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标题: Terahertz time-domain-spectroscopy system using a 1 micron wavelength laser and photoconductive components made from low-temperature-grown GaAs
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来源出版物: JOURNAL OF INFRARED MILLIMETER AND TERAHERTZ WAVES 卷: 33 期: 2 页: 183-191 DOI: 10.1007/s10762-011-9857-7 出版年: FEB 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: 20
摘要: A terahertz time-domain spectroscopy (TDS) system based on a femtosecond Yb:KGW laser, photoconductive emitters and detectors made from as-grown and from annealed at moderate temperatures (similar to 400 degrees C) low-temperature-grown GaAs (LTG GaAs) layers was demonstrated. The measured photoconductivity of these layers increased linearly with the optical power, showing that transitions from the defect band to the conduction band are dominant. The largest amplitude THz pulse with a useful signal bandwidth reaching 3 THz and its signal-to-noise ratio exceeding 50 dB was emitted by the device made from the LTG GaAs layer annealed at 420 degrees C temperature. The detector made from this material was by an order of magnitude less sensitive than conventional GaBiAs detectors.
入藏号: WOS:000301541300007
语种: English
文献类型: Article
作者关键词: Terahertz; Optical pump - THz probe; LTG GaAs; 1 mu m wavelength time-domain-spectroscopy; Optoelectronic terahertz components
KeyWords Plus: MOLECULAR-BEAM EPITAXY; YB-KGW LASER; CARRIER DYNAMICS
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出版商: SPRINGER
出版商地址: 233 SPRING ST, NEW YORK, NY 10013 USA
Web of Science 分类: Engineering, Electrical & Electronic; Optics; Physics, Applied
学科类别: Engineering; Optics; Physics
IDS 号: 909DB
ISSN: 1866-6892
29 字符的来源出版物名称缩写: J INFRARED MILLIM TE
ISO 来源出版物缩写: J. Infrared Millim. Terahertz Waves
来源出版物页码计数: 9