522.
标题: Model-Based Prediction of the Plasma Oscillation Excitation Response Characteristics of a High-Electron Mobility Transistor-Based Terahertz Photomixer with the Cap Region
作者: Chen, Y (Chen, Yu); He, J (He, Jin); Liang, HL (Liang, Hai Lang); Ma, Y (Ma, Yong); Chen, Q (Chen, Qin); Su, YM (Su, Yanmei); He, HY (He, Hong Yu); Chan, MS (Chan, Mansun); Cao, JC (Cao, Juncheng)
来源出版物: JOURNAL OF COMPUTATIONAL AND THEORETICAL NANOSCIENCE 卷: 9 期: 4 页: 549-554 DOI: 10.1166/jctn.2012.2059 出版年: APR 2012
在 Web of Science 中的被引频次: 0
被引频次合计: 0
引用的参考文献数: 19
摘要: The model-based prediction of the response characteristics of a terahertz photomixer from the excitation of plasma oscillation in the channel of a high-electron mobility transistor (HEMT) with the cap region is presented in this paper. In the proposed model, the photo beam is inputted to the absorption layer of HEMT through the ungated area. Starting from the Euler equation and continuity equation, we obtained a response expression depicting the terahertz characteristics of that HEMT photomixer. As a result, the response as a function of the signal frequency is analyzed and the dependence of resonant frequency and amplitude on different length of cap region, voltage, and physical parameters are demonstrated. Are these may be useful for terahertz photomixer design and performance optimization.
入藏号: WOS:000304221000008
语种: English
文献类型: Article
作者关键词: Terahertz Photomixer; HEMT; Analytical Model; Plasma Excitation; Two Dimensional Gas (2DEG)
KeyWords Plus: FIELD-EFFECT TRANSISTOR; INVERSION-LAYERS; RADIATION; EMISSION; FLUID; MECHANISM; GAAS
地址: [Chen, Yu; He, Jin] Peking Univ, Sch Elect Engn & Comp Sci, Beijing 100871, Peoples R China
[He, Jin; Liang, Hai Lang; Ma, Yong; Chen, Qin; Su, Yanmei; He, Hong Yu] Peking Univ, Shenzhen SOC Key Lab, PKU HKUST Shenzhen Hongkong Inst, Shenzhen 518057, Peoples R China
[Chan, Mansun] Hong Kong Univ Sci & Technol, Dept Elect & Comp Engn, Kowloon 999077, Hong Kong, Peoples R China
[Cao, Juncheng] Chinese Acad Sci, Shanghai Inst Microsyst & Informat Technol, State Key Lab Funct Mat Informat, Shanghai 200050, Peoples R China
通讯作者地址: He, J (通讯作者),Peking Univ, Sch Elect Engn & Comp Sci, Beijing 100871, Peoples R China
出版商: AMER SCIENTIFIC PUBLISHERS
出版商地址: 26650 THE OLD RD, STE 208, VALENCIA, CA 91381-0751 USA
Web of Science 分类: Chemistry, Multidisciplinary; Nanoscience & Nanotechnology; Materials Science, Multidisciplinary; Physics, Applied; Physics, Condensed Matter
学科类别: Chemistry; Science & Technology - Other Topics; Materials Science; Physics
IDS 号: 944RH

ISSN: 1546-1955
29 字符的来源出版物名称缩写: J COMPUT THEOR NANOS
ISO 来源出版物缩写: J. Comput. Theor. Nanosci.
来源出版物页码计数: 6