

ENGINEERING SERVICES

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Training Kits

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electronics INC.

Technology Today, Tomorrow & Beyond

Leading the Way In
Electronics

For Over 30 years.

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STI is a multifaceted technical organization whose common goal is to provide support through products and services in the field of electronics manufacturing. Utilizing some of the most advanced equipment for training, R&D, prototyping and analysis enables engineers and analysts at STI the versatility to provide the highest quality services for a wide range of products and services in order to address the challenges and issues facing today's electronic manufacturers.





DESIGN & MANUFACTURING

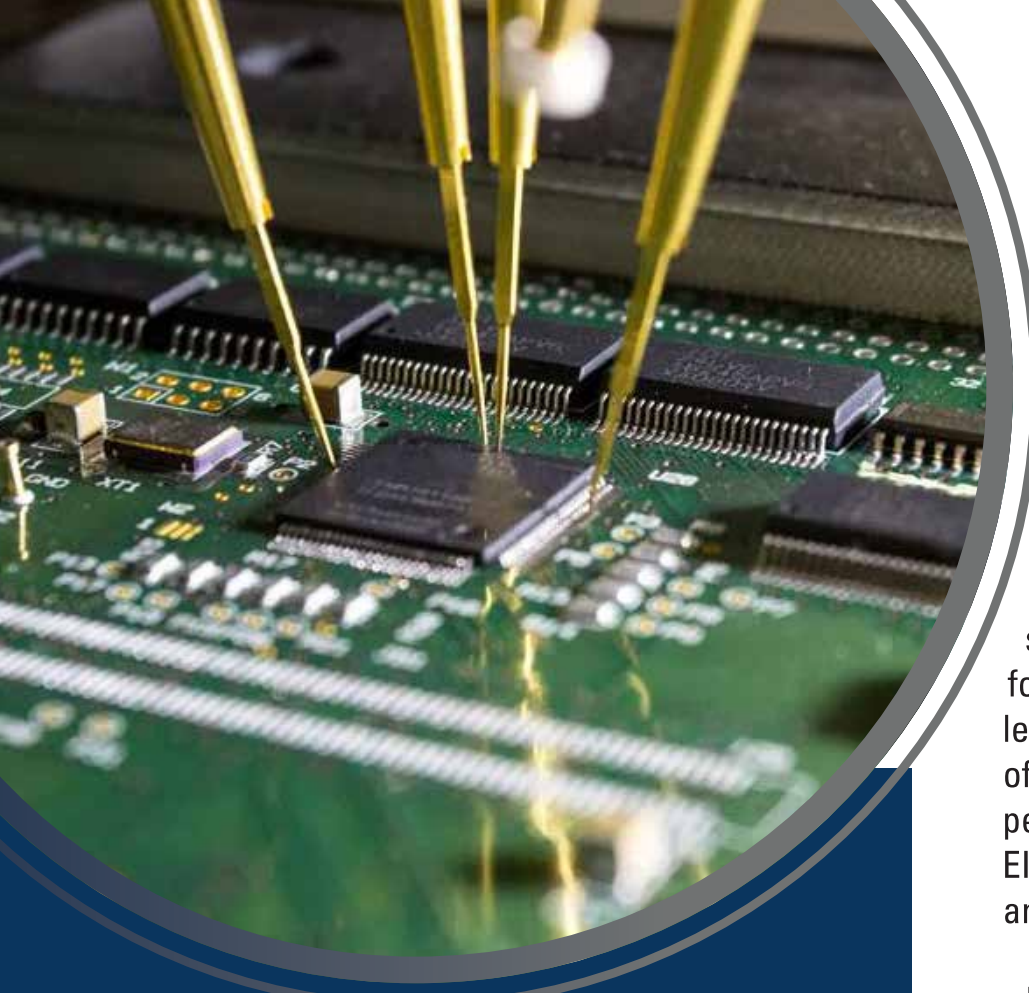
STI Electronics' manufacturing lab encompasses 26,000 square foot of floor space containing two surface mount lines, automated through-hole processing, and multiple flexible work cells for final assembly, rework and repair, box build and test. The facility and equipment is complimented by a highly skilled and trained work force of electronic technicians and associates, all of whom are certified to the highest standard of IPC J-STD-001 S (Space Addendum).

STI is equipped with a state of the art manufacturing area with the latest in high speed placement, inspection, and test equipment in addition to work cells to assemble complex box builds. Our personnel are uniquely qualified to assemble to the highest quality standards and are all trained and certified to J-STD-001 S (Space Addendum). This includes all technicians, machine operators and support personnel.

