

BCTM PROCEEDINGS

**PROCEEDINGS
OF THE 1997
BIPOLAR/BI^CMOS CIRCUITS AND
TECHNOLOGY MEETING**

1997



**Minneapolis, Minnesota
September 28-30, 1997**

*50th Anniversary
of the BJT
1947-1997*

Sponsored by IEEE



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**PROCEEDINGS OF THE 1997
BIPOLAR/BiCMOS CIRCUITS AND
TECHNOLOGY MEETING**

**SPONSORED BY
IEEE ELECTRON DEVICES SOCIETY**

**in cooperation with
IEEE SOLID STATE CIRCUITS SOCIETY**

September 28-30, 1997

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Welcome from the Chairman

Welcome to the 1997 IEEE Bipolar/BiCMOS Circuits and Technology Meeting.

1997 marks the 50th anniversary of the invention of the bipolar transistor. In honor of this event, the BCTM has invited a number of pioneers involved in seminal milestones in the development of bipolar/BiCMOS circuits and technologies for a special luncheon on Monday. James Early will be the featured luncheon speaker. He will be accompanied by Jack Kilby, John Moll, Tak Ning, Tetsushi Sakai, John Shier, and Ray Warner; all of whom will be invited to give a brief anecdote from the early days.

The BCTM continues with the theme of last year, emphasizing the convergence of the fields of Computers and Communications, as this takes us into the information age and the 21st century. Integrated circuits combining telecommunication and computer applications, using high-speed analog and mixed signal digital circuitry will be a central element of future progress in the electronics industry. With this in mind, the short course and keynote speech this year both deal with the topics of RF technologies and telecommunications ICs. Additionally, as a result of the large number of RF-based design papers submitted last year, the design committee was split this year into two: RF and analog/digital.

This year's short course, which is entitled "Process, Packaging and Circuit Technologies for RF Applications" continues this theme. Three well known experts in the areas of RF technology, packaging and design will cover the basic topics and will discuss the issues and challenges in bipolar RF process development, packaging and passive components, and design for manufacturability.

The keynote speech, which will be given by Simon Atkinson of Analog Devices' Communications Division in the UK, is entitled "The Outlook of Bipolar/BiCMOS for Future Telecom ICs". Mr. Atkinson will discuss future directions of telecommunications integrated circuits, surveying examples from throughout the industry.

There are 12 technical sessions, with three invited and 41 regular session papers. For the second year, there will be a late news paper to bring the latest in technical progress to the conference. As a new feature, there will be a panel discussion at the end of Session 1 on Monday morning, to allow a lively debate of several different techniques of statistical modeling of bipolar transistors. In support of our policy of encouraging student participation in BCTM, the conference participants will be asked to vote for the best student paper award, which will be awarded at next year's conference.

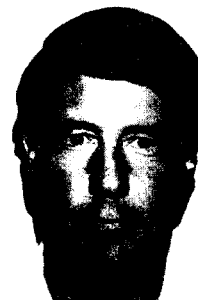
There are two panel discussions Monday night. The first panel, entitled: "The Top Bipolar Circuit Ideas of All Time" ties in with the 50th anniversary theme. The second panel is called "What the Heck Are Universities Teaching Electrical Engineers?" and will be a discussion between supervising professors and hiring managers of the state of engineering education.

Finally, the 1997 BCTM is featuring an enhanced vendor exhibition, which is highlighted by a reception at lunchtime Tuesday.

Overall, the 1997 BCTM promises to be an exciting international conference. We express our great appreciation to the 1997 BCTM committee members for their outstanding job putting together an exciting program. It is a great pleasure to extend a hearty welcome to the 1997 IEEE Bipolar/BiCMOS Circuits and Technology Meeting in Minneapolis, Minnesota.



Tad Yamaguchi
Conference General Chairman



Jim Hayden
Technical Program Chairman

FOR YOUR CONVENIENCE ...

BCTM 1997 EXECUTIVE AND TECHNICAL PROGRAM COMMITTEES

BCTM 1997 EXECUTIVE COMMITTEE

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Pierre Rosset (CNRS LAAS, France)
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Ian Getreu (Analog)
Rick Jerome (Linear Tech.)
Michael Schröter (Rockwell)
Ting-Wei Tang (Univ. of Massachusetts)
Terry Magee (Nortel, UK)

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Bahram Jalali (UCLA)
Larry Larson (Univ. of Calif. at San Diego)
Mikael Ostling (Royal Inst. of Tech., Sweden)
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John Long (Univ. of Toronto, Canada)
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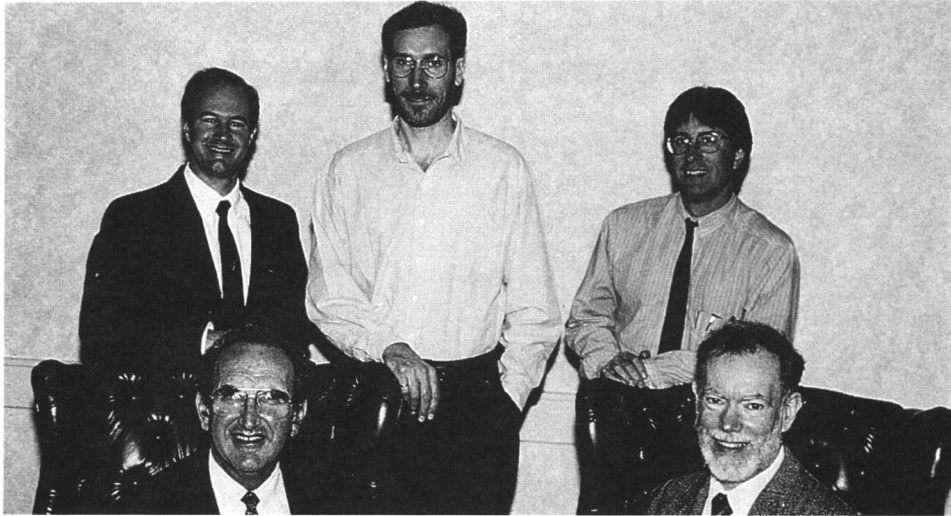
Marco Corsi (Texas Instruments, Chair)
M. I. Elmasry (Univ. of Waterloo, Canada)
Masao Hotta (Hitachi, Japan)
Farhood Moraveji (S3 Incorporated)
Tom Skaar (VTC)
Leon Alkalaj (Jet Propulsion Laboratory)
Frank Fattori (Seagate Microelectronics Ltd.)
David Pace (Motorola)

