

BiTS 2017

Archive Welcome

EIGHTEENTH ANNUAL

BiTS™

Burn-in & Test Strategies Workshop

March 5 - 8, 2017

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

Welcome

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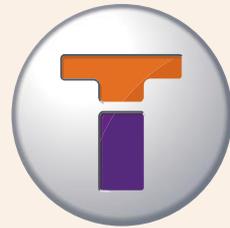
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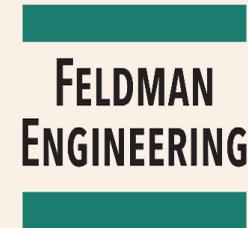
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Multitest - Xcerra Corp.

Jason Mroczkowski
Xcerra Corp.

Hongjun Yao
Qualcomm

BiTS Overview



Welcome to the BiTS Workshop!

- **Burn-in and Test Strategies Workshop**
- A scope that incorporates next-generation solutions to test and burn-in challenges while also providing vital, current information on traditional technologies

What's NOW & NEXT in Test and Burn-in of Packaged ICs

- The World's Premier Forum For The Latest Information About Test & Burn-in of Packaged IC's
- Extensive & Diverse Technical Program
- The Latest Products & Services at BiTS EXPO
- Many Networking Opportunities

Feedback & Suggestions are Encouraged

Informal and Casual Throughout All Sessions & Activities

Core Values

What's *Now & Next* in Burn-in and Test

Premier Event ♦ Cutting Edge ♦ Staying Ahead

Learn...

Technical Program

Explore...

BiTS EXPO – 52 Exhibitors

...Share

Networking Opportunities

Learn ...

Podium Sessions

- 9 Sessions Across 4 Days; 32 Practical & Useful Presentations

Poster Session

- 19 Posters

Renowned Speakers

- Keynote Address
- Distinguished Speaker

Market Reports

- Information about the Test & Socket Markets

BiTS Tutorial

- Learn From Industry Experts & Build Your Leading Edge Skills

... Explore ...

BiTS EXPO

- 52 Companies Are Exhibiting
- Exhibits Area is Open
 - Monday 6:00 – 9:00 pm
 - Tuesday 3:30 – 6:30 pm

... Share

Meet and Chat With Someone You Don't Know!

- Many Opportunities to Network, Share & Discuss Ideas
 - 3 Breakfasts, 2 Lunches, 3 Receptions, 3 Dinners
- Morning and Afternoon Breaks
 - Poster Session During Monday Afternoon
- BiTS Social Event - *Speakeasy*
 - Excellent food and drink in style
 - Enjoy the fun in our private club

BiTS Awards

- Best Presentation
 - Best Poster
 - Best Data Presented
 - Most Inspirational Presentation
 - Most Educational (Tutorial in Nature)
 - Attendee Choice
- ... and ...

BiTS "Special" Award

For the Least Concealed Sales Pitch



(Almost)
Brilliant
Disguise

"Semi-retired" but always available...

Awards – Best Presentation

China
2016
"Study of Probe Pin Internal Resistance"
"弹簧探针内部阻值的研究"
Takuto Yoshida - Test Tooling Solutions Group

2016
"Magnetically shielded test-cell for an integrated fluxgate sensor"
Gert Haensel – Texas Instruments
Loren Hillukka – Johnstech International Ltd.

Awards – Best Presentation

China 2015	"LPDDR4 Signal & Power Performance Optimization By Hardware" Yuanjun Shi - Twinsolution Technology Xiao Yao - HiSilicon Technologies Co
2015	"Designing Sockets for Ludicrous Speed (80 GHz)" Don Thompson – R&D Altanova Jose Moreira – Advantest
2014	"High Bandwidth Sockets For SERDES Applications On ATE Load Boards" Don Thompson – R&D Altanova
2013	"Die-Cracking Failure Analysis of QFN Packages in Manual Test Handler" M.P. Divakar, PhD – Stack Design Automation
2012	"DUT Temperature Control Using LN2 Injection" Chad Turner, Joseph Mayfield, Nolan Riley – Texas Instruments
2011	"Improvement of Dual Core Power Delivery Performance Through Modulation of Socket-Mechanical Dimension" Suchismita Ghosh, Jeremy D. Littrell, Satish Prathaban – Intel Corporation
2010	"Advances in WSP - Wafer Socket Pogo-Pin Probing" James Tong, Norman Armendariz – Texas Instruments

Awards – Best Presentation

- | | |
|------|--|
| 2009 | "Current-Voltage Nonlinearities in Test Socket Contacts"
Gert Hohenwarter – GateWave Northern, Inc. |
| 2008 | "Optimized Air Cooled Test Socket"
Grant Wagner, David Gardell – IBM Microelectronics |
| 2007 | "Contact Resistance is Sexy Again"
Tim Swettlen, Morten Jensen – Intel Corporation |
| 2006 | "Socketing the Impossible: a Very Fine, Very Dense Case Study"
Jon Diller, Kiley Beard – Synergetix
Takuya Tsumoto - NEC Electronics Japan |
| 2005 | "Thermal Characterization and Specification For Test And Burn In"
David Gardell – IBM Microelectronics |
| 2004 | "A Method for Contactor Characterization to 25 GHz"
Tim Swettlen - Intel Corporation
Eric Bogatin – Synergetix
Orlando Bell, Gary Otonari – GigaTest Labs |

