116.
Accession number:20113414255404
Title:The plasmonic resonant absorption in GaN double-channel high electron mobility transistors
Authors:Wang, Lin (1); Chen, Xiao-Shuang (1); Hu, Wei-Da (1); Wang, Jun (1); Wang, Jian (1); Wang, Xiao-Dong (1); Lu, Wei (1)
Author affiliation:(1) National Laboratory for Infrared Physics, Shanghai Institute of Technical Physics, Chinese Academy of Sciences, Shanghai 200083, China
Corresponding author:Chen, X.-S.(xschen@mail.sitp.ac.cn)
Source title:Applied Physics Letters
Abbreviated source title:Appl Phys Lett
Volume:99
Issue:6
Issue date:August 8, 2011
Publication year:2011
Article number:063502
Language:English
ISSN:00036951
CODEN:APPLAB
Document type:Journal article (JA)
Publisher:American Institute of Physics, 2 Huntington Quadrangle, Suite N101, Melville, NY 11747-4502, United States
Abstract:We have investigated the plasmonic oscillations in GaN double-channel (DC) high electron mobility transistors (HEMTs). It is shown that the absorption peaks of DC-HEMT can exist in wider frequency regions than that of single channel HEMT. These absorption peaks appear as a result of excitation of elementary plasmon modes supported by separate channels and can be tuned for the entire terahertz domain. Significant resonant enhancement is also observed after varying the two-dimensional electron gas density in DC-HEMTs. These promising properties indicate that DC-HEMTs can have important applications as voltage tunable broadband terahertz detectors, intensity modulators, and filters. © 2011 American Institute of Physics.