BCTM 1997 Executive Committee



Seated, left to right: Hiroshi Iwai, Tad Yamaguchi, Jim Hayden, Paul Davis
Standing, left to right: Tony Brown, John Long, John Cressler, Jan Jopke, Joachim Burghartz,
John Shott

BCTM 1997 RF Design Subcommittee



Seated, left to right: Paul Davis, Tony Brown.
Standing, left to right: Scott Williams, John Long, Kevin Negus

BCTM 1997 Process Technology Subcommittee



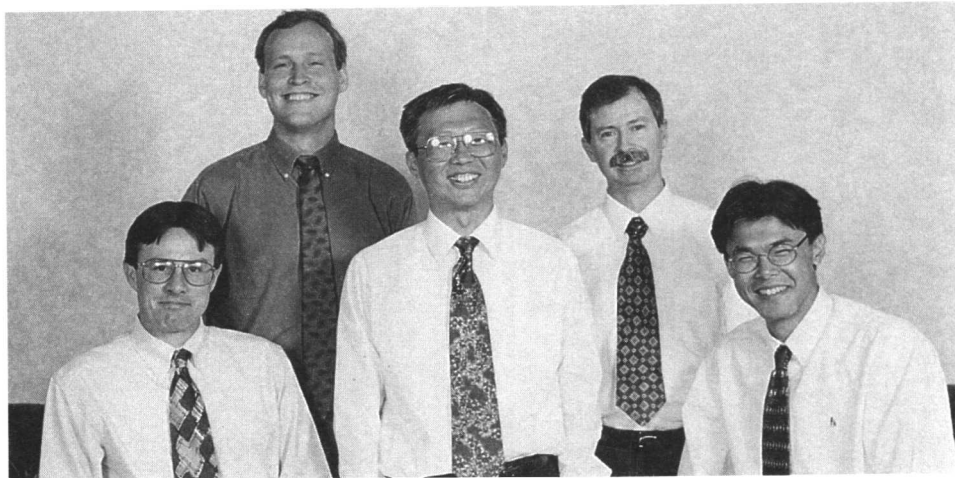
Seated, left to right: Brad Scharf, W. Margaret Huang
Standing, left to right: Masahiko Nakamae, Hiroshi Iwai, Tohru Nakamura

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Seated, left to right: Bahram Jalali, Robert Fox
Standing, left to right: S. J. Prasad, John Hamel, John Cressler, Seshu Subbanna, David Haramé

BCTM 1997 Power Devices Subcommittee



Left to right: Michael Zunino, Ross Teggatz, Paul Tsui, Taylor Efland, Cliff Ma

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Standing, left to right: Terry Magee, Colin McAndrew, Rick Jerome, Michael Schröter

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Left to right: Masao Hotta, David Pace, Tom Skaar, Marco Corsi

1997 BCTM

SCHEDULE AT A GLANCE

Sunday — September 28

8:30 AM	SHORT COURSE	
—	Process Technology for RF, Packaging for RF, Design for Manufacturability	
5:00 PM		
7:00 PM	Registration/Reception - Atrium (4th floor)	

Monday — September 29

Registration open from 7:30 AM in Ballroom Atrium

8:30 AM	Opening Remarks and Announcements	
8:45 AM	KEYNOTE SPEAKER: Simon Atkinson "The Outlook of Bipolar/BiCMOS for Future Telecom ICs" Ballrooms 1 and 2	
9:30 AM	Coffee and Cookies in Ballroom Atrium	
9:50 AM	Statistical Modeling Ballroom 3	SiGe BiCMOS and Advanced Bipolar Technology Ballroom 4
12:00 Noon	LUNCHEON SPEAKER: Jim Early Ballrooms 1 and 2	
2:00 PM	RF Design Ballroom 3	BiCMOS Technology Ballroom 4
3:40 PM	Coffee break in Ballroom Atrium	
3:50 PM	RF Circuits and Components Ballroom 3	Physics and Novel Devices Ballroom 4
Author Interviews Immediately After Sessions		
Dinner Break		
7:45 PM	Compl. Refreshments in Ballroom Atrium	
8:00 PM	Top Bipolar Circuit Ideas of All Times Ballroom 3	What the Heck are Universities Teaching Electrical Engineers Ballroom 4

Tuesday — September 30

8:30 AM	Analog Circuits Ballroom 3	Modeling of Power Devices Ballroom 4
10:10AM	Coffee and cookies in Ballroom Atrium	
10:30 AM	Power Devices Ballroom 3	Interconnect Modeling, Extraction Ballroom 4
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Top Bipolar Circuit Ideas of All Time

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What the Heck are Universities Teaching Electrical Engineers?

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Co-chair: Terry Magee (Nortel, UK)

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