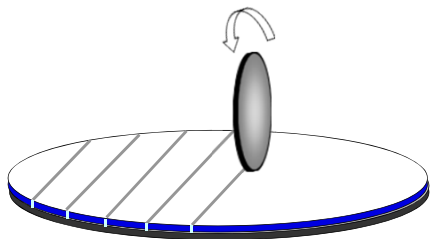


**Support
thin-substrate**

**e-Carrier
(Electrostatic Force)**

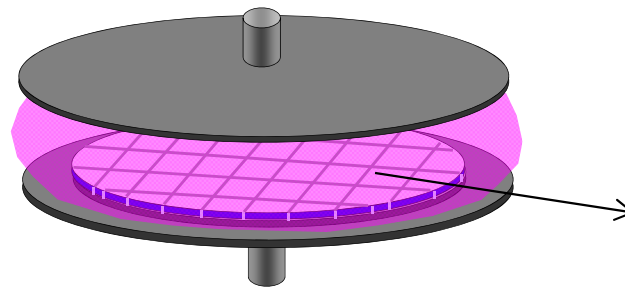


Blade Dicing

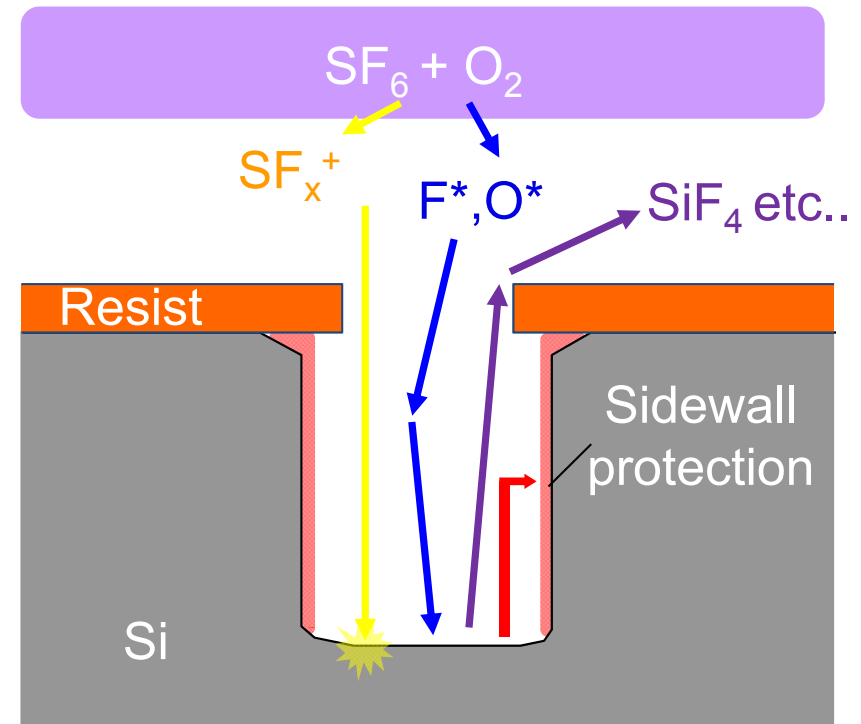


SOLID based

Plasma Dicing



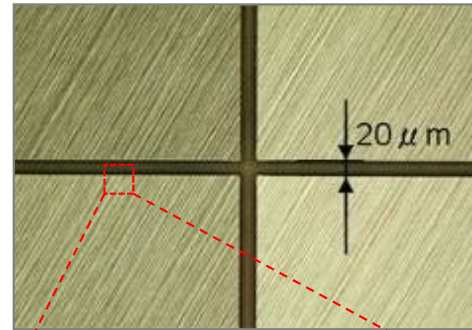
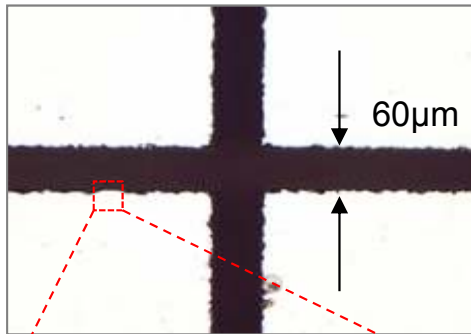
Dry Etching based



