

P-2.1 Committee on Ceramic Dielectric Capacitors

MINUTES

Wednesday, April 16, 2003
Tempe Mission Palms Hotel
60 East 5th Street
Tempe, AZ 85281

Scope of the P-2.1 Committee on Ceramic Dielectric Capacitors (approved 10/13/99): All types of Ceramic Dielectric Capacitors.

Attendees:

<u>NAME</u>	<u>COMPANY</u>
Michael Cannon	TDK Corporation
Terry Charles	Panasonic
Casey Crandall	Wright Capacitors Inc
Frank B. Hayward	American Technical Ceramics
Mike Lauri	IBM Corporation
Ming Li	AEM, Inc.
Laird Macomber	Cornell Dubilier
Michael Mosier	Vishay/NACC Mallory
Christine Pollock	Presidio Components, Inc.
Chris Reynolds	AVX
David Richardson	Vishay Intertechnology, Inc.
David Ritchey	Yageo/Phycomp
Tadashi Yoshida	Sanyo Electronic Components
Hideki Ishida	Sanyo Electronic Components

<u>Member Organizations Present</u>	<u>Present at this meeting?</u>	<u>Present at previous meeting?</u>	<u>Present at meeting prior to previous?</u>
Cornell Dubilier	Yes	Yes	Yes
IBM Corporation	Yes	Yes	Yes
Panasonic Industrial Co.	Yes	Yes	Yes
Presidio Components	Yes	Yes	Yes
TDK Corporation of America	Yes	Yes	Yes
Vishay	Yes	Yes	Yes
Yageo (Phycomp USA, Inc.)	Yes	Yes	Yes
Vishay/NACC Mallory	Yes	Yes	No
AVX Corporation	Yes	No	Yes
AEM	Yes	No	No
Wright Capacitors	Yes	No	No

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<u>Member Organizations Absent</u>	<u>Present at this meeting?</u>	<u>Present at previous meeting?</u>	<u>Present at meeting prior to previous?</u>
Intel Corp	No	No	Yes
Taiyo Yuden	No	No	Yes
*BC Components, Inc. USA	No	No	No
*Lucent Technologies	No	No	No
KEMET Electronics Corp	No	Yes	Yes
KOA Speer Electronics	No	Yes	Yes
Murata	No	Yes	No

*Members dropped from the calculation for quorum due to non-attendance

<u>Other Organizations Present</u>
EIA/ECA

The meeting was called to order by Chairman Michael Cannon at 8:00am.

1.0 Introductions

- 1.0.1 Chairman welcomed the attendees, especially guests from Sanyo Electronic Components.
- 1.0.2 Self introductions were made.

1.1 Circulate Membership Roster

- 1.1.1 Attendance was taken, and it was determined that a quorum was present.
- 1.1.2 Please note the Member Organizations that have been dropped from the quorum calculation for lack of attendance.

1.2 Approval of Fall Meeting Minutes from Charlotte, NC.

- 1.2.1 Minutes from Oct. 9, 2002 Marriott City Center were approved.

1.3 Review of Agenda for Present Meeting

- 1.3.1 Agenda was approved.

1.4 Correspondence & Review of Committee's Scope

- 1.4.1 Correspondence was received from Dick Thompson, announcing his retirement from Kemet and offering many kind word to EIA/ECA and the P2.1 members. Several members also expressed kind words about Dick and EIA/ECA committed to responding at the retirement party in South Carolina.
- 1.4.2 Committee scope was accepted.

1.5 Report of task groups, committees, and DSCC efforts

1.5.1 DSCC

- 1.5.1.1 No report at the time of the meeting, see attachment to minutes.

1.5.2 Automatic Component Handling Committee, ACH-Dave Ritchey, Phycomp

- 1.5.2.1 Current activities have involved IPDs and other non-P2.1 devices.

1.5.3 General Session, U1- Dave Richardson, Vishay

- 1.5.3.1 The China Compulsory Certificate (CCC) was discussed by Ed Mikoski as a significant concern for doing business in China.
- 1.5.3.2 Global legislation for the Pb-Free movement was presented by Mr. Mikoski.
- 1.5.3.3 The technical paper at the lunch meeting was presented by Mark Cohen, Maxwell Technologies, on the topic of ultra capacitors and the KiloFarad International forum.
- 1.5.3.4 At the lunch meeting, this year's Distinguished Fellow award was presented to Terry Charles of Panasonic
- 1.5.3.5 Future meeting sites are: Fall 2003, Oct. 6-9, San Antonio; Spring 2004, April 19-22, Tampa; Fall 2004, San Diego.

2.0 Old Business

- 2.1 Status of balloting latest revision of EIA-595-A (SP-4622) (Dick Thompson, Kemet)
 - 2.1.1 Mr. Thompson is working with Mr. Mikoski to finalize balloting result and issue release of the approved document.

