



TEST, LAB & DESIGN SERVICES



TURNKEY PRODUCT & SERVICE PROVIDER

It is our goal at Austin Semiconductor to provide our customers with a full service solution to their product and manufacturing needs. This includes full turnkey requirements as well as isolated activities and screening. Our resources are available to address needs regardless of the magnitude of the request. We have an extensive range of capabilities, including design, assembly, screening, and final processing to military and space quality standards. This allows Austin Semiconductor to be the premier world-wide supplier of state-of-the art semiconductor products for high-reliability applications. Our in-house technical expertise allows us to design new parts and processes very quickly. If you have a service requirement that is not found below, our technical staff can assist in developing a solution for you.

ENGINEERING/ANALYTICAL SERVICES

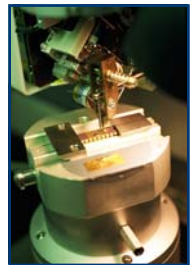
- ❖ **Component Evaluation and Qualification**
- ❖ **Time/Temperature Regression Infant Mortality**
- ❖ **Sub-Assembly Design**
 - Sonoscan CSAM (Test Method 1034)
- ❖ **X-Ray** (Test Methods 2012 & 2030)
- ❖ **Die Shear Stud Pull** (Test Method 2019 or 2027)
- ❖ **Bond Strength** (Test Method 2011)
- ❖ **Resistance to Solvents** (Test Method 2015)
- ❖ **Steam Age/Solderability** (Test Method 2003)
- ❖ **Salt Atmosphere** (Test Method 1009)
- ❖ **Thermal Shock** (Test Method 1011 - 65°C to 150°C)
- ❖ **Thermal Resistance** (Test Method 1012)
- ❖ **Thermal Impedance**
- ❖ **PIND** (Test Method 2020)
- ❖ **High Mag Visual > 100X** (Test Method 1010)
- ❖ **Lead Integrity** (Test Methods 2004 & 2028)
- ❖ **ESD Testing** (Test Method 3015)
- ❖ **Temperature Cycling** (Test Method 1010 -65°C to 150°C)
- ❖ **Hermetic Testing: Fine Leak/Gross Leak** (Test Method 1014)
- ❖ **SEM Inspection** (Test Method 2018)
- ❖ **Centrifuge: up to 40,000Gs** (Test Method 2001)
- ❖ **Lid Torque** (Test Method 2024)
- ❖ **Mechanical Shock and Vibration** (Test Method 2002 & 2007 resp.)
- ❖ **HAST Screening 85/85**
- ❖ **Internal Water Vapor: RGA** (Test Method 1018)
- ❖ **Steady-State LIFE Test** (Test Method 1005)



ASSEMBLY

The Austin Semiconductor assembly capability is structured to serve the unique needs of the high-reliability markets. The diverse assembly capabilities provide opportunities for small lot manufacturing as well as large lot & continuous production. The process control and process monitoring within the Austin Semiconductor assembly line exceed the requirements for Space level manufacturing.

- ❖ **Multi-Chip and Monolithic Ceramic Product Assembly Services**
- ❖ **Class 100 Clean Room**
- ❖ **Silicon, SOS, GaAs**
 - Die Attach
 - JM7000
 - Eutectic
 - Epoxy
 - Solder
- ❖ **Wire Bond**
 - Aluminum
 - Gold
 - 0.7mil to 1.25mil to 3mil or larger
- ❖ **Internal Visual Inspection**
 - Commercial
 - Level B MIL-STD 883
 - Level A MIL-STD 883
 - QML Certified (Class B & Space)
- ❖ **Seal**
 - Solder
 - Glass Frit
 - Seam Seal
 - Can Weld
- ❖ **Vacuum Bake**
- ❖ **Surface Mount Assembly**
- ❖ **Radiation Tolerant Shielded Packages**





TEST CAPABILITIES

Austin Semiconductor's engineering staff is experienced and ready to service your electrical evaluation and device reliability testing needs, including infant mortality "burn-in" screening and upsampling of commercial plastic components. Austin Semiconductor has built a large foundation of test program libraries on a multitude of test platforms with base programs numbering in the thousands, and test hardware fixtures for many hundreds of unique, ceramic and plastic packages and pin counts.

If you are looking for increased reliability assurance and your requirements entail burn-in, or life test, Austin Semiconductor has several large capacity ovens, especially suited for dynamic, or static bias excitation with already tooled burn-in boards for multitude of devices and packages.

