

# Electronics Packaging Forum Multichip Module Technology Issues

Multichip Module Technologies and Alternatives: The Basics Best Practices in Business Technology Management Solar PV Power Resources in education Module Technology AIAA Space Programs and Technologies Conference and Exhibit: 93-4740 - 93-4784 The International Journal of Microcircuits and Electronic Packaging Multichip Modules and Related Technologies Top Auditing Issues for 2005 Leading Trends in Environmental Regulation that Affect Energy Development The Technology Teacher Multi-Chip Module Conference Electronics Packaging Forum Proceedings Multichip Modules Client/server Implementation Energy Research Abstracts History of Automotive Electronics Astrodynamics 2001 Engineering Daryl Ann Doane Stephen J. Andriole Rabindra Kumar Satpathy Gerald L. Ginsberg United States. Department of Energy. Environmental Impacts Division IEEE James E. Morris R. Wayne Johnson Institute of Internal Auditors. Research Foundation Ronald K. Jurgen

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far from being the passive containers for semiconductor devices of the past the packages in today's high performance computers pose numerous challenges in interconnecting powering cooling and protecting devices while semiconductor circuit performance measured in picoseconds continues to improve computer performance is expected to be in nanoseconds for the rest of this century a factor of 1000 difference between on chip and off chip performance which is attributable to losses associated with the package thus the package which interconnects all the chips to form a particular function such as a central processor is likely to set the limits on how far computers can evolve multichip packaging which can relax these limits and also improve the reliability and cost at the systems level is expected to be the basis of all advanced computers in the future in addition since this technology allows chips to be spaced more closely in less space and with less weight it has the added advantage of being useful in portable consumer electronics as well as in medical aerospace automotive and telecommunications products the multichip technologies with which these applications can be addressed are many they

range from ceramics to polymer metal thin films to printed wiring boards for interconnections flip chip tab or wire bond for chip to substrate connections and air or water cooling for the removal of heat

discussing specific best practices for making specific decisions this book offers qualitative and quantitative methods tools and techniques for deploying and supporting all kinds of information technology it identifies the range of technology decisions that managers make and the best practices that define good acquisition deployment and support decisions all in an easy to absorb conversational tone the book covers the interrelated business technology alignment areas of business strategy as well as technology applications architecture infrastructure support acquisition and organization each section ends with a summary of actionable best practices

solar pv power design manufacturing and applications from sand to systems details developments in the solar cell manufacturing process including information from system design straight through to the entire value chain of solar pv manufacturing in addition the book includes aspects of ground mounted grid connected solar pv systems and optimization for solar pv plants economic analyses and reliability and performance the advances and processes of solar product technology and reliability along with the performance of solar pv plants and operational and maintenance aspects with advance diagnostic techniques are also presented making this an ideal resource with rapid change in the manufacturing process it is crucial for solar cells and solar pv modules to adapt to new developments in solar products especially with regard to reliability financial aspects and performance includes detailed solar panel module assembly and analysis offers new concepts for solar pv system design that are presented alongside field related issues and examples saves time and resources by collecting all pieces of information needed by engineers in the same text

pv modules must provide mechanical support for the cells protect the world from the voltages inside protect the cells diodes and interconnects from the weather outside couple as much light as possible into the pv cells and minimize the temperature increase of the cells the package must continue to serve these functions for at least 25 years as that is the typical module warranty period today furthermore the package must do all this for as low a cost as possible since the key to large scale pv growth is a reduction in cost while retaining excellent module reliability and durability this paper will review current module construction practices for both crystalline silicon and thin film pv with emphasis on explaining why the present designs and materials have been selected possible long term issues with today s designs and materials will be discussed several proposed solutions to these issues will be presented highlighting the research efforts that will be necessary in order to verify that they can cost effectively solve the identified issues

important topics covered include building long term reliability by increasing polyimide stability recent discoveries in the field of soldering phenomena relating to fundamental fluid mechanical processes circuit and electromagnetic solutions to problems of modeling highspeed electrical interconnections how to use the finite difference time domain approach in electromagnetic modeling and the development of dedicated test chips for package evaluation in varied field conditions

this volume provides the information essential for making the right decisions required for new equipment design

semiannual with semiannual and annual indexes references to all scientific and technical literature coming from doe its laboratories energy centers and contractors includes all works deriving from doe other related government sponsored information and foreign nonnuclear information arranged under 39 categories e g biomedical sciences basic studies biomedical sciences applied studies health and safety and fusion energy entry gives bibliographical information and abstract corporate author subject report number indexes

the four day quebec city conference in 2001 of some 200 registrants featured approximately 157 papers under topics such as libration point attitude determination geo collocation orbit determination constellations and clusters mars missions debris and collision avoidance neutral density formation flying low thrust trajectory optimization and relative motion and rendezvous chronological and author indexes are appended to the third volume these papers are not thoroughly peer reviewed by session chairs or the editors authors being responsible for technical accuracy annotation copyrighted by book news inc portland or

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