

# E.K.S.S. Microelectronics Ltd.

Introduction to our services

# Content

- Introduction
- Package Design Services
- Test Engineering Services
- Test Hardware Services
- Pre Production Services
- Supply Chain Services
- Examples
- Close

# Introduction

**E.K.S.S. Microelectronics Ltd**, founded in 2002.

- Yovav Yahav-Amir joined **E.K.S.S. Microelectronics Ltd** at 2005. He has 20 years of experience in the semiconductor industry. After earning his BSEE degree from the Technion, Israel Institute of Technology, he worked as product and test engineer in various companies including National Semiconductors, Oren Semiconductors and DSPC (Intel). In his last role he served as the Product & Test Engineering Manager at Metalink.
- <http://www.ekss.co.il>
- Provides engineering outsourcing and consulting services for the fabless semiconductor industry :
  - Technology choice, Packaging, Tape-out,
  - Product & Test engineering,
  - Production processes
  - Reliability and failure analysis.

# Introduction

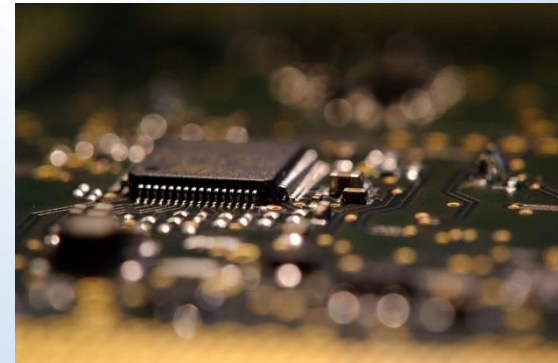
- A business focused on package design, complex test and supply chain solutions for Fabless Semiconductor Organisations
- We work in partnership with our clients and understand the challenges that arise from New Product Introduction.
- Through a network of strategic business partners we are able to offer full turn-key solutions.





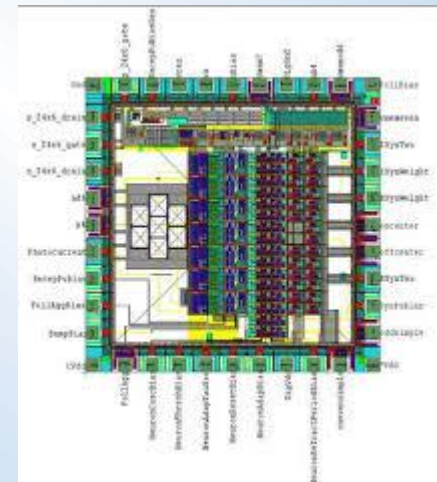
# Package Design Services

- Package definition
  - Interfacing with the assembly house
  - Package requirements/design rules
- Substrate design
  - Either using the assembly house or internal resource
- Electrical Simulation
- Thermal Simulation
  - Static or Dynamic
- Substrate manufacturing/supply chain management:



# Package Design Services

- Package Design Capability
  - System In Package
  - Multi Chip Module
  - RFID
  - Plastic – Metal – Ceramic
  - Low Volume prototype through to volume production



# Test Engineering Services

- Test plan development
- Test hardware design and manufacturing :
  - Load board
  - Probe card
- Wafer sort & Final test program development :
  - Test patterns conversion
  - Test program development and debug.
  - Test program release to production.

# Test Engineering Services

- Product test engineering services :
  - Test program optimization :
    - Test time reduction
    - Multi-site testing
  - Yield improvement.
- Devices characterization :
  - Test program development & test patterns conversion
  - Corners analysis
  - Temperature analysis
  - Voltage analysis
  - Characterization report



# Test Engineering Services

- Tools & Capabilities :
  - IG-XL offline software for J750, J750eX & Flex testers.
  - SmarTest offline software for Verigy 93K tester.
  - e-VCD/VCD/STIL/WGL to pattern converter.
  - WGL/STIL to e-VCD/VCD converter.
  - Verilog test bench generation.
  - STDF analyzer (including wafer maps generation).

# Test Engineering Services

- Supported Testers
- Teradyne J750/J750eX – 100MHz/200Mhz (digital), 16M/64M LVM, Scan option.
- Teradyne Flex – 200MHz (digital), mix-signal and high voltage.
- Teradyne UltraFlex – 1.6GHz (digital), Mix-signal and RF.
- Verigy 93K – 1.6GHz (digital), mix-signal and RF.
- Supported products :
  - ASIC or ASSP
  - Digital, Analog, Mixed signal, RF Integrated Circuits
  - Small quantities/pre-production testing

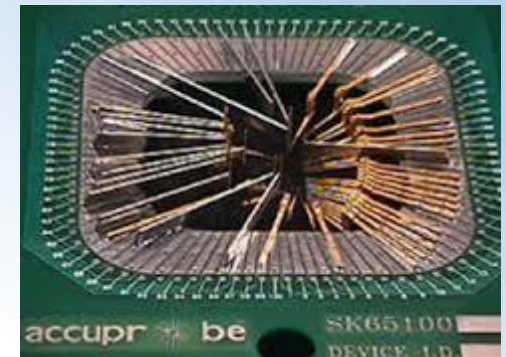


# Test Engineering Services

- Test program development :
  - Test patterns conversion & generation :
    - e-VCD/VCD/STIL/WGL
    - Can generate e-VCD/VCD or Verilog Test Bench for virtual tester verification.
  - Off-line test program development :
    - Using IG-XL software for Teradyne testers.
    - Using SmarTest software for Verigy 93K.
  - Test program debugging
  - Test program release to production
  - Test program and patterns belong to customer