Placement capability includes surface mount high speed placement of components down to 01005 in size. Our Juki FX-3 and KE2080-L pick and place machines offer placement rates that can compete with any contract manufacturer. Inline and secondary automatic optical inspection (AOI) ensures in-process control for placement accuracy of components. STI's reflow operation is performed in a 12-zone oven to ensure proper profile and temperature ramp ($\pm 2^\circ/\text{s}$) to eliminate thermomechanical overstress due to wide variance in thermal exposure. This is especially critical on large, fine-pitch devices (e.g. BGAs, etc). Additionally, high speed through-hole component processing is available using our Juki selective solder machine which automates through-hole soldering for higher volume applications.

At STI, product quality is our top objective. All processes are governed by a quality system certified to AS9100 with manufacturing and inspection in accordance with IPC J-STD-001 S (Space Addendum). All completed assemblies are washed and visually inspected after each process. BGA devices are 100% X-RAY inspected, and X-RAY images are available upon request. Flying probe testing is available to detect any opens and shorts on the assembly as well as to provide statistical analysis for device tolerances. Final inspection and packing is performed by IPC-certified inspectors with 10+ years in past performance experience with critical hardware. STI has 20+ years in past performance building mission-critical Class III circuit card assemblies (CCA).





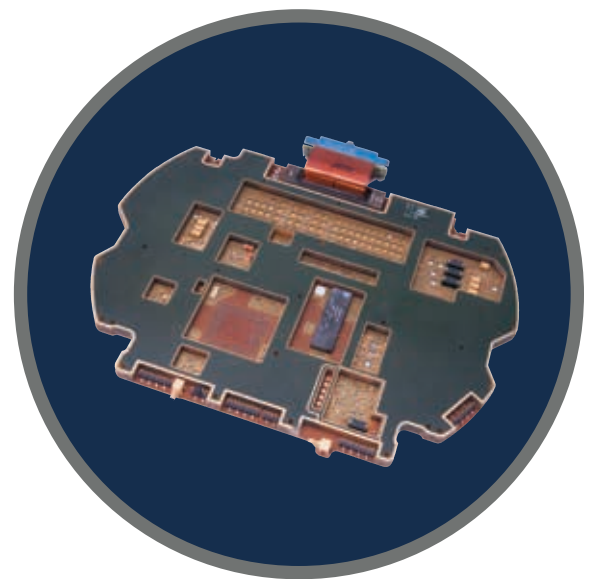
TESTING

STI Electronics, Inc's Engineering Department serves the aerospace, military, and commercial sectors of the electronics industry offering test services and evaluation services for component-level and system-level electronics hardware. We offer customized test protocols and perform testing in compliance with EIA/JEDEC, IEC, AEC, ASTM, IPC, and MIL standards.

- Environmental Test Services
- Electrical Test Services
- Mechanical Test Services
- Thermography Test Services
- Strain Gage Test Services

CIRCUIT DESIGN

STI's involvement in research and development programs, both in component packaging technologies and electronics assembly manufacturing, has brought about the acquisition of the top people in this field and the installation of the latest and most advanced equipment and circuit design tools. STI is US-based, ITAR registered, and staffed with engineers to design, develop, and assemble a ruggedized electronics assembly in compliance with our customer's specifications. With experience in Defense, Aerospace, Space, and commercial applications, we are adept in circuit design and the assembly of products to satisfy our customer's requirements.

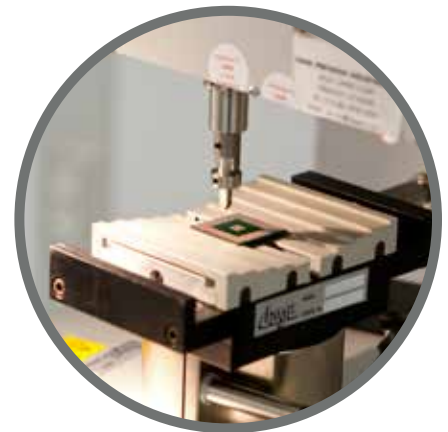




MATERIAL FAILURE ANALYSIS

EXPERIENCE
&
KNOWLEDGE

The experience and knowledge of STI's Analytical Laboratory personnel enables interpretation of test results and reporting that lets our customers make the right choices for corrective actions. Services include Qualification testing, Visual Inspection & IPC Compliance Testing, residue/cleanliness analysis, and solderability testing. STI's enhanced capabilities are the result of the recent addition of several new analytical tools and equipment. The analytical equipment includes some of the industry's newest and most advanced tools. STI also provides services as an expert witness and arbitrator.



