PACKAGING FACILITY: KEY EQUIPMENTS & TOOLS

OUR LAB PROVIDES ALL THE INFRASTRUCTURE REQUIRED TO BUILD A PACKAGED DEVICE USING A FULLY PROCESSED MEMS WAFER

PACKAGING AND SYSTEMS FACILITY (PASF)

CONTACT US:

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WAFER GRINDER

Compact, automatic grinder that can thin upto 8" workpieces made of various materials, including SI and SIC.

DIE BONDER

Enables adhesive and eutectic attachment of dies sized 0.1-30 mm in automatic, semi-automatic, & manual modes. Allows die picking from upto 8" wafers, 2" and 4" waffle packs, as well as 2" and 4" gel packs. Fully automatic pick and place capability with a 3-µm accuracy at 3 sigma.

WAFER DICERS

One of our dicers can dice upto 6" and 1.2-mm bonded and non-bonded wafers made of Si, SiC, quartz, and glass, with a minimum die size of 1.2 mm*1.2 mm The other enables ultrasonic-wave dicing of upto 8" Si, SiC, ceramic, and glass wafers as well as alignment of multiple mounted workpieces.

FLIP CHIP BONDER

Offers advanced packaging solutions for complex and high-performance die interconnects.

WIRE BONDERS

Our automatic wire bonder has changeable bond heads, allowing wedge-wedge and ball-wedge bonding of thin, heavy, and ribbon wires in a X: 100 mm/Y: 150 mm/ Z: 42 mm working area and at an approximate speed of 2 wire bonds per second. It can create heavy and ribbon wire bondheads with 2-24 mil Al, Cu, and AlCu wires and ribbon wire bondheads with 10-80 mil by 1-16 mil Al, Cu, AlCu wires. It can also create thin wire wedge-wedge bondheads with 0.5-3 mil Al and Au wires and 0.7-2 mil Cu wires as well as ball-wedge bondheads with 0.7-2 mil Au wires.

Our semi-automatic wire bonder allows ball and wedge bonding of Au, Cu, and Al. It has a bond pad size of 200 µm*200 µm and a pitch of 300 µm.

PLASMA CLEANER

Activates and removes impurities, like photoresist and oxide reduction on bond pads, from the surface of wafers through energetic plasma or Dielectric Barrier Discharge (DBD) plasma created using various gases.

LASER WELDING MACHINE

Enables spot & seam welding of metals and alloys such as SS, Kovar, Invar with a min spot size of 0.7 mm.

THERMAL CHAMBER

Enables temperature testing of electronic assemblies in a range of -40°C to 180°C and a ramp rate of 4K/min.

PARYLENE C DEPOSITION

A chemical vapor deposition process in which a thin Parylene C coating is vaporized in 3 stages. Enables ultra-thin coating on semiconductor surfaces, providing dielectric material properties and moisture protection. One of the best conformal coating methods in the industry.

SHEAR TESTER

Automatic shear tester with high sensor accuracy and resolution, a large X stage, superior axis speed, cameras, and illumination. Enables various types of testing, including that of thin and heavy wire pull, ball shear, ribbon wire pull, and die shear.

VACUUM SOLDERING REFLOW OVEN

Allows hermetic package sealing using various solder preforms to isolate critical microelectronic circuits from the surrounding environment and vacuum package sealing of MEMS packages that require package vacuum levels of ~1 millitorr. The oven also enables die attach/ reflow attach of RF and power chips using solder preform to ensure the high thermal conductivity required for proper device function. Additionally, the oven allows pressure-less sintering for die bonding, which is superior to the standard high-pressure processes.

PACKAGING AND SYSTEMS FACILITY (PASF)

OVERVIEW

The Packaging and Systems Facility (PASF) is a National Facility open to public and private academic institutes, industrial organizations, public sector undertakings, and the strategic sector in India. International facility users are also welcome. Spanning over an area of 2500 sq ft, with a 1000 sq ft class 10K semiclean room, the PASF offers embedded design services, advanced semiconductor packaging, and package assembly and testing to its users.

SEMICONDUCTOR PACKAGING SERVICES

Wafer Dicing, Wafer Grinding, Die Bonding, Wire Bonding (including handling specialty materials for RF and Power packaging), Shear Testing, Die Inspection, Parylene C Coating, Plasma Cleaning, Flip Chip Bonding, Laser Welding, Thermal reliability testing, 3D printing with carbon fiber and other materials.

DESIGN SERVICES

Embedded hardware and firmware design, mechanical design (including RF and Power package design) and modelling, prototype hardware assembly and testing.

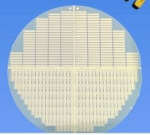
TESTING SERVICES

Various types of pressure sensor calibrations and tests, including thermal reliability testing and shock testing based on customized fixtures for high-reliability applications, in various pressure ranges.

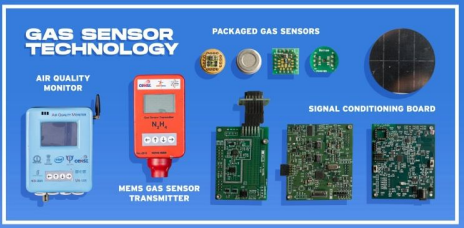
DESIGN SERVICES

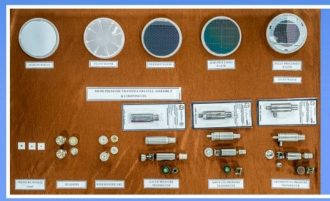
Hardware and embedded system design, firmware development and testing, mechanical design, RF and Power package design, modelling and 3D printing for prototype development and proof-of-concept for research and development projects.

GAN RF AND POWER PACKAGED DEVICES



GAS SENSOR TECHNOLOGY





PRESSURE SENSOR TECHNOLOGY

ADDITIONAL SERVICES

- FINE-PITCH PCB DESIGN, ASSEMBLY, AND SOLDERING

- HARD SUBSTRATE (e.g., SiC) GRINDING AND DICING
- FIRMWARE DESIGN, DEVELOPMENT & TESTING C Programme on multiple embedded platforms.
- MECHANICAL DESIGN AND 3D MODELLING USING SOLIDWORKS Prototype design and printing of housing for electronic assemblies.

- TRAINING for students and other users.

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