

Technology Opportunity Bulletin

ISAC - Adaptive Steady-State and Dynamic Thermal Analysis Software Package

ISAC is a comprehensive integrated circuit (IC) chip-package thermal analysis software package, for use in IC design and synthesis and computer architecture design.

Description:

Ever-increasing integrated circuit power densities and peak temperatures threaten reliability, performance, and economical cooling. To address these challenges, thermal analysis must be embedded within IC design flow. ISAC is a comprehensive IC chip-package thermal analysis software package based on novel, adaptive, numerical analysis methods. Compared to other thermal analysis solutions, ISAC achieves orders of magnitude speedup without loss of accuracy. Its initial version was described in the following research paper: Y. Yang, Z. Gu, C. Zhu, L. Shang, and R. P. Dick, "Adaptive Chip-Package Thermal Analysis for Synthesis and Design," Proc. Conf. on Design, Automation, and Test in Europe, March 2006.

Many methods of integrated circuit thermal analysis suffer performance or accuracy problems that prevent use in IC synthesis and hinder use in architectural design. ISAC is the first comprehensive solution to offer both accuracy and efficiency to the IC thermal analysis problem.

Potential applications:

The goal of ISAC is to support rapid and accurate steady-state and dynamic thermal analysis for use in integrated circuit synthesis and computer architecture research.

State of development:

ISAC is a joint development of Queen's University (Dr. Li Shang li.shang@queensu.ca) and Northwestern University (Dr Robert Dick dickrp@ece.northwestern.edu) ISAC is being made available under an "evaluation use only" license.

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