TESTER CAPABILITY

- ❖ Teradyne J997-100/200 MHz, 72 I/O's
- ❖ 5 Teradyne J937-50/100 MHz, 36 I/O's
- ❖ SZ M3000 - Multi-Family Test System
- ❖ Sentry VII - 10MHz, 60 Pin High Speed Head, 60 Pin High Voltage Head
- ❖ 2 Automated Bench Test Systems
- ❖ LTX TS80 - Linear / Mixed Signal Test System
- ❖ 2 Sentry 21 - 20MHz, 120 Pin High Speed Head, 60 Pin High Voltage Head
- ❖ Testronics 201C - Discrete Component Test System
- ❖ Sub-Nanosecond ECL Logic AC Test System
- ❖ Automated Handlers
- ❖ Large Variety of Standard Bench Test Equipment and High Precision Equipment



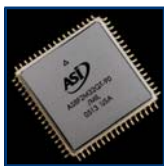
BURN-IN/LIFE TEST CAPABILITY

- ❖ Dynamic / Static
- ❖ Accelerated VCC
- ❖ Arrhenius / FIT Rate Calculation
- ❖ 100°C, 125°C, 135°C, 145°C
- ❖ Logic, Linear, PLD, VLSI
- ❖ All Memory Devices
- ❖ Infant Mortality EFR
- ❖ Functional Check In-Situation
- ❖ PDA / Parameter Drift
- ❖ Data Retention / Endurance
- ❖ 5 Large-Capacity Memory Burn-In Ovens
- ❖ 4 Custom Product Burn-In Ovens
- ❖ 3 Auxiliary Custom Product Ovens



PRODUCT TESTING

Austin Semiconductor has experience in testing a wide range of both memory and logic/linear/VLSI products, and maintain a large library of test programs under strict quality control standards.



MEMORY / MEMORY MODULES

- ❖ SRAM / SSRAM
- ❖ DRAM / SDRAM
- ❖ VRAM
- ❖ FIFO
- ❖ Dual-Port RAM
- ❖ VLSI / Logic
- ❖ EEPROM / FLASH

FAILURE ANALYSIS

- ❖ I/C Electrical
- ❖ Characterization
- ❖ Decapsulation
- ❖ Dye Penetrant
- ❖ X-Ray
- ❖ Energy Dispersive X-Ray
- ❖ Scanning Electron Microscope
- ❖ Optical Microscope
- ❖ Curve Tracer
- ❖ O/S Test
- ❖ Scanning Acoustic Microscope



ELECTRICAL TEST

- ❖ -65°C to +150°C
- ❖ Group A
- ❖ Correlation / Gold Standard
- ❖ Modules
- ❖ Attributes Data
- ❖ Logic, Linear, PLD, VLSI
- ❖ All Memory Devices
- ❖ Precision High Speed
- ❖ Low-Noise PWB Design
- ❖ Discrete Components



ENVIRONMENTAL / STRESS SCREENING

Austin Semiconductor can perform environmental / stress screening and assembly evaluation tests required by the high reliability semiconductor market.

- ❖ Environmental / Stress Screening
- ❖ Temperature Cycling
- ❖ Centrifuge
- ❖ Fine / Gross Leak Testing
- ❖ Marking / Resistance to Solvents
- ❖ HAST Testing
- ❖ Lead Trimming / Forming and Lead Integrity

TESTING:

- ❖ Shock / Vibration Testing
- ❖ PIND Testing
- ❖ Half-Sine Shock Testing
- ❖ X-Ray / Sonoscan Evaluation
- ❖ Trained Operators
- ❖ Experienced Analysis



CUSTOM PRODUCTS & PACKAGING



Austin's Product Development Team excels at defining and delivering product and/or packaging solutions from modifying standard products to designing full custom products. Modifications and designs start from either a generic requirement communicated during a customer visit or a fully documented descriptive request received via a customer's source control drawing (SCD).

With over 18 years experience in definition, design and test of products and packaging for the high-reliability marketplace, we have prided ourselves in the quality of our turn-key services approach that we provide to our customer base. Our designs take into consideration manufacturability, testability, quality and long-term reliability, with particular attention to obtaining these goals within project cost guidelines.

DESIGN CAPABILITIES:

Silicon Experience

- ❖ Linear
- ❖ Mixed-Signal
- ❖ Analog
- ❖ Digital
- ❖ Non-Volatile Memory

Standard Packages

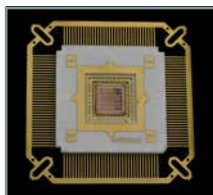
- | | |
|-----------------|-----------------|
| ❖ Hermetic | ❖ Plastic |
| <u>Standard</u> | <u>Standard</u> |
| ➢ DIP | ➢ PGA |
| ➢ ZIP | ➢ LCC |
| ➢ SOJ | ➢ PGBA |
| ➢ QFP | ➢ PLCC |
| | ➢ PLCC |
| | ➢ PBGA |
| | ➢ TQFP |

Custom Packages

Per Requirement

ADVANTAGES OF USING AUSTIN SEMICONDUCTOR:

- ❖ Substantial experience in available silicon technologies.
- ❖ Substantial experience in all facets of packaging and packaging technologies.
- ❖ Availability of turn-key design, test and management services.
- ❖ Dedicated supplier to markets requiring high-reliability products and services.
- ❖ A participating supplier to the DMS / Obsolescence socket.



RADIATION TOLERANT



Austin Semiconductor has been supporting the radiation tolerant market with specialized products and services for over 18 years and has parts designed in hundreds of programs with tens of thousands devices shipped to date.

