

SEVENTEENTH ANNUAL

BiTS

Burn-in & Test Strategies Workshop

TM

March 6 - 9, 2016

**Hilton Phoenix / Mesa Hotel
Mesa, Arizona**

Archive- Posters

© 2016 BiTS Workshop – Image: Stiop / Dollarphotoclub

Presentation / Copyright Notice

The presentations in this publication comprise the pre-workshop Proceedings of the 2016 BiTS Workshop. They reflect the authors' opinions and are reproduced here as they are planned to be presented at the 2016 BiTS Workshop. Updates from this version of the papers may occur in the version that is actually presented at the BiTS Workshop. The inclusion of the papers in this publication does not constitute an endorsement by the BiTS Workshop or the sponsors.

There is NO copyright protection claimed by this publication. However, each presentation is the work of the authors and their respective companies: as such, it is strongly encouraged that any use reflect proper acknowledgement to the appropriate source. Any questions regarding the use of any materials presented should be directed to the author/s or their companies.

The BiTS logo and 'Burn-in & Test Strategies Workshop' are trademarks of BiTS Workshop.

Poster
Session

BiTS Workshop 2016 Schedule

Frontiers Day

Monday March 7 - 3:30 pm

Poster Session

"WiGig Test"

Bert Brost – Xcerra

"Re-balling BGA with Gold Plated Copper Spheres, the Need and the SMT Challenges"

Emad Al-Momani, Srikanth Mothukuri, Jack Mumbo - Intel Corporation

"Thermal Test Methodology for Validating Automotive Semiconductor Packages"

Ying Feng Pang, Amy Xia – Intel Corporation

"Insitu 256 Node Resistive Leakage Tester"

Gordon Cowan, Rich Zavala - HighRel, Inc.



Thermal Test Methodology for Validating Automotive Semiconductor Packages

Ying-feng Pang, Amy Xia
Intel Corporation

INTRODUCTION

- Compute units are widely used in the automotive for powering the in-vehicle infotainment system, navigation system, autonomous driving platform, and vehicles connected with sensors, radars, and cameras [1]
- The boom of Internet of Things created the opportunity for a quarter billion of connected intelligent devices expected in the smart vehicles over the next decade [2]
- It is becoming more important that the electronics and the compute units used in the connected vehicles to meet the industrial temperature spec for ensuring the functionality of these electronic components
- This poster presents the methodology for validating new silicon packages required to meet industrial temperature range from -40°C to 130°C

CHALLENGES

- Commercial temperature spec 0°C to 85°C vs. industrial temperature spec from -40°C to 130°C
- Ability to localize temperature testing on the die under test (DUT) without violating other component temperature spec on the board
- Thermal solution capable of reaching -40°C and 130°C
- Condensation due to testing at extreme cold temperature such as -40°C

References

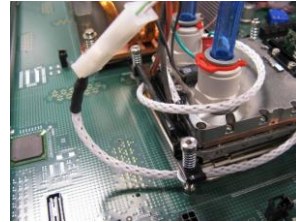
- [1] Intel Corporation. Available: <http://www.intel.com/content/www/us/en/automotive/industry-partners-enabling-connected-intelligent-car.html>
- [2] R. van der Meulen, and J. Rivera (2015, Jan 26). Gartner Inc. [Online]. Available: <http://www.gartner.com/technology/home.jsp>

TECHNICAL APPROACH

- ❑ Localized temperature testing on the DUT with Peltier-based thermal margining tool

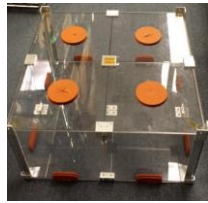


Thermal Margining Tools

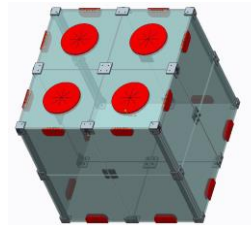


Thermal Margining Tools on Validation Board

- ❑ Complete system in a system dry air chamber with dry air purged into the dry air chamber



3.52 Cu. Foot Chamber



7.04 Cu. Foot Chamber

EXPERIMENTAL RESULTS