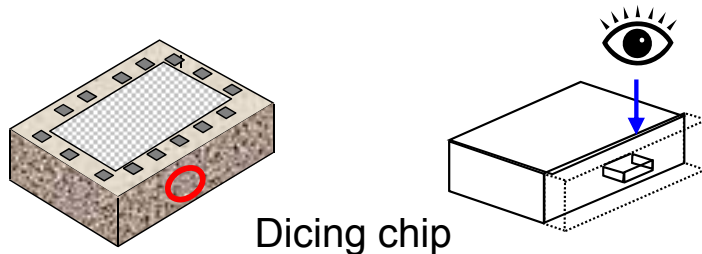
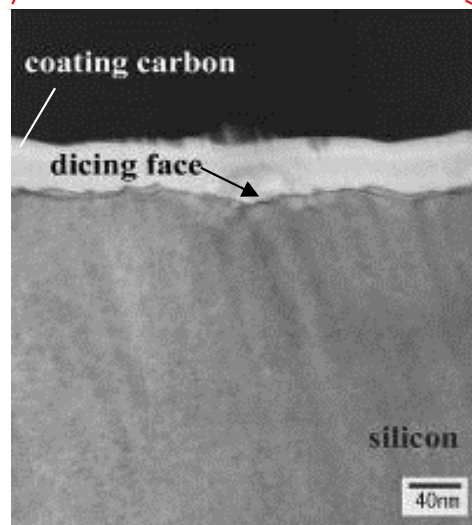
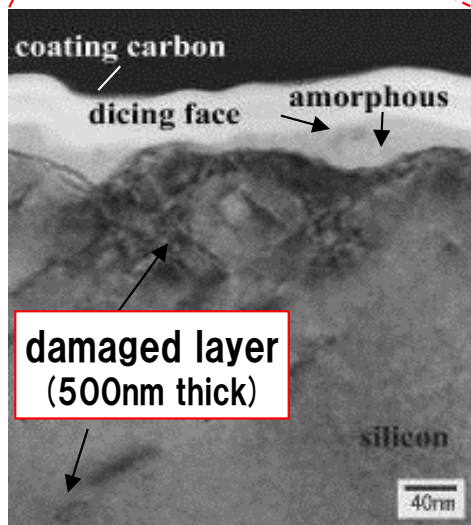
Blade Dicing