# Test hardware services

- Load board / Probe card design & manufacturing :
  - High Level Schematics performed by EKSS.
  - Engaging with manufacturing subcontractors :
    - Full schematics
    - Board Layout
    - Board Manufacturing
- Subcontracting activities are managed by EKSS :
  - Load board & probe cards belong to the customer.
  - P.O. to subcontractors can be issued directly by our Customer or through EKSS





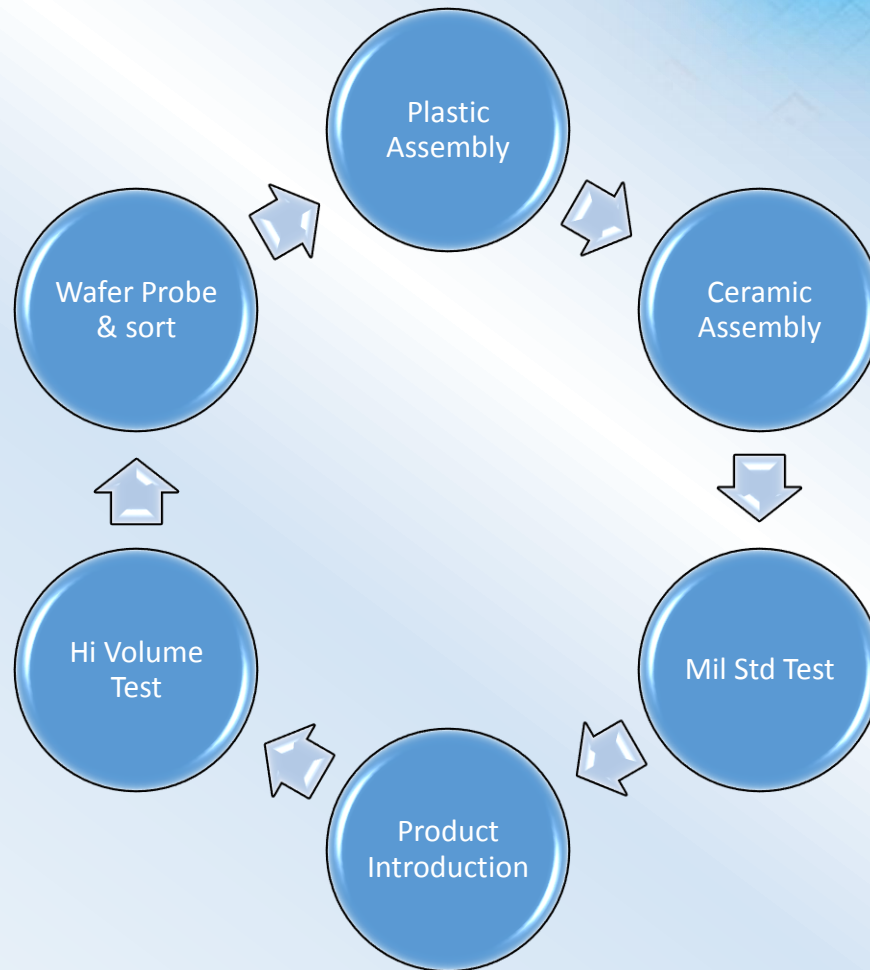
# Product Engineering Services

- Process selection
- Engagement with Foundry, assembly & test houses, through our approved Supply Chain partners.
- Package design
- Tape-out process management
- Reliability tests management
- Yield monitoring
- Failure analysis management
- Low Volume Production
- Transfer of volume production to approved assembly & test houses
- Full Supply Chain Management and Delivery of prod

# Supply Chain Services

- Managing from wafer start to finish good:
  - Wafers start in the foundry and follow up.
  - Assembly
  - Test (wafer sort and final test)
  - Shipping to customer.
- In-House pre-series testing services : Few hundreds parts
- Transfers to production sites :
  - Transfer to Test House included in EKSS services :
    - Customers Test Houses (Worldwide operations)
    - EKSS can propose Test Houses if needed
  - Boards, Test programs, Correlations transferred.
  - Support to production ramp-up
  - Release to production :
    - After Test house & Customer approvals
- Engineering support

# Supply Chain Partners



# Test Projects examples

- 70W Digital SoC : Teradyne J750eX
  - Digital SoC with RLDRAMS.
  - Over 5000 balls Flip-Chip BGA, and 6000 pads.
  - On-board power supplies.
  - Developed both final test and wafer sort.
- GPS RF receiver IC : Teradyne J750
  - On-board GPS module
  - Developed final test and characterization.
  - Quad site
- W-USB RF IC : Teradyne J750
  - On-board RF head
  - Developed both final test and wafer sort.
  - Dual site.



# Test Projects examples

- W-HDI baseband IC : Teradyne Flex
  - Mixed signal SoC
  - Developed final test program.
- FEMTO Cell IC : Teradyne Flex
  - Digital SoC with DDR and LVDS.
  - Developed final test and characterization.
- Flash controller : Teradyne Flex and J750eX
  - Developed final test and wafer sort.
  - Test program includes unique ID fusing.
  - Quad site.

# Questions