Awards – Best Presentation

- 2003 "Thermal Interface Materials: An Implementation Process (From Cradle to Grave)"
Marc Knox – IBM Microelectronics
- 2002 "Power Decoupling Optimizer – A Systematic Frequency Domain Approach To BiB Noise Decoupling Simulation"
Isaac Chang – Intel Corporation
- 2001 "Next Generation Burn-in & Test System For Athlon Microprocessors: 'Hybrid Burn-in'"
Mark Miller – Advanced Micro Devices
- 2000 "Characterization Of High Performance Contactors For Production RDRAM Chip-scale Package Test"
Ken Karklin – Agilent Technologies
Francois Billaut, Gary L. Chew – Hewlett Packard Company
-

Awards – Best Poster

2016 "Thermal Test Methodology for Validating Automotive Semiconductor Packages"
Ying Feng Pang, Amy Xia - Intel Corporation

2015 "Advanced Kelvin Test Solution for Wafer Level Chip Packages"
Jay Kim, Daniel Shin– Leeno Industrial, Inc.

2014 "Investigation of Micro Spring Performance"
Jiachun (Frank) Zhou, Hui Liu - Smiths Connectors – IDI

2013 "Auto Centering Manual Actuator –
One Manual Lid for Different Package Sizes Testing"
Mah Ying Hoe, Shamal Mundiyyath – JF Microtechnology Berhad

2012 "Use of Conical Inductors for Load Boards Testing"
Gustavo Cozakov, Maroon Maroon, Isar Reichman, Tali Korin, Shimon Manor
– Intel Corporation

Awards – Best Poster

2011 "Does a Conductive Elastomeric Socket Have the Same Electrical Performance as the Soldered Unit Attachment?"
Oren Ganon – Intel Corporation

2010 "New Polyaryleketone Polymer for Use in the Manufacturing of Test Sockets:
OXPEKK®"
Tim Spahr – Oxford Performance Materials

2009 "Contact Challenges with Leadless Devices"
Justin Toops, Kiley Beard, John Diller – Interconnect Devices, Inc.

2008 "Complete Z0 = 50 Ohm Coaxial Spring Probe IC Socket"
Tatsumi Watabe – S.E.R. Corporation

Awards – Best Data Presented

2016

"Prediction of Contact Mark for QFN package"

Yuanjun Shi - Twin Solution

2015

"PCB Test Fixture and DUT Socket Challenges for
32 Gbps/GBaud ATE Applications"

Jose Moreira – Advantest

Christian Borelli, Fulvio Corneo – STMicroelectronics

2014

"The Stuff We're Made Of
An Examination of the State of the Art in Socket Materials"

Jon Diller - Smiths Connectors | IDI

2013

"High Temperature Burn-in (Up to 200 Deg. C): Are We Ready Yet?"

Noriyuki Matsuoka, Kazumi Uratsuji – Yamaichi Electronics Co., Ltd.

Jec Sangalang – Yamaichi Electronics USA

Ryota Takeuchi – NGK Insulators, Ltd.

2012

"Socket Contact Plating and the Impact on
Contact Resistance in a Burn-in Environment"

Mike Noel – Freescale Semiconductor

Shawn Toth – Enplas Semiconductor Peripheral Corp.

Awards – Best Data Presented

- | | |
|------|---|
| 2011 | "PCB Pad Wear Analysis at 0.4mm Pitch - the story continues..."
Valts Treibergs, Christopher Cuda – Multitest |
| 2010 | "A Comparison of New Probe Materials Against Pb Free Solder"
Nick Langston – Yamaichi Electronics USA
Hideyuki Ichinosawa – Koshin Kogaku Co., Ltd. |
| 2009 | "New Performance-Enhanced Cu-Be Strip Products
for Burn-in Test Socket Applications"
John C. Harkness – Brush Wellman Inc. |
| 2008 | "New Concept in Spring Probe Design"
John Winter, Larre Nelson, Amos Friedner – Rika Denshi America, Inc. |
| 2007 | "Benchmarking Printed Circuit Board Fabrication Suppliers Using IPC's PCQR2
Database"
Bill Mack – Texas Instruments Inc. |
| 2006 | "Socket Performance Over Time and Insertion Count With Pb-Free
Applications"
Jeff Sherry, Bert Brost – Johnstech International Corporation |

Awards – Best Data Presented

2005 "Characterization of Maximum Current Capability for Microprocessor Sockets"
David Song, Ashish Gupta, Chia-Pin Chiu – Intel Corporation

2004 "Dimensional Stability and High Frequency Properties of Polymeric Materials
for Machined Test Sockets"
Paul Kane – DuPont Engineering Materials
Dr. Joy Bloom – Dupont

2003 "The Effects of No Lead Solder Balls on Burn-In Socket Design Decisions"
Mike Noel, Don VanOverloop, Daniel Wilcox, K.Y. Yap – Motorola
Tom Lyzinski, Keith Callahan – Wells-CTI

Awards – Best Data Presented

2002 "Effect Of High Temperature Heating On Music Wire Spring Performance"
Jiachun (Frank) Zhou, January Kister, Alberto M. Campos –
Kulicke & Soffa Interconnect

2001 "Low Cost Thermal Management Using Compliant
Thermal Interface Materials"
Nancy Dean, Kenichiro Fukuyama – Honeywell Electronic Materials

2000 "Methodology For Characterizing RF Response Of Sockets And Test
Contactors"
Valts Treibergs – PrimeYield Systems, Inc.

