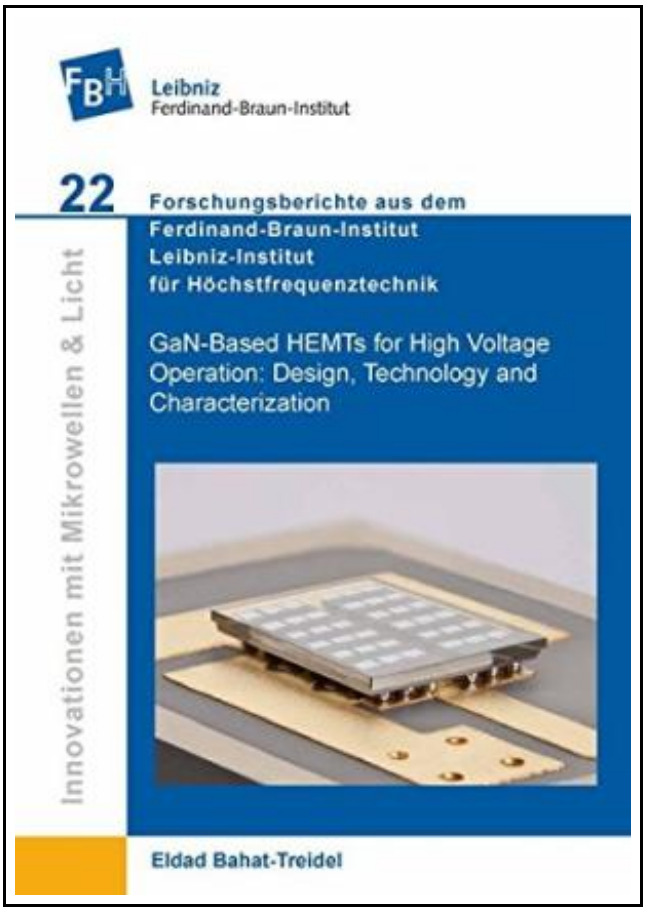
GaN-Based HEMTs for High Voltage Operation: Design, Technology and Characterization



Filesize: 5.05 MB

Reviews

A top quality publication along with the font used was intriguing to read. I really could comprehended everything using this written e ebook. Its been designed in an remarkably straightforward way and it is only after i finished reading through this publication by which basically altered me, modify the way i believe.

(Cathrine Larkin Sr.)

GAN-BASED HEMTS FOR HIGH VOLTAGE OPERATION: DESIGN, TECHNOLOGY AND CHARACTERIZATION

Cuvillier Verlag Jun 2012, 2012. Taschenbuch. Book Condition: Neu. 208x147x14 mm. Neuware - Gallium nitride (GaN)-based High Electron Mobility Transistors (HEMTs) for high voltage, high power switching and regulating for space applications are studied in this work. Efficient power switching is associated with operation in high OFF-state blocking voltage while keeping the ON-state resistance, the dynamic dispersion and leakage currents as low as possible. The potential of such devices to operate at high voltages is limited by a chain of factors such as subthreshold leakages and the device geometry. Blocking voltage enhancement is a complicated problem that requires parallel methods for solution; epitaxial layers design, device structural and geometry design, and suitable semiconductor manufacturing technique. In this work physical-based device simulation as an engineering tool was developed. An overview on GaN-based HEMTs physical based device simulation using Silvaco-ôATLASö is given. The simulation is utilized to analyze, give insight to the modes of operation of the device and for design and evaluation of innovative concepts. Physical-based models that describe the properties of the semiconductor material are introduced. A detailed description of the specific AlGaN/GaN HEMT structure definition and geometries are given along with the complex fine meshing requirements. Nitride-semiconductor specific material properties and their physical models are reviewed focusing on the energetic band structure, epitaxial strain tensor calculation in wurtzite materials and build-in polarization models. Special attention for thermal conductivity, carriersÆ mobility and Schottky-gate-reverse-bias-tunneling is paid. Empirical parameters matching and adjustment of models parameters to match the experimental device measured results are discussed. An enhancement of breakdown voltage in AlxGa1-xN/GaN HEMT devices by increasing the electron confinement in the transistor channel using a low Al content AlyGa1-yN back-barrier layer structure is systematically studied. It is shown that the reduced sub-threshold drain-leakage current through the buffer layer postpones the punch-through and therefore...

You May Also Like

Creative Thinking and Arts-Based Learning : Preschool Through Fourth Grade

Book Condition: Brand New. Book Condition: Brand New.

Download ePub »

Studyguide for Creative Thinking and Arts-Based Learning : Preschool Through Fourth Grade by Joan Packer Isenberg ISBN: 9780131188310

2011. Softcover. Book Condition: New. 4th. 8.25 x 11 in. Never HIGHLIGHT a Book Again! Includes all testable terms, concepts, persons, places, and events. Cram101 Just the FACTS101 studyguides gives all of the outlines, highlights,...

Download ePub »

Six Steps to Inclusive Preschool Curriculum: A UDL-Based Framework for Children's School Success

Brookes Publishing Co. Paperback. Book Condition: new. BRAND NEW, Six Steps to Inclusive Preschool Curriculum: A UDL-Based Framework for Children's School Success, Eva M. Horn, Susan B. Palmer, Gretchen D. Butera, Joan A. Lieber, How...

Download ePub »

A Year Book for Primary Grades; Based on Froebel s Mother Plays

Rarebooksclub.com, United States, 2012. Paperback. Book Condition: New. 246 x 189 mm. Language: English . Brand New Book ***** Print on Demand *****.This historic book may have numerous typos and missing text. Purchasers can download...

Download ePub »

Edible Bible Crafts: 64 Delicious Story-Based Craft Ideas for Children

BRF (The Bible Reading Fellowship). Paperback. Book Condition: new. BRAND NEW, Edible Bible Crafts: 64 Delicious Story-Based Craft Ideas for Children, Sally Welch, If you're looking for child-friendly Bible-themed cooking activities, this is the book...

Download ePub »