

# **CARTS Europe 2005**

**Prague, Czech Republic  
17-20 October 2005**

**ISBN: 978-1-62748-080-2**

**Printed from e-media with permission by:**

Curran Associates, Inc.  
57 Morehouse Lane  
Red Hook, NY 12571



**Some format issues inherent in the e-media version may also appear in this print version.**

Copyright© (xxxx) by the Electronic Components Industry Association (ECIA)  
All rights reserved.

Printed by Curran Associates, Inc. (xxxx)

For permission requests, please contact the Electronic Components Industry Association (ECIA)  
at the address below.

Electronic Components Industry Association (ECIA)  
1111 Alderman Drive, Suite 400  
Alpharetta, GA 30005

Phone: (678) 393-9990

Fax: (678) 393-9998

[rwillis@eciaonline.org](mailto:rwillis@eciaonline.org)

**Additional copies of this publication are available from:**

Curran Associates, Inc.  
57 Morehouse Lane  
Red Hook, NY 12571 USA  
Phone: 845-758-0400  
Fax: 845-758-2634  
Email: [curran@proceedings.com](mailto:curran@proceedings.com)  
Web: [www.proceedings.com](http://www.proceedings.com)

# TABLE OF CONTENTS

## SESSION 1: DESIGN AND CONSTRUCTION

<b>Facedown Termination Allows Higher C/V and Lower ESL for SMT Conductive-Polymer Capacitors</b> .....	3
<i>John Prymak, Paul Staubli, Mike Prevallet</i>	
<b>Influence of Carbonaceous Electrodes on Dielectric Capacitor</b> .....	9
<i>A. Albina, P. L. Taberna, J. P. Cambronne, P. Simon, E. Flahaut, T. Lebey</i>	
<b>New Conducting Polymer Dispersions for Solid Electrolyte Capacitors</b> .....	30
<i>Udo Merker, Klaus Wussow, Wilfried Lovenich</i>	
<b>High Capacitance Density Multilayer Integrated Tantalum Pentoxide Decoupling Capacitors</b> .....	36
<i>Chris Thomason, Julie Morgan</i>	

## SESSION 2: IMPACT OF LEAD-FREE MATERIALS

<b>RoHS Aspects on Aluminium versus NbO Capacitors for Automotive Applications</b> .....	45
<i>S. Pala</i>	
<b>MLC Flex Comparison of Lead Free Versus Lead Based Solders</b> .....	50
<i>Paul Staubli, John Prymak, Mike Prevallet</i>	
<b>Extended Range NbO Capacitors Through Technology and Materials Enhancements</b> .....	57
<i>S. Zednicek, I. Horacek, T. Zednicek, Z. Sita</i>	

## SESSION 3: MAGNETICS & RESISTORS

<b>EHP Transformer for Automotive Converter, Power Capability and Thermal Interface</b> .....	67
<i>Matthias Haubner</i>	
<b>Advanced Transponder Coils</b> .....	75
<i>Jan Rossel</i>	
<b>High Temperature Stable Thin Film Resistors</b> .....	81
<i>Wolfgang Werner</i>	
<b>Charge Carrier Transport in Polymer based Thick Resistive Films</b> .....	93
<i>V. Sedlakova, J. Sikula</i>	
<b>Constraints on the Electrical Ratings of Thick-Film Chip Resistors and Recent Developments to Overcome them</b> .....	99
<i>Stephen Oxley</i>	

## SESSION 4: APPLICATIONS

<b>Investigation on Tantalum Capacitors in Parallel Configuration</b> .....	111
<i>Olivier Mourra, Paul Collins, John Hopkins, Ferdinando Tonicello</i>	
<b>A Soft Termination MLCC Solution to Guard against Capacitor Crack Failures</b> .....	118
<i>Mark Stewart, Jonathan Lennox</i>	
<b>Improving Flex Capabilities of Ceramic MLC Chip Capacitors</b> .....	124
<i>Paul Staubli, Travis Ashburn, John Prymak, Mike Prevallet</i>	
<b>Ta Capacitors with Conductive Polymer Stable in Humidity</b> .....	132
<i>M. Biler, Z. Sita</i>	
<b>Trends in Tantalum and Niobium Capacitors</b> .....	138
<i>T. Zednicek</i>	
<b>Improved Voltage and Temperature DC Bias Performance of BME X7R Dielectric</b> .....	147
<i>Michael Conway</i>	
<b>Ink Jettable Silver Nanosystems</b> .....	153
<i>Alan Rae, Dana Hammer-Fritzingler</i>	

## **SESSION 5: RELIABILITY & TESTING**

<b>Improved SMT Performance of Tantalum Conductive Polymer Capacitors with Very Low ESR</b> .....	161
<i>Randy Hahn, Jim Piller, Philip Lessner</i>	
<b>Proofing Tantalum Capacitors and Effects on Reliability</b> .....	171
<i>John D. Prymak, Mike Prevallet, Paul Staubli</i>	
<b>Component Corrosion - Real Life Experience</b> .....	179
<i>Knud Blohm</i>	
<b>Failure Analysis of MLCC Using Focused Ion Beam</b> .....	189
<i>Akira Saito, Nobuyuki Wada, Hiroshi Tamura, Yukio Sakabe</i>	
<b>Characterization and Reliability Analysis of Quartz Resonators Submitted to High Temperature</b> .....	196
<i>Yves Ousten, Bruno Levrier, Gregory Andriamonge</i>	
<b>Transport and Noise Characteristics of Niobium Oxide and Tantalum</b> .....	210
<i>J. Sikula, V. Sedlakova, J. Hlavka, P. Hoeschl, Z. Sita, T. Zednicek, M. Tacano, S. Hashiguchi</i>	