273.
标题: Experimental Study of Frequency Multipliers Based on a GaAs/AlAs Semiconductor Superlattices in the Terahertz Frequency Range
作者: Paveliev, DG (Paveliev, D. G.); Koshurinov, YI (Koshurinov, Y. I.); Ivanov, AS (Ivanov, A. S.); Panin, AN (Panin, A. N.); Vax, VL (Vax, V. L.); Gavrilenko, VI (Gavrilenko, V. I.); Antonov, AV (Antonov, A. V.); Ustinov, VM (Ustinov, V. M.); Zhukov, AE (Zhukov, A. E.)
来源出版物: SEMICONDUCTORS 卷: 46 期: 1 页: 121-125 DOI: 10.1134/S1063782612010150 出版年: JAN 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: 10
摘要: Frequency multipliers based on a GaAs/AlAs semiconductor quantum superlattice have been experimentally studied. The power spectrum of the harmonics in the output signal from a multiplier with an input-signal frequency of 140-160 GHz has been measured. Planar diodes with a small active region (an area of 1-2 mu m(2)) have been used in this study. For fabrication of the diodes, structures of heavily doped superlattices with the miniband width 24 meV have been used, these structures were grown by the molecular-beam epitaxy method. Measurements have been conducted using a BOMEM DA3.36 Fourier spectrometer equipped with a detector based on a bolometer cooled to the temperature of liquid helium. The results of the measurements have been used to plot the dependences of the power of the harmonics on the frequency in the range from 0.4 to 8.1 THz. It has been found that the character of the microwave-power distribution over the number of harmonics is close to the spectrum of a sequence of sign-alternating pulses which appear in the diode circuit when the applied voltage of the input signal exceeds the threshold of the diode. The minimal time of establishment of the pulse front and pulse duration are equal to 123 and 667 fs, respectively.
入藏号: WOS:000301787200017
语种: English
文献类型: Article
地址: [Paveliev, D. G.; Koshurinov, Y. I.; Ivanov, A. S.] Lobachevskii State Univ Nizhny Novgorod, Nizhnii Novgorod 603950, Russia
[Panin, A. N.; Vax, V. L.; Gavrilenko, V. I.; Antonov, A. V.] Russian Acad Sci, Inst Phys Microstruct, Nizhnii Novgorod 603950, Russia
[Ustinov, V. M.] Russian Acad Sci, AF Ioffe Phys Tech Inst, St Petersburg 194021, Russia
[Zhukov, A. E.] St Petersburg Acad Univ, Russian Acad Sci, Nanotechnol Res & Educ Ctr, St Petersburg 194021, Russia
通讯作者地址: Paveliev, DG (通讯作者),Lobachevskii State Univ Nizhny Novgorod, Nizhnii Novgorod 603950, Russia
电子邮件地址: pavelev@rf.unn.ru
出版商: MAIK NAUKA/INTERPERIODICA/SPRINGER
出版商地址: 233 SPRING ST, NEW YORK, NY 10013-1578 USA
Web of Science 分类: Physics, Condensed Matter
学科类别: Physics
IDS 号: 912HO
ISSN: 1063-7826

29 字符的来源出版物名称缩写: SEMICONDUCTORS+
ISO 来源出版物缩写: Semiconductors
来源出版物页码计数: 5