NON HERMETIC 28nm SOLDERED

FC FOR SPACE APPLICATIONS

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AEMtec GmbH
Advanced Electronic Microsystems
Excellence in (opto) electronics and sensor systems offering high-end chip level technology services from product / process development to packaging

Areas of Excellence
Technology-Know-How
For complex module assembly

Wafer Back-End
- Au-Stud Bumping
- UBM
- Solder Balling
- Sawing
- Cleaning and UV-Exposure

Flip Chip
- Soldering
- Gluing (ICA, ACA, NCA)
- Copper Pillar
- TC/TS Bonding
- Underfill

Chip on Board
- Die Bonding
- Al and Au Wedge and Ball Bonding
- Encapsulation
- 2.5D/3D Packaging
- System in Package

SMT
- 01005 and 03015 (metric)
- Selective Soldering
- RoHS-Compliant Processes

Box-Build
- Co-Product Development
- Prototyping + Industrialization
- Serial Production incl. Repair Service
- Worldwide Supply

On all common substrates
Description of the projects

TWO STAGES
FROM WAFER TO CHIP
QUALIFIED NON-HERMETIC FC
FROM WAFER TO CHIP

IC
Design House, Foundry, etc.

UBM
Electroless Ni – Au plating Ni-Pa-Au

BALLING
Ball / Bump Attach

TESTING
Wafer

GRINDING
Wafer, Si, Glass, etc.

DICING
Wafer standard or MEMS

ASSEMBLY
FC

✓ Faster time to market
✓ One face to the customer
✓ Fast root cause analysis
✓ Streamlined supply chain
✓ Full transparency and control of the supply chain
✓ No overhead accumulation
Key parameters in the Wafer Back-End Services

**TEST WAFER**
- Daisy Chain 28nm
- Pad size and pitch TBD
- Configurable chip sizes
- Up to 10,000 bumps / chip

**UBM**
- Electroless Ni-Au
- Ni – Pd - Au

**BALLING**
- Material independent
- Multiple sizes for balls
- Automated repair

**DICING**
- Laser Grooving
- Blade Dicing

All necessary processes (except for laser grooving) are already qualified in house. We aim to establish through empirical methods the best suitable combination of parameters for all processes in order to achieve the qualification for space applications.
Non-Hermetic FC – Variables in the qualification

- Number of contacts (Balls) >8000
- Material of the balls
- Size of the balls <100µm
- Pitch <200µm
- Pad shape and size on substrate 75x75µm
- Substrate Ceramic
- Underfill degasing
Conclusions

• Highest reliability electronics CAN be assembled in a cost effective manner
• Qualification of the processes implies a long and tedious work
• High level of automation and process control are the key
• The right selection of parameters – including interactions between processes – needs to be
done empirically
Thank You

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