

# IEEE TRANSACTIONS ON COMPONENTS, PACKAGING, AND MANUFACTURING TECHNOLOGY

A PUBLICATION OF THE COMPONENTS, PACKAGING, AND MANUFACTURING TECHNOLOGY SOCIETY



IEEE COMPONENTS, PACKAGING, AND  
MANUFACTURING TECHNOLOGY SOCIETY

[WWW.CPMT.ORG](http://WWW.CPMT.ORG)

**MARCH 2016**  
**APRIL 2016**

**VOLUME 6**  
**VOLUME 6**

**NUMBER 3**  
**NUMBER 4**

**ITCPC8**

**(ISSN 2156-3950)**

---

*For the March 2016 issue, see p. 333 for Table of Contents.*

*For the April 2016 issue, see p. 497 for Table of Contents.*

---

# IEEE TRANSACTIONS ON COMPONENTS, PACKAGING, AND MANUFACTURING TECHNOLOGY

A PUBLICATION OF THE COMPONENTS, PACKAGING, AND MANUFACTURING TECHNOLOGY SOCIETY



IEEE COMPONENTS, PACKAGING, AND  
MANUFACTURING TECHNOLOGY SOCIETY

WWW.CPMT.ORG

MARCH 2016

VOLUME 6

NUMBER 3

ITCPC8

(ISSN 2156-3950)

---

REGULAR PAPERS

***Advanced Packaging***

Manufacturability of a Printed Resistance-Based Multiplexing Scheme for Smart Drug Packaging .....	335
..... N. Graddage, H. Ding, C. Py, J. Lee, and Y. Tao	
Wearable AMC Backed Near-Endfire Antenna for On-Body Communications on Latex Substrate .....	346
..... K. Agarwal, Y.-X. Guo, and B. Salam	
A D-Band Packaged Antenna on Organic Substrate With High Fault Tolerance for Mass Production .....	359
..... B. Zhang, C. Kärfelt, H. Gulan, T. Zwick, and H. Zirath	
A Low-Temperature Batch Mode Packaging Process for Submillimeter Microsystems in Harsh Environment Applications .....	366
..... Y. Ma, T. Li, and Y. B. Gianchandani	
Lead-Free Solder for Assembly of Thick-Film Hybrid Modules for Use in High-Temperature Applications .....	373
..... Z. Shen, T. Xu, R. W. Johnson, and M. C. Hamilton	
Triple-Mode Dielectric-Loaded Cylindrical Cavity Diplexer Using Novel Packaging Technique for LTE Base-Station Applications .....	383
..... Z.-C. Zhang, Q.-X. Chu, S.-W. Wong, S.-F. Feng, L. Zhu, Q.-T. Huang, and F.-C. Chen	

***Components: Characterization and Modeling***

Research of Dynamic Optimization for the Cam Design Structure of MCCB .....	390
..... Y. Liu, D. Chen, H. Yuan, L. Ji, and Z. Ma	
A Novel Intermittent Fault Detection Algorithm and Health Monitoring for Electronic Interconnections .....	400
..... W. A. Syed, S. Perinpanayagam, M. Samie, and I. Jennions	
An FEM Study of the Electrothermal Properties of Microelectrical Contacts for Application in the Design of Arcless Switches .....	407
..... R. Femi, A. Agrawal, and S. Clement	
Experimental Investigation and Understanding of the Intermittent Molten Bridge Phenomena and Mechanism of Contacts With Superlow Opening Speed .....	418
..... W. Ren, H. Wang, C. Chang, S. Xue, and Y. Chen	

---

(Contents Continued on Page 334)

---

Fast Transient Convolution-Based Thermal Modeling Methodology for Including the Package Thermal Impact in 3D ICs .....	<i>F. L. T. Maggioni, H. Oprins, E. Beyne, I. De Wolf, and M. Baelmans</i>	424
Macroscopic Mechanical Constitutive Characterization of Through-Silicon-via-Based 3-D Integration .....	<i>H.-C. Cheng, R.-S. Li, S.-C. Lin, W.-H. Chen, and K.-N. Chiang</i>	432
<b><i>Electrical Performance of Integrated Systems</i></b>		
New Multiport I/O Model for Power-Aware Signal Integrity Analysis .....	<i>W. Dghais and J. Rodriguez</i>	447
Fabrication and Characterization of Polymer-Enhanced TSVs, Inductors, and Antennas for Mixed-Signal Silicon Interposer Platforms .....	<i>P. A. Thadesar and M. S. Bakir</i>	455
Electromagnetic Analysis for Miniaturized Patch Antennas With Self-Biased Ferrite Thin Films .....	<i>W. J. Chen and M. S. Tong</i>	464
<b><i>Electronics Manufacturing</i></b>		
A Self-Aligning Flip-Chip Assembly Method Using Sacrificial Positive Self-Alignment Structures .....	<i>H. S. Yang, C. Zhang, and M. S. Bakir</i>	471
Soldering Surface Mount Components Onto Inkjet Printed Conductors on Paper Substrate Using Industrial Processes .....	<i>H. Andersson, J. Sidén, V. Skerved, X. Li, and L. Gyllner</i>	478
Fabrication of Fully Inkjet-Printed Vias and SIW Structures on Thick Polymer Substrates .....	<i>S. Kim, A. Shamim, A. Georgiadis, H. Aubert, and M. M. Tentzeris</i>	486

---