Awards – Most Inspirational

2016 "Carbon Nanotube Polymer Composites as High Performance Thermal Interface Materials for Burn in and Test Applications"
Craig Green, Baratunde Cola - Carbice Nanotechnologies, Inc
Leonardo Prinzi - Georgia Institute of Technology

2015 "APEX Glass for Burn-In and Test Sockets"
Jeb H. Flemming, Tim Foster – 3D Glass Solutions, Inc.

2014 "Yield and Test Time Improvement via Automated Online Cleaning"
Brent Edington - TriQuint

2013 "Bridging Between 3D and 3D TSV Stacking Technologies"
Belgacem Haba, Ph.D. – Invensas

2012 "High Volume Low Cost Stamped Spring Probe Development"
Samuel Park, A.J. Park – IWIN Co. Ltd.
Jimmy Johnson – Materion Brush Performance Alloys

2011 "Probing Inside the Socket"
Marc Mössinger – Verigy

2010 "Socket Cleaning With Laser"
Dr. J. M. Lee, J. S. Choi – IMT Ltd.
S. K. Park – OKins Electronics, Co. Ltd.

Awards – Most Inspirational

2009 "A Novel Redesign of BI System Interconnects Results in Major BIB Cost Reduction for Day-to-Day Operations"
Bob Jemison – RJI Technical Sales

2008 "Batting Cleanup: Approaches to Maintenance of WLCSP Probe Card Interposers"
Jon Diller, Jamie Andes – Interconnect Devices, Inc.

2007 "Auto Contact Cleaning Engineering Study Applied to Package Test"
Byron Gibbs – Texas Instruments, Inc.
Kevin McNamara – Delta Design

2006 "Are Sockets Required for Test and Burn-in?"
Belgacem Haba, Ph.D. – Tessera, Inc.

2005 "Application Of Socket Cleaning And Contact Restoration To Reduce Burn-In, Test And Device Programming Cost"
Erik Orwoll – Nu Signal LLC
Jason Hughes – IBM Microelectronics

Awards – Most Inspirational

2004 "Current Rating for Contacts – Time to Standardize the Test Method"
Qifang "Michelle" Qiao – IBM Microelectronics
Karl Schoenfeld – Gonzer Associates

2003 "Automated Burn-In Socket Testing and Evaluation"
Holger Hoppe – Infineon Technologies

2002 "The New YieldPro Array Series Contactor"
Julius Botka – Agilent Technologies

2001 "Embedded Test Solution For Burn-in"
Charles McDonald (Presented by Steve Pateras) – LogicVision, Inc.

Awards – Most Educational

(Best Tutorial)

- | | |
|------|--|
| 2016 | "Device Packaging and How It Affects RF Performance"
Noureen Sajid, Jeff Sherry - Johnstech International |
| 2015 | "Comparison of Different Methods in Determining Current Carrying Capacity of Semiconductor Test Contacts"
Valts Treibergs – Xcerra Corporation |
| 2014 | "Rising to the Challenge: Material Evolution to Enable Reliable Performance at Tighter Pitches and Higher Temperature"
Mike Gedeon - Materion |
| 2013 | "Anatomy of a Socket"
Paul F. Ruo – Aries Electronics, Inc. |
| 2012 | "Evaluation and Optimization of the Thermal Performance of a Socketed Device for an HTOL Application - Considerations in the selection of a socket for a plastic molded, thermal enhanced package"
Nathanaël Loiseau – Presto Engineering
Marco Michi, Dr. James Forster – WELLS-CTI |
| 2011 | "Electroformed Barrels for Fine Pitch Test Probes"
Larre Nelson, John Winter – Rika Denshi America |

Awards – Most Educational

(Best Tutorial)

2010 "Thermal Characterization Issues and Potential Techniques for Test"
Ashish Gupta, Rafael Quintanilla, Jaime A. Sanchez, James C. Shipley
– Intel Corporation

2009 "Tuning a PCB/Contactor System to Your Device"
Ryan Satrom – Everett Charles Technologies

2008 "Thermal Design and Analysis"
Harlan Faller – Johnstech International Corporation

2007 "Monte Carlo Based Package to Socket Alignment Assessment Methodology"
David Shia – Intel Corporation
Wei-ming Chi – Mobility Electronics

2006 "Using a High Performance Micro-channel Cold Plate for Test and Burn-in"
Zahed Sheikh – Mikros Technologies

2005 "Challenges Of Contacting Lead-Free Devices"
Brian Sheposh – Johnstech International Corporation

Awards – Most Educational

(Best Tutorial)

2004 "Understanding the Effects of Signal Path Bandwidth on Semiconductor Test"

Jason Mroczkowski – Everett Charles Technologies

2003

"Thermal Testing of Burn-In Sockets"

James Forster, Savithri Subramanyam - Texas Instruments

2002 "Optimizing Load Board Design And Modeling For High Frequency Contactors"

