

Contents

1	Introduction: Towards Sustainable 2020 Nanoelectronics	1
	Bernd Hoefflinger	
2	From Microelectronics to Nanoelectronics	13
	Bernd Hoefflinger	
3	The Future of Eight Chip Technologies	37
	Bernd Hoefflinger	
4	Analog-Digital Interfaces	95
	Matthias Keller, Boris Murmann, and Yiannos Manoli	
5	Interconnects, Transmitters, and Receivers	131
	Bernd Hoefflinger	
6	Requirements and Markets for Nanoelectronics	141
	Bernd Hoefflinger	
7	ITRS: The International Technology Roadmap for Semiconductors	161
	Bernd Hoefflinger	
8	Nanolithography	175
	Burn J. Lin	
9	Power-Efficient Design Challenges	189
	Barry Pangrle	
10	Superprocessors and Supercomputers	215
	Peter Hans Roth, Christian Jacobi, and Kai Weber	

11	Towards Terabit Memories	229
	Bernd Hoefflinger	
12	3D Integration for Wireless Multimedia	251
	Georg Kimmich	
13	Technology for the Next-Generation-Mobile User Experience	273
	Greg Delagi	
14	MEMS (Micro-Electro-Mechanical Systems) for Automotive and Consumer Electronics	293
	Jiri Marek and Udo-Martin Gómez	
15	Vision Sensors and Cameras	315
	Bernd Hoefflinger	
16	Digital Neural Networks for New Media	331
	Lambert Spaanenburg and Suleyman Malki	
17	Retinal Implants for Blind Patients	367
	Albrecht Rothermel	
18	Silicon Brains	383
	Bernd Hoefflinger	
19	Energy Harvesting and Chip Autonomy	393
	Yiannos Manoli, Thorsten Hehn, Daniel Hoffmann, Matthias Kuhl, Niklas Lotze, Dominic Maurath, Christian Moranz, Daniel Rossbach, and Dirk Spreemann	
20	The Energy Crisis	421
	Bernd Hoefflinger	
21	The Extreme-Technology Industry	429
	Bernd Hoefflinger	
22	Education and Research for the Age of Nanoelectronics	439
	Bernd Hoefflinger	
23	2020 World with Chips	451
	Bernd Hoefflinger	
	Index	457
	Titles in this Series	479



<http://www.springer.com/978-3-642-22399-0>

Chips 2020

A Guide to the Future of Nanoelectronics

Hoefflinger, B. (Ed.)

2012, XXVIII, 477 p., Hardcover

ISBN: 978-3-642-22399-0