

**CUSTOM ENGINEERED SOLUTIONS
FOR COMPLEX ELECTRONIC
PACKAGING CHALLENGES**

From Design to Manufacturing to Assembly to Test



TELEDYNE
ADVANCED ELECTRONIC SOLUTIONS
Everywhereyoulook™

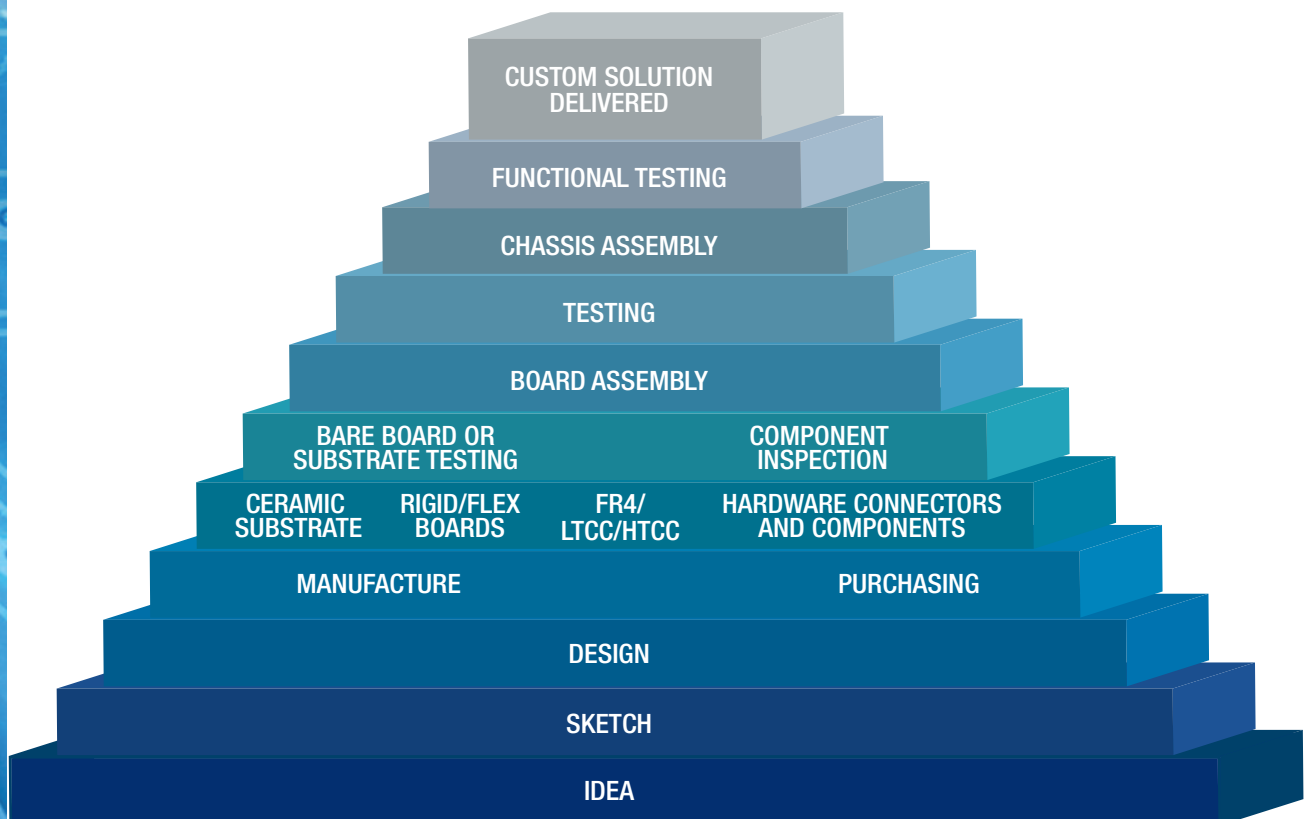
Advanced Electronic Solutions

Teledyne Advanced Electronic Solutions provides beginning to end solutions for all your advanced electronic manufacturing needs.