MICROELECTRONICS PACKAGING

The Microelectronics Packaging Lab was established to meet the rising need for advanced systems development and packaging to address the emerging challenges and issues facing today's electronics assemblies. Advanced design and modeling software enables STI to design and develop highly integrated hardware to meet shrinking form and fit factor requirements as well as increasing thermal loads. Emerging packaging materials are continuously evaluated to optimize electrical and thermal performance.

The microelectronics lab specializes in state-of-the-art packaging design and microelectronics assembly including current technologies such as Chip-On-Board (COB) and Multichip Module (MCM) as well as emerging technologies such as STI's patented packaging technology termed Imbedded Component/Die Technology (IC/DT®).

STI's involvement in research and development programs, both in component packaging technologies and electronics assembly manufacturing, has brought about the installation of the latest and most advanced equipment and the acquisition of the top people in this field. STI is staffed to design, develop, assemble, and test a ruggedized electronics assembly in an advanced cleanroom laboratory (Class 1000/ISO Class 6 certified) to meet our customer's specifications.

DESIGNING FOR THE FUTURE



A Class 1000 / ISO Class 6 cleanroom provides the optimum environment for prototype and low volume microelectronics manufacturing and assembly production.

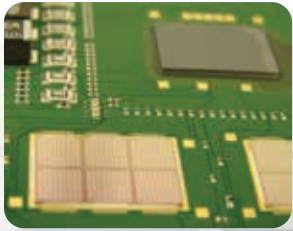
Assembly materials such as printed circuit boards (PCBs), components, and wire are stored in dry nitrogen cabinets to reduce contamination and degradation.

A sophisticated dispenser/placement machine is used for low volume dispense accuracy and repeatability in addition to $\pm 10 \mu\text{m}$ component placement. Component pick options include waffle pack and wafer for high-precision SMT and bare die, including flip chip assembly.

Wire bond interconnect is accomplished with a fully automatic ultrasonic wedge bonder utilizing aluminum wire over a wide diameter range for low and high current applications.

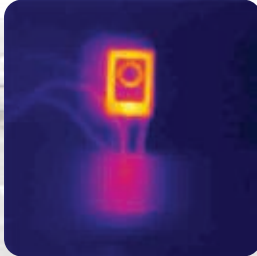
A two-channel mass flow controller plasma system is employed to prepare surfaces for die attach, wire bonding, and encapsulation.

Material qualification and process control are accomplished via a bond tester coupled with high magnification visual inspection.



FLIP CHIP ASSEMBLY

- Direct Chip Attach (DCA)
- Lead-Free Interconnect
- Eutectic 63Sn37Pb Interconnect
- High Lead Interconnect
- Anisotropic Conductive Adhesive Interconnect
- Underfill Encapsulation



THERMAL OPTIMIZATION

- Passive Cooling Design
- Thermal Material Selection
- Thermography Testing



CLEAN ROOM (CLASS 1000/ISO CLASS 6)

- ISO 14644-1 Certification to ISO Class 6
- Controlled Temperature/Humidity Environment
- Ionizer/Dissipative Flooring ESD Control



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PARTNER

www.stiusa.com

email: sales@stiusa.com

261 Palmer Road, Madison, AL 35758 • Phone: 800-858-0604 • Fax: 888-650-3006

Monday - Friday 7:30 a.m. - 4:30 p.m. CST

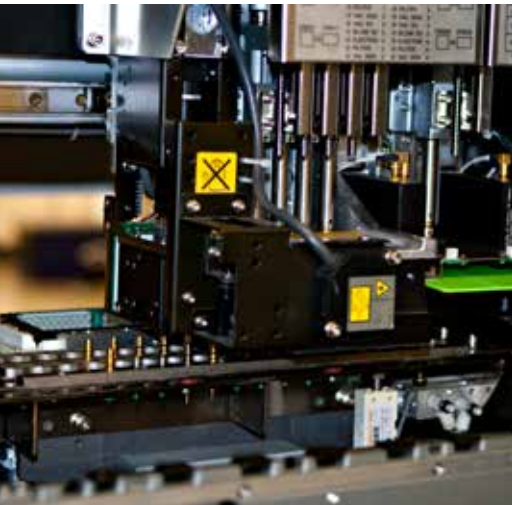


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