Jeff Sherry – Johnstech International Corporation

Awards – Attendee Choice

- | | |
|------|---|
| 2016 | "Characterize Only the High Speed Interconnect Performance"
Carol McCuen - R&D Altanova |
| 2015 | "BURst Pressure (BURP) Stress Test for MEMS Pressure Sensors"
Peter Jones, Ray Sessego – Freescale Semiconductor |
| 2014 | "LIGA Precision Microfabrication for Electromechanical Applications"
Frank Schonig - Innovative Micro Design |
| 2013 | "Optimization of Package, Socket, and PC board for 25 to 40GHz RF Devices"
Carol McCuen, Phil Warwick – R & D Circuits |
| 2012 | "Consistent Online Test Socket Cleaning for First Pass Yield Stability and Reduced Retest"
Jerry Broz, Ph.D., Bret Humphrey – International Test Solutions, Inc. |
| 2011 | "A Complete High Frequency Interconnect Scheme for Testing >20Gb/s Interfaces"
Thomas P. Warwick, Thomas Smith, Dan Turpuseema – R&D Circuits |
| 2010 | "Spring Probe PCB Pad Wear Analysis"
Valts Treibergs, Chris Cuda – Multitest |

Awards – Attendee Choice

- | | |
|------|---|
| 2009 | "Pulsed Current-Carrying Capacity of Small Metallic Conductors
as Applied to Device Test"
Harlan Faller – Johnstech International Corporation |
| 2008 | "CO2 Composite Spray Technology For Test Socket Cleaning"
David Jackson – Cool Clean Technologies |
-

Awards – Special Contribution

- | | |
|------|---|
| 2004 | "Polymer Material Selection for ESD Sensitive IC Processing"
Glenn A. Cunningham – Intel Corporation |
|------|---|

bitstestworkshop.org

Your Complete Source For Information About BiTS

Current Workshop

- Call For Papers
- EXPO & Sponsorships
- Advance/Final Program
- Registration Information & Forms; Register On-line
- Author Information
- Hotel Information/Travel

Features

- Committee Members
- Contact BiTS - Add to Mailing List & Inquiries
- Links to Other Websites
- 'Press' About BiTS
- Archive of past BiTS
- Search BiTS Feature

Plus Premium Archive...

BiTS Premium Archive

- Multimedia
 - Audio with synchronized slides & pointer
 - BiTS 2014 - 2016 & BiTS China 2015 - 2016
 - BiTS 2017 posted shortly after BiTS
- Additional content
 - Tutorials
- Subscription Model
 - BiTS 2017 Professional Attendees – Subscription for One Year
 - Subscriber – Nominal Fee
 - Applied to BiTS 2018 Registration

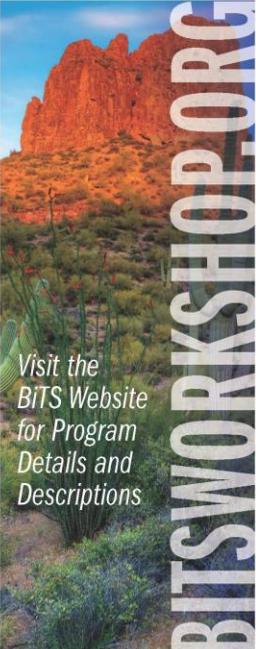
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EXPO 2017
Exhibitors & Booth Assignments

The floor plan shows a central atrium with exhibitor booths arranged around it. Booths are labeled A1 through A51 and K1 through K6. A lobby is located at the top, and elevators are marked. A note at the bottom of the floor plan reads: "to Kiva Ballroom and BiTS Registration".

Aehr Test Systems	A28	Materion Corporation	A49
Aries Electronics, Inc.	A25	Micro Contact Solution	A8
Astronics Test Systems	A18	Micro Control Company	A5
CCI Precision	A24	MicroConnex	K5
Chip Scale Review	A22	Microfriend	A11
Chip Shine, Inc.	A38	Mikuro Spring	A6
CMR Summit	A9	MJC Electronics Corp.	A36
Cohu ITS	A3	Modus Test	A40, A41
E. Jordan Brookes	A30	Phoenix Test Arrays	A46
ELES Semiconductor	A7	Plastronics Socket Company	A48
Enplas Tech Solutions, Inc.	A44	Qualmax Inc.	A51
Ensinger	A50	R&D Altanova	A1
HiCon	A19	Rika Denshi	A23
Incal Technology	A26	Rosenberger	K4
Indium Corporation	A29	Sensata Technologies	A34, A35
INNO GLOBAL	A16	Sun Electric Heater, Inc.	A4
Integrated Test Corp.	K1	SVTCL	A20
inTest Corporation	A32	TDK-Lambda Americas	A10
inTEST Thermal Solutions	A39	Test Tooling Solutions Group	A45
Ironwood Electronics	K6	TSE Co., Ltd	A13
ISC	A42, A43	Tokyo Electron Limited	K3
RWIN Co., Ltd.	A12	TwinSolution Technology Ltd	A27
Johnstech International	A21	WinWay Technology	A17
Kita USA Inc	A2	Xcerra - Multitest	A31
KYEC USA	A37	Yamaichi Electronics USA, Inc.	A47
Leeno Industrial Inc.	A14		

