Journal of Electronic Packaging

Book Reviews

Advances in Thermal Modeling of Electronic Components and Systems, Vol. 1, Ed. by Avram Bar-Cohen and Allan D. Kraus, Hemisphere Publishing Corp., New York, 1988; $90.

REVIEWED BY PETER A. ENGEL[1]

This is a valuable book giving a good overview as well as a state-of-the-art account of several topics related to thermal aspects of electronic packaging.

Chapter I, by Nakayama, is entitled: "Thermal Management of Electronic Equipment: A Review of Technology and Research Topics." The role of heat transfer engineering and fundamental research, toward establishing design criteria are discussed. An exposition of natural convection, forced convection and advanced schemes of cooling follows. An interesting account of the heat load in Japanese computers caps up the section.

Yovanovich and Antonetti wrote the next Section on the application of thermal contact resistance theory to electronic packages. The study surveys mechanical joints and the role of surface roughness, crucial, for example, to the performance of various electrical connectors.

Direct air cooling of electronic components is discussed by Moffat and Ortega under two major headings, I. Forced Convection and II. Natural Convection. Analytical and numerical methods, and experimental data are presented in the first part.

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In the second part natural convection in vertical channels, modeling methods and a design equation for induced flow rate in channels are included.

Chapter IV, by Marto and Peterson, is on the application of heat pipes to electronic cooling. It contains recent practical applications, some of Japanese practice.

In Chapter V Suhir gives account of thermal stress failures in microelectronic components. Analytical determination of thermal stresses, and of the strength of adhesive joints are expounded predominantly.

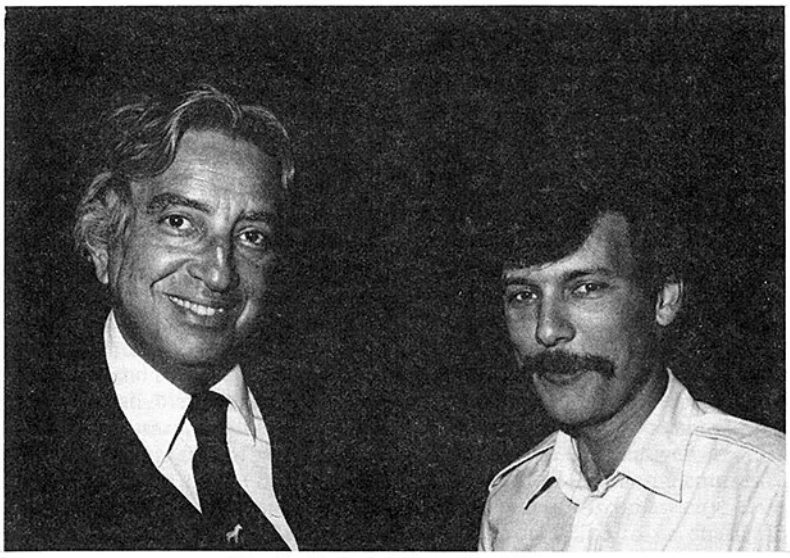
A Bibliography of heat transfer in electronic equipment up to 1986, by Simons, completes this very readable and informative book. The otherwise lucid, well illustrated volume contains a few errors in typesetting.

This is the first volume of a series, the second of which is scheduled to appear in 1989.

Principles of Electronic Packaging, Ed. by Donald P. Seraphim, Ronald Lasky and Che-Yu Li; McGraw-Hill Series in Materials Science and Engineering, New York (1989); $54.95

BY PETER A. ENGEL

In preparation for many years, this book is an achievement in logistics as well as in science. In thirty-two chapters, contributed by seventy-five authors, this volume offers a tasteful and comprehensive treatment of Packaging.



Allan D. Kraus and Avram Bar-Cohen