Field-effect transistor - Wikipedia

The MODFET (modulation-doped field-effect transistor) is now used mainly in research. The MODFET (modulation-doped field-effect transistor) is a high-electron-mobility transistor using a quantum well structure formed by graded doping of the active region. The TFET (tunnel field-effect transistor) is based on band-to-band tunneling.

Junction Field Effect Transistor (JET) - [N-Channel JET]

May 06, 2019 - The Junction Field Effect Transistor (JET) is one of the types of FET transistors. JET is a simplest form of FET transistors with three terminals. The JET transistors are used as electronically controlled switches, Voltage controlled resistors and so on.

What are the Types of Field Effect Transistors - Working

A cluster of field-effect transistor. A field-effect transistor or FET is a transistor, where the output current is controlled by an electric field. FET sometimes is called unipolar transistor as it involves single-carrier type operation. The basic types of FET transistors are completely different from JFET transistor basics. FET is three terminal device.

Doping (semiconductor) - Wikipedia

A very heavily doped semiconductor behaves more like a good conductor (metal) and thus exhibits more linear positive thermal coefficient. Such effect is used for instance in sensors. Lower dosage of doping is used in other types (N/P or P/N) transistors. Silicon dopants. Acceptors, p-type Boron is a p-type dopant.

Electrolyte-gated carbon nanotube field-effect device...the source–drain spacing of 20 μm. The device was fabricated on a substrate with an active area of 200 μm × 200 μm...from an electrolyte-gated device to an organic electrochemical transistor (OECT) device.

The future of ferroelectric field-effect transistor...

Oct 19, 2020 - The ferroelectric field-effect transistor (FET) is a well known semiconductor device concept that until recently remained an unexplored technology. The concept appeared in a number of patents.

Implantable aptamer-field-effect transistor neuroprobes

Nov 2020 - Field-effect transistors (FET) are used to control the transduction of data. They are used in the reverse mode, which resembles a diode. This type of FET has a high transduction efficiency, and a high signal-to-noise ratio.

A ferroelectric semiconductor field-effect transistor

Dec 09, 2019 - Ferroelectric field-effect transistors employ a ferroelectric material as a gate insulator, the polarization state of which can be detected using the channel conductance of the device. As a result, fabrication of a Mesoporous Multimetallic Oxide-based Ion sensor has led to a new class of sensors that can be used for the detection of ions in aqueous solutions.

Ion sensitivity of Bosch-type field effect field effect devices

Electrolyte-gated field-effect transistors (EGOFET) have electrical characteristics that are dependent on the ion concentration. In the presence of ions, the channel conductance of the device increases, allowing for increased signal-to-noise ratios.

Tunneling Field Effect Transistors - Stanford University

The tunnel field-effect transistor (TFET) belongs to the family of so-called steep-slope devices that are currently being investigated as a potential replacement for the silicon-based insulated-gate field-effect transistor (IGFET). TFETs are known for their superior performance in terms of on-off ratio, sub-threshold swing, and scalability. In recent years, TFETs have been extensively studied for their potential applications in low-voltage device design.

Electron Device Letters - IEEE Electron Devices Society

Electron Device Letters (EDL) publishes original and significant contributions relating to the theory, modeling, design, performance and reliability of electron and ion integrated circuit devices and interconnects, including insulators, metals, organic materials, micro-pipes, semiconductors, quantum-effect structures, vacuum devices, and so on.

HEMT: High Electron Mobility Transistor & PHEMT

As a result of its structure, the HEMT may also be referred to as a heterojunction FET or the term “HBT” may be used to describe it. The HEMT is a high-speed, high-frequency semiconductor device that is used in a variety of applications, including RF amplifiers, mixers, and oscillators.

 Bipolar Junction Transistors

This effect is referred to as the Early effect. The Early effect is observed as an increase in the collector current with increasing collector-emitter voltage as illustrated with Figure 3.4.2. The Early effect, V_A, is obtained by drawing a line tangent to the transistor I-V characteristic at the point of interest.

Two-Dimensional Potention for Field-Effect Transistors

Since the first black phosphorus field-effect transistor (FET) demo in 2014, there has been an abundant research activity in terms of increasing collector-emitter voltage as illustrated with Figure 3.4.2. The Early effect, V_A, is obtained by drawing a line tangent to the transistor I-V characteristic at the point of interest.

Gallium oxide (Ga2O3) metal-semiconductor field-effect...

Jan 04, 2012 - We report a demonstration of single-crystal gallium oxide (Ga 2 O 3) metal-semiconductor field-effect transistors using a novel semiconductor-based organic material. Gallium oxide (Ga2O3) metal-semiconductor field-effect transistors (G-MOFETs) are shown to have an on-off ratio of 10^6, with an active area of 2 × 10^3 μm^2.

Introduction to Transistors - Types, Baising Modes and Field Effect Transistor (FET).

The field-effect transistor is a semiconductor device that uses an electric field to control the flow of charge carriers. The three terminals of the transistor are the source, drain, and gate, and the basic n-channel and p-channel are shown above. For an n-channel FET, the device is constructed from n-type material.

Journal of Nanoelectronics and Optoelectronics

JNOA is a cross-disciplinary, open-access, peer-reviewed journal dedicated to consolidating all experimental and theoretical research activities in the areas of nanoelectronic and optoelectronic materials and devices, electronic and optical properties of nanomaterials, atomic and molecular systems, electronic applications of superlattices, quantum structures, and other nanomaterials.

Lettres electronique Baumeister - Wikipedia

Modulation-doped field-effect transistor (MODFET), often denoted as: high-electron-mobility transistor (HEMT), two-dimensional semiconductor field-effect transistor (2DEG), selectively-doped heterojunction transistor (SDHT), or heterojunction field-effect transistor (HJFT).

SCIENCE OF ADVANCED MATERIALS - aspx.com

SAM is an interdisciplinary peer-reviewed journal consolidating research activities in all experimental and theoretical aspects of advanced materials in the fields of science, engineering and medicine including synthesis, fabrication, processing, spectroscopic characterization, physical properties, and applications of all kinds of inorganic and organic materials, metals, and chemical materials.