Schedule At A Glance

BiTS2017 PROGRAMS & SESSIONS				March 5-8, 2017					
SUNDAY		MONDAY		TIME	TUESDAY		WEDNESDAY		
March 5		March 6			March 7		March 8		
<p style="writing-mode: vertical-rl; transform: rotate(180deg); font-size: 2em; font-weight: bold;">SCHEDULE</p>	CONTINENTAL BREAKFAST		REGISTRATION DESK OPEN		7 00	CONTINENTAL BREAKFAST		REGISTRATION DESK OPEN	
	REGISTRATION DESK OPEN		OPENING REMARKS		7 30	SESSION 4 Load Boards & Burn-in Boards		SESSION 7 Handler/Test Cell	
	TUTORIAL Interconnect Sockets and Applications Ashok Kabadi & Mohan Prabhugoud		KEYNOTE ADDRESS Thomas Sonderman		8 00				
	WELCOME RECEPTION		BREAK & NETWORKING		8 30				
	DINNER		SESSION 1 Automotive & mm-Wave Applications		9 00	SESSION 5 Burn-in, Thermal, and MEMS Test		SESSION 8 Contact Technology Part 2	
	MARKET SESSION Ira Feldman & John West		LUNCH		9 30	LUNCH		AWARDS & CLOSING REMARKS	
	Adjourn for the day		SESSION 2 Electrical Simulation		10 00	SESSION 6 Contact Technology Part1		Adjourn Workshop	
			POSTER SESSION BREAK & NETWORKING		10 30	EXPO2017		 <p style="font-size: 1.2em; font-weight: bold;">EXPO2017</p> <p>Visit the BiTS Website for Program Details and Descriptions</p>	
			SESSION 3 Validation		11 00				
			EXPO2017		11 30				
		Adjourn for the day		12 00	SOCIAL EVENT "Speakeasy" FOOD, BEVERAGES, GAMES				
				12 30	Adjourn for the day				
				1 00					
				1 30					
				2 00					
				2 30					
				3 00					
				3 30					
				4 00					
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				5 00					
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				6 00					
				6 30					
				7 00					
				7 30					
				8 00					
				8 30					
				9 00					
				9 30					



BiTS Workshop 2017 Schedule

Tutorial Day

Sunday March 5 2017

Noon	Tutorial – Interconnect Sockets and Applications <i>Ashok Kabadi – AK Technology Leadership</i> <i>Mohan Prabhugoud - Intel</i>	Pueblo Ballroom
6:30 pm	Welcome Reception	Kiva Foyer & Patio
7:30 pm	Dinner	Kiva Ballroom
8:30 pm	Marketplace Session – Marketplace Report <i>Ira Feldman– Feldman Engineering Corp.</i> Market Connections – Semiconductors to Sockets <i>John West – VLSIresearch</i>	Kiva Ballroom
9:30 pm	Adjourn	

BiTS Workshop 2017 Schedule

Frontiers Day

Monday March 6, 2017

8:30 am	Opening Remarks – <i>Ira Feldman – BiTS Workshop General Chair</i>	Kiva Ballroom
9:00 am	Keynote Address – Identifying the path to success for Industry 4.0 <i>Thomas Sonderman - Rudolph Technologies</i>	Kiva Ballroom
10:00 am	Break & Networking	Kiva Foyer & Patio
10:30 am	Session 1 – Driving Performance <i>Automotive & mm-wave applications</i>	Kiva Ballroom
12:30 pm	Lunch	Kiva Foyer & Patio

BiTS Workshop 2017 Schedule

Frontiers Day

Monday March 6, 2017

1:30 pm	Session 2 – Performance Prediction <i>Electrical simulation</i>	Kiva Ballroom
3:30 pm	Poster Session	Kiva Ballroom
4:30 pm	Session 3 – Reality Check <i>Validation</i>	Kiva Ballroom
6:00 pm	BiTS EXPO & Reception	Atrium
9:00 pm	Adjourn	

BiTS Workshop 2017 Schedule

Performance Day

Tuesday March 7, 2017

8:00 am	Session 4 – Launch Pad <i>Load Boards & Burn-in Boards</i>	Kiva Ballroom
10:00 am	Break & Networking	Kiva Foyer & Patio
10:30 am	Session 5 – Heating Up <i>Burn-in, Thermal, & MEMS Test</i>	Kiva Ballroom
12:30 pm	Lunch	Kiva Foyer & Patio
1:30 pm	Session 6 – Making Contact <i>Contact Technology - 1 of 2</i>	Kiva Ballroom
3:30 pm	BiTS EXPO	Atrium
6:30 pm	<i>Speakeasy</i> Social Event	(secret location)
9:30 pm	Adjourn	



BiTS Workshop 2017 Schedule

Solutions Day

Wednesday March 8, 2017

8:00 am	Session 7 – Teaming Up <i>Handler / Test Cell</i>	Kiva Ballroom
10:00 am	Break & Networking	Kiva Foyer & Patio
10:30 am	Session 8 – Contact Frequency <i>Contact Technology - 2 of 2</i>	Kiva Ballroom
12:00 pm	Awards & Closing Remarks	Kiva Ballroom
12:30 pm	Adjourn	

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Technical Program

Title
Tutorial Interconnect Sockets and Applications Ashok Kabadi - <i>AK Technology Leadership</i> Mohan Prabhugoud - Intel Corp.
Marketplace Session Marketplace Report Ira Feldman- Feldman Engineering Corp. Market Connections – Semiconductors to Sockets John West - VLSIresearch
Opening Remarks Ira Feldman, General Chair
Keynote Address Identifying the path to success for Industry 4.0 Thomas Sonderman - Rudolph Technologies
Closing & Awards Ira Feldman, General Chair