Plasma Dicing

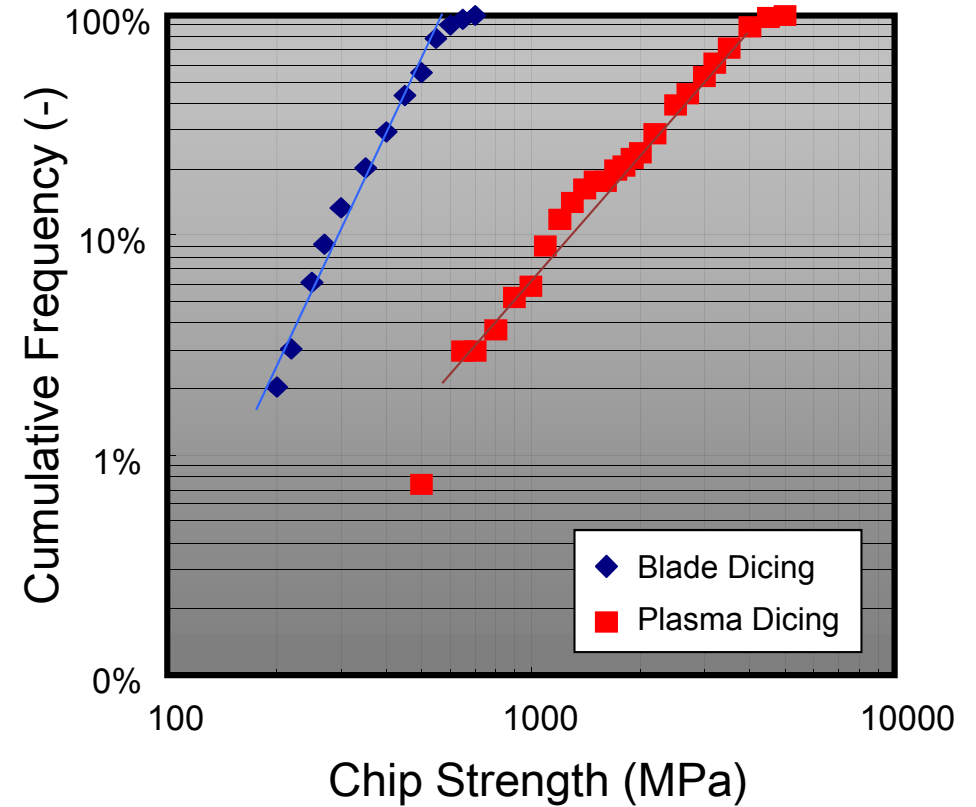
Top View



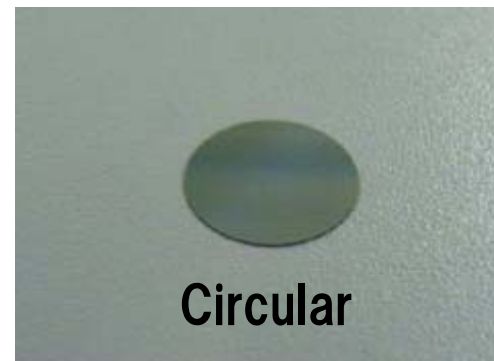
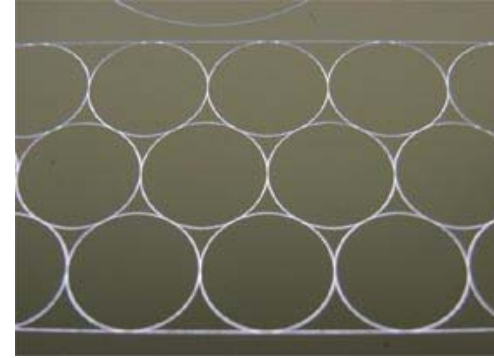
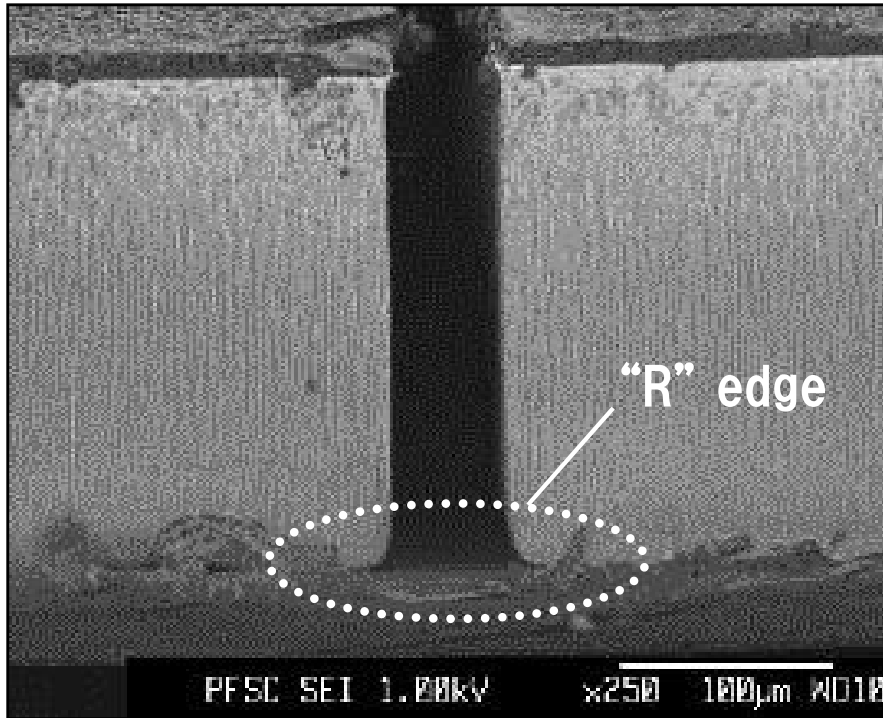
TEM Image



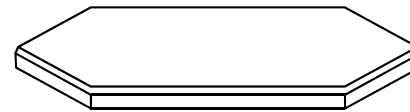
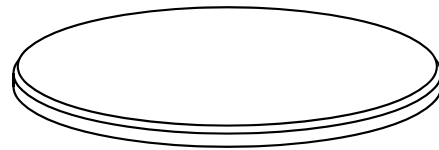
3 points bending test result



