Report of OSAT Centre

(Data for Annual Report Preparation)

1. Vision Statement:

To create a **Centre for Innovation in Outsourced Semiconductor Assembly and Test (CFI for OSAT) –** Including Setting-up of Assembly and Packaging Facility for Discrete Power Semiconductor Devices and Application-Specific Multi-Chip Modules and Initiating a Skill based course leading to Advance Diploma on Packaging of Semiconductor Devices and OSAT for Postgraduate, Undergraduate and Diploma students.

2. Objectives:

The 'Centre for OSAT' will be set-up to offer:

(i) Advance Diploma in Semiconductor Packaging and OSAT

(ii) Skill development in areas including:

- Assembly and Packaging of discrete Semiconductor Devices
- Fabrication of Hybrid modules and Application-Specific MCMs

(iii) Specialized services in Customized Semiconductor Packaging and Technology Development

3. Profile:

At NITTTR, Bhopal, we are jointly working with following industries and Institutes on OSAT and ATMP

(i) Naina Semiconductors Ltd., Noida – *Collaboration for Semiconductor Package Development*

(ii) Cassandra Microelectronics, Solan – *MoU for Supercapacitors & Semiconductor Packaging*

(iii) NIT, Patna – *MoU for Packaging of Micro-actuator and Semiconductor devices*

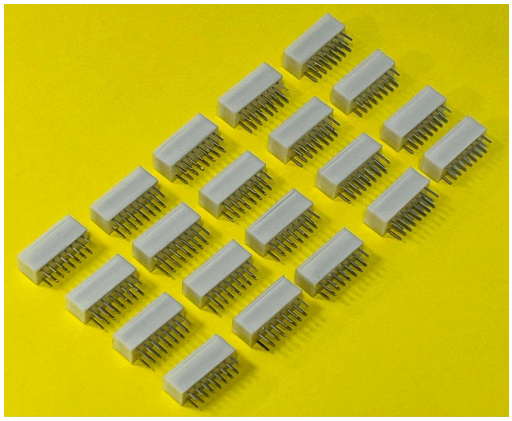
(iv) IIT, Mandi – *MoU for Assembly and Packaging of Semiconductor devices*

We have a dedicated OSAT team of Consultant, Professors, Post-doc fellows, Interns, and Technicians. We are planning to start Advance Diploma and contribute to M.Sc./ M.Tech. courses in Semiconductor device packaging. We are planning a FDP on Semiconductor Packaging in this Centre. This set-up shall also be utilized for Internship, training, skilling and lab. purpose.

The semiconductor industry is experiencing explosive growth, with the OSAT and ATMP sectors playing a critical role in developing advanced electronic devices. By fostering emerging technology capacity building and contributing to the ISM, the Centre will be an asset in strengthening India's semiconductor sector and propelling our nation's economic growth. In order to accomplish the above, proposals along with DPR have been submitted to Ministry.

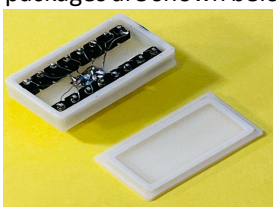
4. Development of Packages for Semiconductor Device Packaging

A 16 dual in-line package (DIP) consisting of base package with pin-assembly and lid has been developed in-house for packaging of semiconductor devices. The fabricated packages are shown below.

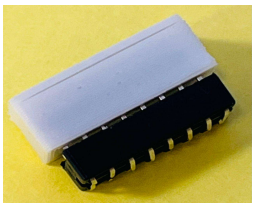


Batch production of 16 pin DIP packages

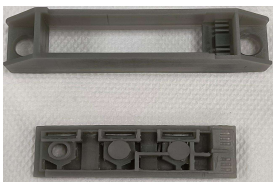
Package (inner view)



Demonstration of package



Package (attached to connector)



Package developed for Industry

Fig. 1: Packages developed for Semiconductor Device Packaging at OSAT Lab

5. Cleanroom Layout design

A clean room layout (approx. 1745 sq. ft. area) with placement of Laminar flows, Fume hoods, Clean-air tent, Air shower along with set-up plan of semiconductor packaging equipments has been prepared. The layout is shown below.

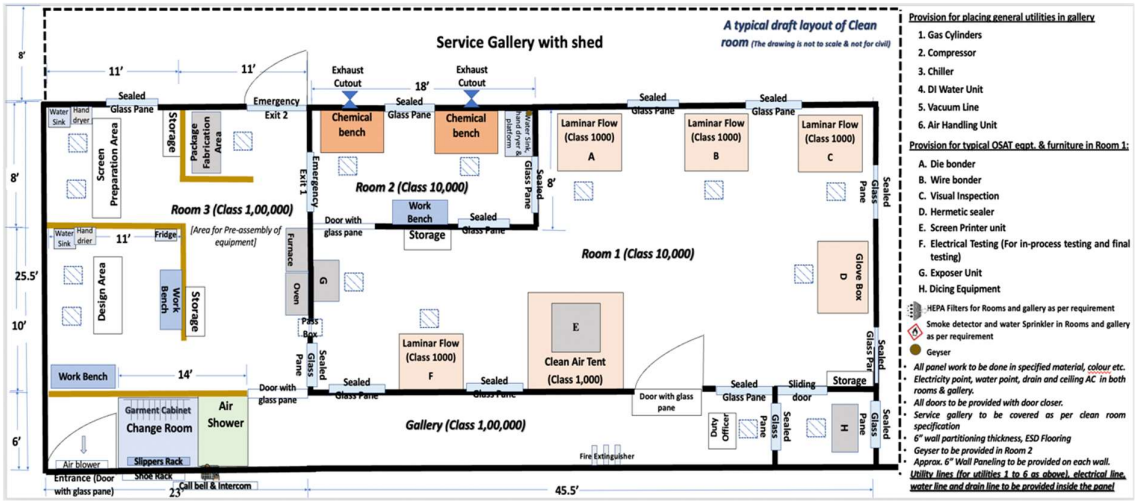


Fig. 2: Layout plan of Cleanroom for Semiconductor Packaging and OSAT

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