Session	Title
1	Driving Performance <i>Automotive & mm-wave applications</i>
2	Performance Prediction <i>Electrical simulation</i>
3	Reality Check <i>Validation</i>
4	Launch Pad <i>Load Boards & Burn-in Boards</i>
5	Heating Up <i>Burn-in, Thermal, & MEMS Test</i>
6	Making Contact <i>Contact Technology - 1 of 2</i>
7	Teaming Up <i>Handler / Test Cell</i>
8	Contact Frequency <i>Contact Technology - 2 of 2</i>
Poster	Poster Session

BiTS Workshop 2017 Schedule

Tutorial

Tutorial Day

Sunday March 5 - Noon

Interconnect Sockets and Applications

In this tutorial, we will go over the socket contact element fundamentals, types of socket contact elements, contact element materials, and printed circuit board (PCB) & hardware requirements. We will also cover electrical, and system design and test requirements. We will provide you with different options for selecting interconnect sockets depending on your requirements like signal integrity, cycle life, cost, etc.

Ashok Kabadi - AK Technology Leadership

Mohan Prabhugoud - Intel

Tutorial – Abstract



Ashok Kabadi



Mohan Prabhugoud

In this tutorial, we will go over the socket contact element fundamentals, types of socket contact elements, contact element materials, and printed circuit board (PCB) & hardware requirements. We will also cover electrical, and system design and test requirements. We will provide you with different options for selecting interconnect sockets depending on your requirements like signal integrity, cycle life, cost, etc.

At the end of the course, you will have a clear understanding of the types of sockets available in the industry, how to select the best one for your needs, and how to successfully develop and implement the same.

Target audience includes: PCB designers, mechanical engineers, hardware engineers, hardware engineering managers, and materials engineers.

Tutorial – Objectives



Ashok Kabadi



Mohan Prabhugoud

Objectives

- Understand what the interconnect socket is and its benefits
- Understand the contact elements and resistances
- Understand different types of interconnect sockets available in the industry and their applications
- Provide overview of different PCB plating available in the industry and their applications
- Understand mechanical system design methodologies with special emphasis on tolerances, PCB Keep-Out-Zones (KOZs) and retention design
- Provide overview of electrical signal integrity measurements
- Understand test and validation requirements for interconnect technologies
- Understand the entire end-to-end process flow, right from gathering the requirements to successful implementation

Tutorial – Biography



Ashok Kabadi

Ashok Kabadi joined Intel as a Manufacturing Engineer in the Systems Manufacturing Department in 1981. Over his thirty-five year career at Intel, his technological innovations advanced the high-tech industry. His last role was Mechanical Architect and Senior Principal Engineer in the Platform Hardware Group (PHG). Ashok drove the development of multiple advanced platform technologies which had significant and measurable impact on improving the cost and time-to-market (TTM) of Intel products as well as external customer products. These technologies included Metallized Particle Interconnect (MPI) sockets, zero keepout (ZKO) sockets, and coax via technology. Ashok was also the key driver for building the Technical Leadership Program in Guadalajara, Mexico (GDC), as well as personally mentoring and growing the pipeline of technical talent in GDC.



Mohan Prabhugoud

He has a deep passion for innovation in the areas of socket interconnect, thermal design, and printed circuit boards. In addition to 16 patents, he has delivered multiple publications, presentations and talks at conferences within the US and internationally. Ashok is now Managing Director of AK Technology (AKT) Leadership providing consulting services and the BiTS Workshop Technical Program Co-chair.

Mohanraj Prabhugoud is currently a Senior Mechanical Engineer at Intel Corporation. He has worked on mechanical design of sockets, socket retention, thermal margining tool, heat sink, PCBs, chassis, etc. for over ten years. Mohan received his MS and PhD in Mechanical Engineering degrees from North Carolina State University.

Market
Session

BiTS Workshop 2017 Schedule

Tutorial Day

Sunday March 5 - 8:30 pm

Marketplace Report

Ira Feldman

Feldman Engineering Corp.

Market Connections – Semiconductors to Sockets

John West

Managing Director

VLSI Research Europe

Opening
Remarks

BiTS Workshop 2017 Schedule

Frontiers Day

Monday March 6 - 8:30 am

Opening Remarks

Ira Feldman

General Chair,
BiTS Workshop

Keynote
Address

BiTS Workshop 2017 Schedule

Frontiers Day

Monday March 7 - 9:00 am

Identifying the path to success for Industry 4.0

Thomas Sonderman
Rudolph Technologies

Sponsored by



Keynote Address – Abstract



**Thomas
Sonderman**

Supply chain complexity is driving the need for new and increasingly advanced analytical solutions to ensure products are delivered on time and with the highest possible quality. In the future, it will become essential for companies to produce digital threads linking all relevant information into product signatures. These product signatures can then be diagnosed and translated into actionable intelligence throughout the value chain. However, to realize this end-state, companies will need to embrace a new paradigm of trust and collaboration.

The industry's challenge is to create this type of enhanced traceability without sacrificing the intellectual property (IP) and security of product (IP) companies, manufacturers and suppliers. This is further complicated by the level of maturity and information technology (IT) sophistication of the various stakeholders within the electronics ecosystem. By leveraging the Internet of Things (IOT) and associated technologies, companies can quickly integrate advanced analytical and control solutions into their manufacturing environments, accelerating the adoption and the resulting benefits of the analytics.