Austin Semi has the proper focus to the unique and special needs of the high-reliability marketplace and provides personalized and dedicated service.

Whether it be just a single process flow step like PIND, centrifuge, temp cycle or sonoscan, or full V-level Class S Assembly to MIL-PRF-38535 and MIL-STD-883 methods, Austin Semiconductor is certified by DSCC and has been audited / approved by over 100 major and minor industry users. Austin is poised to meet the toughest customer specifications and standards.

KEY POINTS:

- ❖ Monolithic & MCM's
- ❖ QML DSCC Certified
- ❖ MIL-PRF-38535 V-Level Assembly
- ❖ DMS & EOL Support
- ❖ MIL-STD-883 Methods Service Provider for Single Step or Full Flow
- ❖ Any Semiconductor Complexity
- ❖ Highest Level of Quality & Customized Support
- ❖ Dedicated to the High-Reliability Marketplace
- ❖ Products on 100's of Space Platforms
- ❖ Certified Supplier to NASA (NSTS 5300.4)
- ❖ MIL-PRF-38535, MIL-PRF-38534, MIL-STD-883
 - DSCC V-Level Class S Assembly Certification
- ❖ Hermetic Ceramic Package Design Service
- ❖ Discrete, Monolithic, Module or Hybrid, RAD-Shield
- ❖ Customer Specified Source Control Drawing Support
- ❖ Long Term DMS Support Via Die Banking
- ❖ Facilities Audited / Approved by 100+ Industry Contractors



ELEMENT EVALUATION

- ❖ SEM, WLAT
- ❖ 30X - 200X Internal Visual
- ❖ Bit-Mapping
- ❖ Bond Pull
- ❖ Die Shear
- ❖ Lid Torque
- ❖ Lead Integrity
- ❖ X-Ray
- ❖ Construction Analysis
- ❖ Single-Bit F/A De-Process
- ❖ ESD Testing

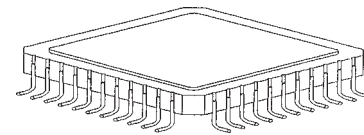


MECHANICAL

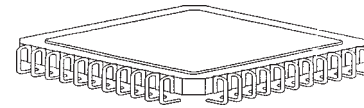
- ❖ Sonoscan
- ❖ PIND
- ❖ Gross & Fine Leak
- ❖ Marking & Permanency
- ❖ Steam Age / Solderability
- ❖ Hot Pb / Sn Solder Dip
- ❖ Vibration Fatigue
- ❖ Lead Time / Forming
- ❖ Centrifuge to 40,000g
- ❖ Mechanical Shock



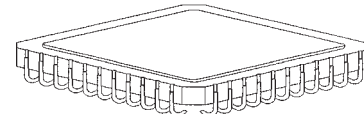
LEAD ATTACHMENT SERVICES



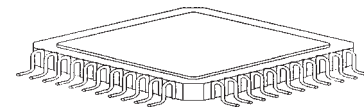
Gullwing - JEDEC MO-111



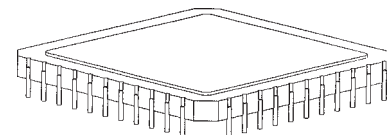
Spider J-Form



J-Form - JEDEC MO-110



Spider Gullwing



Butt-Form

MEMORY DEVICE CHARACTERIZATION

- -65°C to 150°C & Higher Temperatures
- Bit Map
- Parameter Shmoo
- Average & Standard Development (4-corner Characterization)
- Parameter MARGIN
- ICC's over Temperature & VCC
- DC Parameters (Nano-Amp Precision)
- VCC Functional vs. Temperature
- Special Algorithm (Application Specific)
- Sensitivities or Intermittencies
- Noise Margin Performance
- Data Retention Fail Threshold
- Speed
- Timing Sequence (Race Conditions Concerns)
- New Silicon Design Proof
- COTS / PEMS (Plastic Upscreen)

QUALITY ASSURANCE

QUALITY POLICY:

To deliver the highest quality products and service on time. We ensure the quality of product and service through our policies and procedures, modeled and compliant to the ISO9001 Quality System.

QUALITY SYSTEM:

- ❖ All Austin Semiconductor personnel understand and are committed to the corporate policy, providing a confidence level to our customer base.
- ❖ The Quality System is understood and effective.
- ❖ Emphasis of our System is on problem prevention rather than dependence on detection and correction.
- ❖ There is commitment to a philosophy of continuous improvement.

CERTIFICATIONS:

- ❖ DSCC QML
 - ✓ MIL-PRF-38534, Class H
 - ✓ MIL-PRF-38535, Class Q, V
 - ✓ Laboratory Suitability (MIL-STD-883)
 - ✓ DSCC Approved, V-Level
 - ✓ Class S Manufacturing Flow
- ❖ NSTS 5300.4
- ❖ SMD, M Level & QD Level
- ❖ Customer specific, Source Control Drawing (SCD)
- ❖ COTS/PEMS Plastic Flow
- ❖ JEDEC Standards for Plastic



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