

Contents

1. Review of Semiconductor Device Physics	
Robert E Miles	1
2. Classical and Semiclassical Models	
Christopher M Snowden	16
3. Numerical Techniques – Finite Difference and Boundary Element Methods	
Derek B Ingham	34
4. Numerical Techniques – The Finite Element Method	
Stephen D Mobbs	49
5. Gallium Arsenide versus Silicon – Applications and Modelling	
Michael Shur	60
6. Physical Models for Silicon VLSI	
Siegfried Selberherr	70
7. Physical Models for Compound Semiconductor Devices	
Michael Shur	89
8. Modelling of Semiconductor Laser Diodes	
Roel Baets	109
9. Equivalent Circuit Models for Silicon Devices	
Margaret E Clarke	128
10. High Frequency Equivalent Circuit Models	
Michael J Howes	143
11. Modelling of Noise Processes	
Alain Cappy	161
12. Monte Carlo Modelling Techniques	
Mustafa Al-Mudares	181
13. Quantum Transport Modelling	
John R Barker	207
14. Computer Simulations	
Trevor Barton	227
15. Practical Aspects of Device Modelling	
Joseph A Barnard	248
Subject Index	255