With the shared goal of establishing real-time situational awareness for improved value chain decision-making, companies will embrace this next stage of industry evolution – the migration to a connected digital environment that enables a flexible, adaptable and intelligent product delivery system. The resulting return on investment (ROI) from this type of investment will continue the industry's long term trend of delivering the right products, at the right time and with the requisite economics to ensure both consumer and commercial adoption.

Keynote Address – Biography



**Thomas
Sonderman**

Thomas Sonderman is Vice President and General Manager of Rudolph Technologies' Integrated Solutions Group. He previously served as vice president of manufacturing technology at GLOBALFOUNDRIES where he held global responsibility for creating multi-fab breakthrough solutions that generate critical competitive advantage for the foundry business leveraging GLOBALFOUNDRIES' proprietary Design Enhanced Manufacturing (DEM) and Automated Precision Manufacturing (APM) technologies. Mr. Sonderman joined GLOBALFOUNDRIES after more than 20 years with AMD, where he held numerous executive management and engineering positions. Prior to joining AMD, Mr. Sonderman worked as a process control engineer for Monsanto Chemical Inc. He is a recognized expert in the area of manufacturing control and automation for high-volume semiconductor fabrication and is a highly sought-after speaker at industry conferences. Mr. Sonderman is the author of over 45 patents and has published numerous articles in the area of manufacturing technology. Mr. Sonderman received a bachelor's in chemical engineering from the Missouri University of Science and Technology in 1986 and a master's in electrical engineering from National Technological University in 1991.

Session 1

Marc Moessinger
Session Chair

BiTS Workshop 2017 Schedule

Performance Day

Monday March 6 - 10:30 am

Driving Performance

"Design for performance and advanced characterization of new contactors"

Markus Wagner – Cohu & Milen Cheshmedjiev – Melexis

"Investigation into Various Via Structures in High Speed Interconnect"

Carol McCuen - R&D Altanova

"Contactor and Package Design Effects on Crosstalk"

Noureen Sajid & Jeff Sherry - Johnstech International

"Contactor Based Final Test at 77 GHz on a Multi-Channel Radar Transceiver Chipset"

Brian Nakai & Jeffrey Finder - NXP Semiconductors

Session 2

Jason Mroczkowski
Session Chair

BiTS Workshop 2017 Schedule

Performance Day

Monday March 6 - 1:30 pm

Performance Prediction

"Coaxial Test Socket - Evolution & Optimization"

Frank Zhou - Smiths Connectors

"100G Testing Fixture Design and Verification"

Jackie Luo - Shanghai Zenfocus Semi-Tech

"Inductance Rise Due To Plating"

Gert Hohenwarter - GateWave Northern, Inc.

"Spring probe current-carrying capacity (continuous vs pulse) analysis and improvement"

Yuanjun Shi - TwinSolution Technology Ltd

Poster
Session

BiTS Workshop 2017 Schedule

Performance Day

Monday March 6 - 3:30 pm

Poster Session

"Enabling Temperature Margining Solutions for Validating Automotive Electronics in Lab Automation Environment"

Ying Feng Pang, Hagai Wertheim, Amy Xia, Rahima Mohammed - Intel Corporation

"Tool-less Thermal Tool Thermal Interface Material Holder and Package Pusher"

Nicky Sruntza - Intel Corporation

"New Gimbaling Mechanism for Automated Test Systems"

Nicky Sruntza - Intel Corporation

"Development of fan-out layer assembled 100 um pitch BGA socket with 3D MEMS Technologies"

Sungho Kim, Eunkyung Lee, Sanghee Park, Jongmyeon Lee - Microfriend Inc.

Poster
Session

BiTS Workshop 2017 Schedule

Performance Day

Monday March 6 - 3:30 pm

Poster Session

"Extremely short spring probe and socket body"

AJ Park – IWIN Co.,Ltd.

**"Design method to endure the stress by high spring pin
counts on the wafer test"**

Shin-Ho Kang, Gyu-Yeol Kim, Sang-kyu Yoo - Samsung Electronics Company

"Heat/Cold Resistant Dicing Tape for Frame Handling Final Test"

Eiji Hayashishita, Akimitsu Morimoto, Hideki Fukumoto – Mitsui Chemicals Tohcello, Inc.

**"Air Cooled Thermal Tool for System Level High Volume
Manufacturing Testing"**

Rahima Mohammed, Ridvan Sahan, Ying-feng Pang, Amy Xia, Hagai Wertheim- Intel

Poster
Session

BiTS Workshop 2017 Schedule

Performance Day

Monday March 6 - 3:30 pm

Poster Session

"Elastomer Qualification Case Study for Extended Duration Contact Cycles"

Mike Dell – ISC & Emad Al-Momani – Intel

"Universal adjustable docking for automated test equipment systems"

Jess Coleta, Willy Ganoy - ON Semiconductor Philippines

"Design, Fabrication, and Characterization of Dense and Large-stand-Off Compressible MicroInterconnects (CMIs) for Advanced Testing and Socket System Application"

Paul Jo, Muneeb Zia, Joe Gonzalez, Muhannad Bakir - Georgia Institute of Technology

"Low Cost / Low Profile Spring Probe "

Samuel Park - IWIN Co., Ltd.

Poster
Session

BiTS Workshop 2017 Schedule

Performance Day

Monday March 6 - 3:30 pm

Poster Session

"Embedded Thin Film NiP Resistors Relax Signal Integrity Constraints on Printed Circuit Boards Designed for High Speed"

Manuel Herrera – Ohmega Technologies, Inc.

