577.
标题: Propagation, Resonance, and Radiation on Terahertz Optoelectronic Integrated Circuits
作者: Huang, YR (Huang, Yu-Ru); Chen, HP (Chen, Hung-Pin); Chiu, PC (Chiu, Pei-Chin); Chyi, JI (Chyi, Jen-Inn); Wang, BH (Wang, Bing-Hsiao); Chen, SY (Chen, Shih-Yuan); Sun, CK (Sun, Chi-Kuang)
来源出版物: IEEE PHOTONICS JOURNAL 卷: 4 期: 3 页: 699-706 DOI: 10.1109/JPHOT.2012.2195484 出版年: JUN 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: 32
摘要: This paper investigates terahertz (THz) wave propagation, resonance, and radiation on a THz optoelectronic integrated circuit (THz-OEIC). An efficient THz resonant radiation from 0.6 to 0.7 THz can be achieved with a newly designed 2-D open-ended rampart slot array antenna. A monolithically integrated circuit is fabricated on a localized THz resonant cavity, which not only provides a robust base for postdevice processes but also helps collect and reradiate the fleeing surface waves to enhance radiation efficiency. When using a THz time-domain spectroscopy (THz-TDS) technique and a time-frequency analysis, the radiated THz waveform shows a good time-frequency correlation to the circuit design of our THz-OEIC. In addition, an optical-to-THz per-pulse conversion efficiency of 6.41 x 10(-3) can be achieved by a localized THz resonant cavity design. The enhanced optical-to-THz per-pulse conversion efficiency and THz propagation, resonance, and radiation behavior revealed not only help to understand the on-chip THz transmission phenomena but provide a good potentiality for a THz-OEIC design to be applied in low power-consuming microfluidic-channel-based THz biosensing chips as well.
入藏号: WOS:000303893700003
语种: English
文献类型: Article
作者关键词: Terahertz optoelectronic integrated circuits; rampart slot array antenna; THz resonant cavity
KeyWords Plus: TRAVELING-WAVE PHOTODETECTORS; TEMPERATURE-GROWN GAAS; SLOT ARRAY ANTENNA; PHOTONIC TRANSMITTERS; POWER; TIME; CPW
地址: [Huang, Yu-Ru; Chen, Hung-Pin; Wang, Bing-Hsiao; Chen, Shih-Yuan; Sun, Chi-Kuang] Natl Taiwan Univ, Dept Elect Engn, Taipei 10617, Taiwan
[Huang, Yu-Ru; Chen, Hung-Pin; Sun, Chi-Kuang] Natl Taiwan Univ, Grad Inst Photon & Optoelect, Taipei 10617, Taiwan
[Wang, Bing-Hsiao; Chen, Shih-Yuan] Natl Taiwan Univ, Grad Inst Commun Engn, Taipei 10617, Taiwan
[Chiu, Pei-Chin; Chyi, Jen-Inn] Natl Cent Univ, Dept Elect Engn, Jhongli 32054, Taiwan
[Sun, Chi-Kuang] Acad Sinica, Inst Phys, Taipei 11529, Taiwan
[Sun, Chi-Kuang] Acad Sinica, Res Ctr Appl Sci, Taipei 11529, Taiwan
[Sun, Chi-Kuang] Natl Taiwan Univ, Mol Imaging Ctr, Taipei 10617, Taiwan
[Sun, Chi-Kuang] Natl Taiwan Univ, Grad Inst Biomed Elect & Bioinformat, Taipei 10617, Taiwan
通讯作者地址: Sun, CK (通讯作者),Natl Taiwan Univ, Dept Elect Engn, Taipei 10617, Taiwan
电子邮件地址: sun@cc.ee.ntu.edu.tw

出版商: IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC
出版商地址: 445 HOES LANE, PISCATAWAY, NJ 08855-4141 USA
Web of Science 分类: Engineering, Electrical & Electronic; Optics; Physics, Applied
学科类别: Engineering; Optics; Physics
IDS 号: 940MM
ISSN: 1943-0655
29 字符的来源出版物名称缩写: IEEE PHOTONICS J
ISO 来源出版物缩写: IEEE Photonics J.
来源出版物页码计数: 8