- 2.2 Status of EIA-469-D (PN-4621) revision balloting and ANSI public review (Christine Pollock, Presidio Components)
 - 2.2.1 Rev. D balloting results were not available. Additionally, Ms. Pollock, clarified that rev. D is not the active revision where work is being done. Rev. E needs a PN assigned as a formality since the ANSI/EIA draft is already assembled and being reviewed by P2.1 members.

- 2.3 Status of EIA-198-F "Ceramic Dielectric Capacitors Classes I, II, III, & IV"
 - 2.3.1 Part II: Test Methods- revision release status (James Canner, Murata)
 - 2.3.1.1 File transfer from Brian Piscitelli, KOA, to Mr. Canner.
 - 2.3.1.2 MIL-STD 202 test methods continue to be updated (see DSCC attachment) and Committee discussion on pass/fail criteria continues.
 - 2.3.2 Part III: Individual Specifications- PN status (Michael Cannon, TDK)
 - 2.3.2.1 Activity on all necessary slash sheets is to be discussed at the next Ceramic Working Group meeting.
 - 2.3.2.2 PN to be assigned for High Voltage Chip MLC, High Voltage Leaded, and Low ESL Chip (reverse geometry type).

- 2.4 Status of IEC/EIA 521 (Dick Thompson, Kemet)
 - 2.4.1 Mr. Thompson is finalizing with VCC graph additions and low voltage editorial changes.
 - 2.4.2 PN needs to be assigned by EIA.

- 2.5 Status of ESL Capacitor test method (Karun Malhorta, Murata)
 - 2.5.1 Low ESL was agreed to be tabled until next meeting.
 - 2.5.2 Sanyo presentation will be incorporated into future discussions.

- 2.6 Report from Ceramic Capacitor Working Group (meeting 4/14/03, 10am) (Michael Cannon, TDK)
 - 2.6.1 The time length of the WG will remain the same with the focus being detailed project and document discussion as well as future agenda development.

- 2.6.2 Pb-free Soldering concerns
 - 2.6.2.1 It was determined that issues are being addressed for all component groups in the Soldering Technology Committee (STC).
 - 2.6.2.2 P2.1 concerns are in the areas of tin whiskers, solder pad geometries, and board mounted test conditions/results.
- 2.6.3 Lower rated voltages
 - 2.6.3.1 Supplier/customer discussions about life testing conditions are increasing.
 - 2.6.3.2 The EIA 198 and IEC documents need to be more harmonious. The following group is gathering the IEC documents and developing a compare/contrast table versus the EIA documents.
 - Michael Cannon, TDK
 - Karun Malhorta, Murata
 - Michael Lauri, IBM
 - Ed Mikoski, EIA/ECA
 - 2.6.3.3 The IEC TAG TC-40 representative is being invited to the next Ceramic Working Group Meeting and P2.1 meeting.
 - 2.6.3.4 The task force target is to summarize the findings and approach JEITA, IEC, et al, to reach a common ground for testing conditions.
- 2.6.4 ESD Guidelines
 - 2.6.4.1 There are several ESD standards (JEDEC, SAE, IEC, AEC, MIL, etc.). A task force to specifically address ceramic capacitors has been assembled, as follows:
 - Cannon, TDK
 - Chris Reynolds, AVX
 - Carl Postiglione, Murata
 - Malhorta, Murata
 - 2.6.4.2 Next steps are to get a time slot at the U-1 session and move specific testing guidelines through P-9 Test Methods committee.
- 2.6.5 AC ratings and power dissipation guidelines
 - 2.6.5.1 Power dissipation depends on many variables (air flow, pad layout/thickness, etc) and vendors have various safe limits and guidelines.
 - 2.6.5.2 The following task force has been assembled to investigate how best to determine maximum ripple current:
 - Cannon, TDK
 - Malhorta, Murata
 - Reynolds, AVX
 - Terry Charles, Panasonic
- 2.7 Status on search for Committee secretary. (entire P2.1 Committee)
 - 2.7.1 Mr. Terry Charles, Panasonic, has accepted the nomination as the P2.1 Secretary.
- 2.8 Status on Electro-static Discharge (ESD) teleconference (Ed Mikoski, ECA)
 - 2.8.1 See Ceramic WG meeting notes above.

3.0 New Business

3.1 Review of Documents

3.1.1 Status PN author/primary contact column to Active Projects file to be addressed by Mr. Mikoski (EIA/ECA)

3.2 Equivalent Series Inductance Measurement Presentation, Sanyo Components.

3.2.1 Mr. Tadashi Yoshida and Mr. Hideki Ishida of Sanyo Components presented a discussion on ESL measurement techniques including equipment, fixturing, and frequency ranges. This valuable presentation will assist P2.1 in furthering our discussion for the most accurate/quick ESL measurement techniques.

4.0 Time and Place of next meeting

October 6-9, 2003 at the San Antonio (TX) Marriott Rivercenter.

5.0 Adjournment

Meeting was adjourned at 10:08am.

This meeting was conducted in accordance with the EIA Legal Guidelines and the Manual of Organization and Procedures.

Michael C. Cannon

Michael Cannon
Chairman

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Acting Secretary