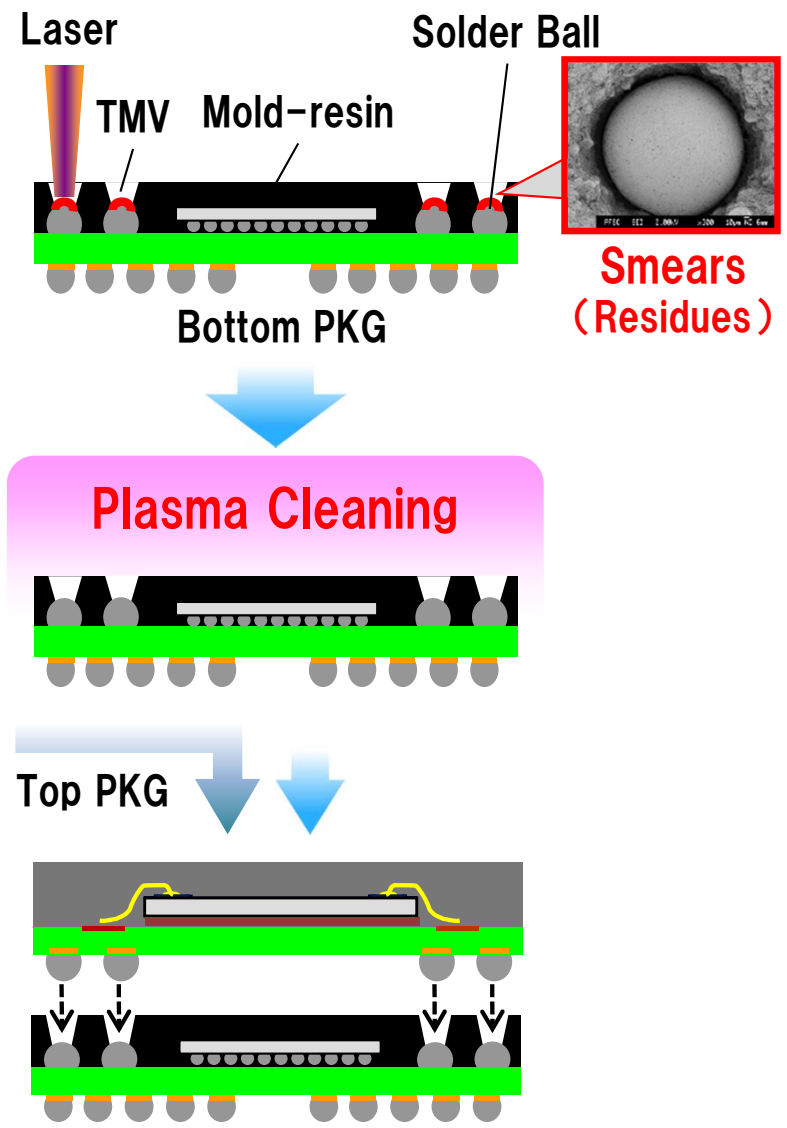
Strong thin-die by Plasma Dicing !