"WL Test Probe Continuous Improvement"

Jim Brandes – Xcerra

"Introduction of Thermal Interface Material (TIM) in Thermal Management Solution"

HH Ng – TTS

"Metallic Thermal Interface Material Selection for Burn-In"

David Saums - DS&A, LLC

Tim Jensen, Ron Hunadi, Carol Gowans, Bob Jarrett - Indium Corporation

Poster
Session

BiTS Workshop 2017 Schedule

Performance Day

Monday March 6 - 3:30 pm

Poster Session

"Statistical Method for setting up Safe Screen Voltage for Products"

Krishna Mohan Chavali – Globalfoundries US Inc

"Reliability Evaluation of Wing Riser Solder Joint used in Post Silicon Validation Environment"

Amy Xia, Ying-feng Pang, Jack Mumbo, Emad Al-Momani - Intel Corporation

"A Case Study Evaluating the Performance of Carbon Nanotube Based Thermal Interface Materials in a Burn in and Test Application"

Craig E. Green, Leonardo Prinzi, Yvan Cossette, Baratunde Cola – Intel Corporation

Benoit Foisy - IBM Bromont

Session 3

Ila Pal

Session Chair

BiTS Workshop 2017 Schedule

Performance Day

Monday March 6 - 4:30 pm

Reality Check

"Augmenting form factor designs with validation and debug capability"

John Kelbert - Intel Corporation

"New Possibility with Coax Via Risers"

Matthew Priolo, Adrian Rodriguez, Christopher Kinney, Adewale Oladeinde – Intel

"Processes for Validating and Maintaining Electrical DUT Interfaces"

Martin Gao, Carolina Lock - Texas Instruments

Session 4

Rahima Mohammed
Session Chair

BiTS Workshop 2017 Schedule

Frontier Day

Tuesday March 7 - 8:00 am

Launch Pad

"Load Board PCB Socket Contact Pad Solution"

Willy Ganoy, Jess Coleta – ON Semiconductor Philippines

"Addressing high frequency challenges for burn-in requiring LVDS"

Rolando Reyes - Analog Devices Inc.

"New Applications for Embedded Thin Film Heaters"

Bruce Mahler - Ohmega Technologies, Inc.

"Adressing the EOS on legacy burn-in boards with over voltage protection through a modular design"

Gil Conanan - Analog Devices, Inc.

Session 5

Rahima Mohammed
Session Chair

BiTS Workshop 2017 Schedule

Frontier Day

Tuesday March 7 - 10:30 am

Heating Up

"Process Improvements to Increase Burn-In Yield and Quality"

Jeanette Linn, Rich Karr - Texas Instruments

"Device Characterization Over Temperature at the Board Level"

Barry Johnson - inTEST Thermal Solutions

"Qualifying A Process For Higher Burn-In Voltage Application"

Krishna Mohan Chavali - Globalfoundries US Inc

"Coming Challenges and Opportunities for MEMS

Testing Supply Chain"

Wendy Chen - KYEC

Session 6

Jason Mroczkowski
Session Chair

BiTS Workshop 2017 Schedule

Frontier Day

Tuesday March 7 - 1:30 pm

Making Contact

"High Current Final Test Contactor Development"

Thiha Shwe, Hisashi Ata – Texas Instruments

Kenichi Sato – Yokowo

"Customers Are the New Team Member for Board to Board Connectors"

Derek Biggs – Plastronics

"WLCSP Contacting Technologies for 0.2 mm Pitch and Below"

Valts Treibergerg - Xcerra Corporation

"Coming to terms with Burn-In sockets"

James Tong - Texas Instruments

Session 7

Mike Ramsey
Session Chair

BiTS Workshop 2017 Schedule

Solutions Day

Wednesday March 8 - 8:00 am

Teaming Up

"Applying FEA Simulation for Test Interface Unit"

Jason Koh - Test Tooling Solutions Group

"BI RHINO Handling Solution"

Yaniv Raz- Intel Corporation

"Optical Device Testing at Wafer Level and Package Devices"

Carl Kasinski – Aehr

"Fan-in WLCSP Test Requirements"

Mike Frazier - Mike Frazier

Session 8

Hongjun Yao
Session Chair

BiTS Workshop 2017 Schedule

Solutions Day

Wednesday March 8 - 10:30 am

Contact Frequency

" Small Form Factor Cantilever Concepts for High Performance Analog / RF Applications"

Gerhard Gschwendtberger – Cohu

"MRC (MEMS Rubber Contact) Socket Bump Particle Structure & Performance Analysis"

BoHyun Kim, Dave Oh, Justin Yun - TSE Co., Ltd

"Flat Probe Technology For High Frequency Test"

Jason Mroczkowski, Nadia Steckler - Xcerra

Awards &
Closing

BiTS Workshop 2017 Schedule

Solutions Day

Wednesday March 8 Noon

Awards & Closing Remarks

Ira Feldman

General Chair,
BiTS Workshop

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- Socketing/Contacting of Contemporary and Advanced Packaging Technologies
- PCBs, Materials, Handlers, Contact Technologies, Burn-in Tooling
- Modeling, Characterization & Analysis
- Process & Operational Challenges
- WLCSP Test for KGD or Final Test
- MEMS and Non-Electrical Stimuli Test

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