Millimeter wave emission from GaN high electron mobility transistor

ARTICLE *in* APPLIED PHYSICS LETTERS 84(1) · JANUARY 2004

The University of Aizu, Hukusima, Fukushima, Japan
Impact Factor: 3.52 · DOI: 10.1063/1.1638625

Yanqing Deng
Roland Kersting
Jingzhou Xu
24.93 · IMRA America, Inc.
Ricardo Ascazubi
Xi-Cheng Zhang
Michael S. Shur
50.99 · Rensselaer Polytechnic Institute

Abstract

We report on millimeter wave electromagnetic radiation from a GaN high electron mobility transistor with the gate length of 1.5 mum at 8 K. The emission takes place at gate and drain voltages in the linear regime of operation but close to the saturation voltage with the principal emission peak at approximately 75 GHz, which is much higher than the device cut-off frequency. An explanation of this effect involves the ``shallow water'' plasma wave instability, with the frequency of the plasma waves decreased by the ungated regions of the device.

"...ric detectors, Schottky diodes [5], and photoconductive detectors [6]. THz plasma wave oscillators **[7]**-[8], and detectors based on GaAs [9], GaN [10], Si [11], and silicon on insulator (SOI) [12] FETs h..." [more]

Enhanced Terahertz Detection using Multiple GaAs HEMTs Connected in Series

Microwave Symposium Digest, 2009. MTT '09. IEEE MTT-S International; 07/2009

Tamer A. Elkhatib · D.B. Veksler · K.N. Salama · X.-C. Zhang · M.S. Shur

FOLLOW

"...eld a electromagnetic radiation of 75 GHz which much higher than f T of 8 GHz and f max of 20 GHz **[27]** . The AlGaN/GaN HEMT with 0.15 μm gate length produced 1.5 THz radiation at room temperature [28] ...." [more]

GaN-based Semiconductor Devices for Terahertz Technology

Yue Hao · Lin-An Yang · Jin-Cheng Zhang

REQUEST FULL-TEXT FOLLOW

"...or the transistor magnetic field of 1 T, 3 T and 5 T. dard HEMT structure was used in the case of **[14]**. Our emission experiments concentrate on InGaAs/AlInAs and GaN/GaAlN HEMTs and are carried out at ..." [more]

Terahertz Emission and Detection by Plasma Waves in Nanometer SizeField Effect Transistors.

IEICE Transactions on Electronics 07/2006; 89-C:926-930. DOI:10.1093/ietele/e89-c.7.926 · **0.39 Impact Factor**

Wojciech Knap · Jerzy Lusakowski · Frederic Teppe · Nina Dyakonova · Abdelouahad El Fatimy

FOLLOW

SHOW MORE

Note: This list is based on the publications in our database and might not be exhaustive.