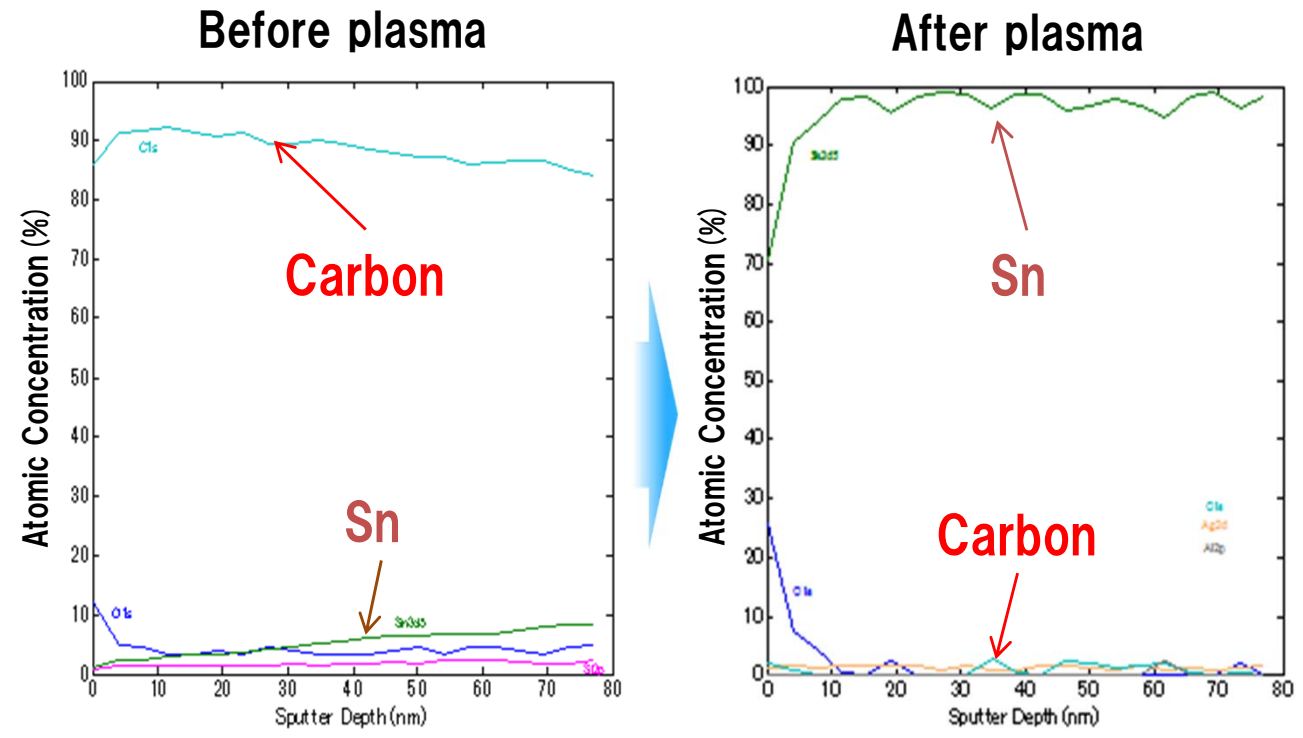
Highest Strength Dies



■ TMV (Through Mold Via) process



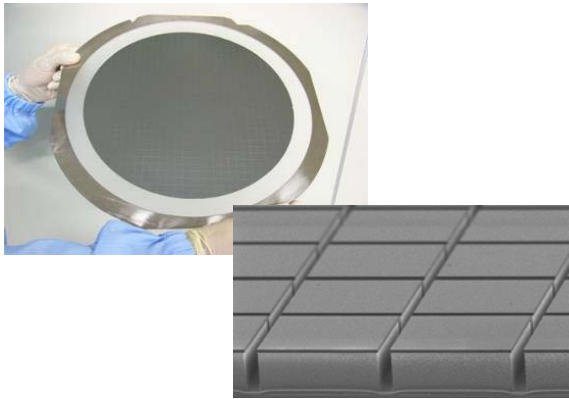
■ XPS depth profile on solder ball surface



Reliable Solder Joint after cleaning !

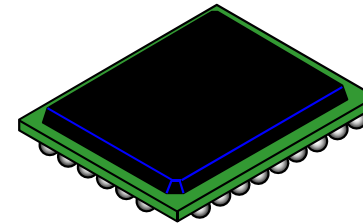
XPS : X-ray Photoelectron Spectroscopy

Plasma Dicing



APX300

Chip Bonding

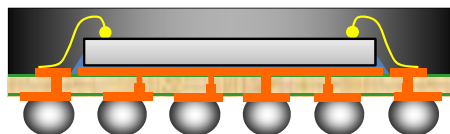


MD-P200US

Plasma Cleaning

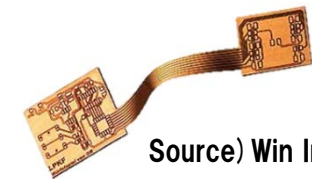


PSX307

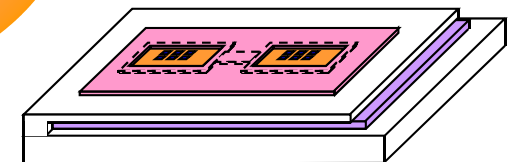


**Panasonic's
PKG techniques**

Handling



Source) Win Industry



e-carrier

Panasonic