Teledyne Advanced Electronic Solutions provides innovative technologies and successful program solutions servicing aerospace, defense, space and high-tech industries. We leverage our expertise and broad spectrum of technologies to provide our customers with a new level of full service design, manufacturing and test solutions. From printed circuit boards,

to complex microelectronics, to box level assemblies, we are uniquely positioned to help you with your most complex and challenging manufacturing needs. Our world class manufacturing facilities, along with our experienced team of technical experts will assure your program will be successfully completed on time and on budget.

custom engineered solutions for the most demanding applications

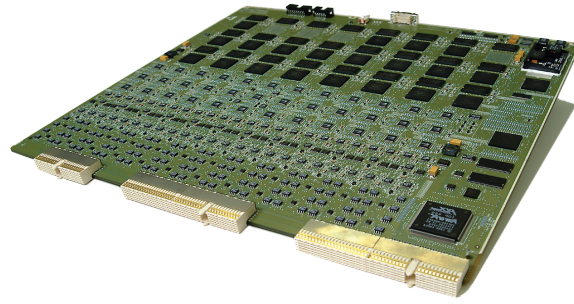


ELECTRONIC MANUFACTURING AND TEST SERVICES

Low to medium volume, high mix, high complexity assemblies, offering complete manufacturing lifecycle support including product development, manufacturing, test and sustainment services.

Manufacturing Capabilities

- **Complex circuit card assemblies**
 - SMT (component sizes 0201 up to large grid array components and connectors)
 - RF, analog, high-speed and digital circuits on rigid-flex and Cu core substrates
 - Typical lot sizes from 3 to 300 pieces
 - 4 high speed, flexible SMT lines
 - 100% solder paste, automated optical, and x-ray inspection
 - Forced air convection reflow with inert atmosphere option
 - Special processes for RF assemblies (filters, shields, etc)
 - BGA underfill, conformal coating, etc.
 - Selective and wave solder pin-thru-hole processes
 - CCA and component bonding processes
- **Advanced microelectronic packaging qualified to MIL-PRF-38534 Class H and Class K**
 - MCM, MCA, MCP, PBGA
 - High density interconnects
 - High density flip chip assembly
 - Fine pitch wire bonding
 - BGA attach and re-balling
 - Precision eutectic and epoxy die attach
 - Cover seal hermetic packaging and encapsulation
- **Substrate Technologies**
 - FR4
 - Polyimide
 - Rigid-Flex
 - Insulated Metal
 - Proprietary High Tg (BT, BN)
 - PTFE (Teflon, Rogers™)
 - Thick Film Ceramic
 - LTCC
 - HTCC



Mechanical Box and Backplane Assemblies

- Cable fabrication and installation
- Hardware installation
- Multi-level system integration
- Bonding of sub-assemblies/heat sinks
- Large system capability (200 lbs.+)
- Fiber optic integration
- PAO and other coolant requirements
- RF harness and waveguide integration

Development Capabilities

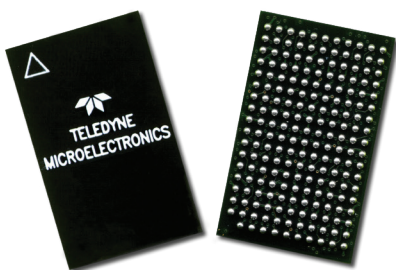
- New product development support
- Design verification and prototyping
- Test and RF development engineering for complete product lifecycle
- Optoelectronic transceiver design development

Functional Testing

- MDA - Flying probe and ICT
- Boundary Scan - ScanWorks
- JTAG programming
- Mixed signal functional testing
- RF test up to 40 GHz
- High power test up to 4 KW
- Full system testing - FVT and ESS for mechanical box assemblies

Environmental Stress Screening

- Temperature cycling 10 chambers with 2 HASS
- 20-25°C per minute rate, -100 to +180°C
- Vibration up to 3 axis random vibrate - 2-30 G
- Mechanical shock
- Pressurized helium chamber
- Fine and gross leak testing
- Centrifuge
- Real time X-ray



ADVANCED ELECTRONICS SOLUTIONS FOR A COMPREHENSIVE START TO END RESULT

We offer the most advanced manufacturing technologies to provide our customers with a one stop shop, upheld by unparalleled service and support.

In addition to its vast breadth of capabilities, Teledyne Advanced Electronic Solutions has direct access to highly focused and unique resources throughout the Teledyne Technologies family and its world-renowned research center.

Together, we undertake complex and difficult challenges and provide you with the optimum solution for success.

Contact our Sales Team for assistance:

West

Harry Kellzi
Tel: 310.990.9178
Email: harry.kellzi@teledyne.com

Southeast

Shannon Princiotta
Tel: 310.869.6543
Email: shannon.princiotta@teledyne.com

Central

Jim Murray
Tel: 931.842.0018
Email: jim.murray@teledyne.com

Northeast

Mike Collier
Tel: 931.842.0018
Email: jim.murray@teledyne.com



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1425 Higgs Road, Lewisburg, TN 37091 USA
931.359.4531 | aes@teledyne.com
www.teledyneaes.com