Picture Source: UMS

UMS 0.25, 0.15 µm GaN & 0.10 µm GaAs MULTI-PROJECT-WAFER PROTOTYPING

Europractice provides users with access to UMS GaN and GaAs technologies for Multi-Project-Wafer (MPW) prototyping.

Why Europractice?

- Affordable and easy access to Prototyping, Design Tools, and Training for universities, research institutes, and their spinouts.
- MPW runs for multiple technologies, including ASICs, Photonics, TFT, and more.
- Advanced packaging and system integration support.

Why UMS?

- European Leader in RF MMIC products and foundry service.
- Technologies with high electron mobility, insensitivity to heat, and radiation tolerant.
- Outstanding model accuracy thanks to expertise in thermal simulations, GaN, and electrothermal modelling.
- Excellent PDK and models. User-friendly online layout DRC test.

Technology Highlights

UMS offers universities, research institutions, and industrial customers worldwide a wide range of solutions to develop, produce, and qualify your own proprietary Monolithic Microwave Integrated Circuits (MMICs).

Customers can access high performance GaN with high-electron-mobility-transistor (HEMT) and 0.1µm GaAs low-noise pseudomorphic high-electron-mobility-transistor (pHEMT) processes.

pHEMT and HBT GaAs, HEMT GaN, diodes, and passive components are implemented and integrated in 0.25, 0.15, and 0.10µm technologies. They are available for ASIC fabrication via UMS's prototyping service and offer our customers the capability to realize low-noise or power MMIC solutions based on their own designs.

UMS offers technologies with high electron mobility, insensitivity to heat, and radiation tolerant when compared to silicon for low-noise, high power, and overwide temperature range applications. These technologies are proved by the successful implementation of many standard products for Aerospace, Telecom, Automotive, and ISM.

Extensive support and sets of solutions make it possible to design innovative systems, launch products on time to market, and secure your supply chain for production.

GH25 0.25µm GaN HEMT

The GH25 process from UMS is an HEMT GaN-on-SiC, ideal for high RF power amplifier or switch design. With a 0.25µm transistor's gate length, it exhibits more than 12dB at 10GHz with a typical 4.5W/mm output power density and good noise performance. The high breakdown voltage and good thermal conductivity of SiC substrate allows biasing of transistors up to 30V. Therefore, the Gallium Nitride GH25 is ideal for the design of HPA, high power switches, and LNA up to 20GHz for many applications, including Telecommunication, Satcom, Radar and more.

GH15 0.15µm GaN HEMT

The GH15 process from UMS is a state-of-the-art 0.15µm HEMT on 4” GaN-on-SiC wafers. Thanks to a 70µm SiC substrate, thermal dissipation is enhanced; parasitics are reduced; and transistors exhibit a typical 4.2W/mm output power density while maintaining a good gain at 40GHz. The availability of two densities of MIM capacitors facilitates MMIC design. The process is ideal for high power and high PAE amplifiers, LNA and high-power switches designed for a wide range of applications, such as PtP Radio, 5G, Satcom, Broadband Amplification, and Hi-Rel products.

PH10|GaAs pHEMT

The PH10 process is a state of the art 4” GaAs/InGaAs pHEMT exhibiting very low noise performance. Typically, 2dB minimum noise figure is at 60GHz. The short 0.1µm gate length provides high linear gain and very good noise figure targeting applications up to 110GHz. The process is ideal for millimeter and micrometer waves applications, such as E-band PtP Communication, W-band Radar, Space Instrumentation, Security Sensors, and Fiber Optics.

UMS BES|GaAs pHEMT

Buried Epitaxial Schottky (BES) pHEMT is offered for high-performance power electronics. BES are characterized by a low forward voltage, extremely short switching times, very low leakage currents, a high breakdown voltage value, and the ability to operate at high temperatures.

UMS ULRC-20|GaAs

ULRC-20 is a GaAs passive process gathering GaAs properties: high resistivity, good isolation and high dielectric constant. This process is optimized for reproducibility, power handling, low losses, up to high frequency and for high volume / high yield production. ULRC-20 allows very diverse passive circuit design including accurate microwave filters, RF power combiners, microwave baluns, matching elements, low losses lines; power bar input and output matching circuits. ULRC-20 is widely recommended to design hybrid microwave circuits for amplifier modules used into antenna transmitters and receivers such as Radars, Telecom and Space Communication systems.

Technology Details

GH25 - 0.25µm GaN HEMT

AlGaN/GaN on SiC, 100µm thickness
4.5 W/mm power density
Ids+: 1A/mm, Gm: 290mS/mm
Biasing up to 30V
Vbds > 100V
255pF/mm^2 MIM density
30 &1000 Ohms/sq metallic resistors
Via-holes, 2 metal layers
Electro-thermal non-linear transistor model
Power amplification up to 20GHz

GH15 - 0.15µm GaN HEMT

AlGaN/GaN on SiC, 70µm thickness
4.2 W/mm power density
Ids+: 1.45A/mm, Gm: 405mS/mm
Biasing up to 25V
Vbds > 80V
255 and 355 pF/mm^2 MIM density
30 &1000 Ohms/sq metallic resistors
Via-holes, 2 metal layers
Electro-thermal non-linear transistor model
Power amplification up to 40GHz

PH10 - 0.1µm Low Noise GaAs pHEMT

GaAs pHEMT, 70µm thickness
Gm >750mS/mm at Vds=2.0V
Idss >200mA/mm at Vds=2.V
Vbds: 6V
330pF/mm^2 MIM density
30 &1000 Ohms/sq metallic resistors
120 Ohms/sq GaAs resistor
Via-holes, 2 metal layers
Cold FET and passives models

UMS BES|GaAs pHEMT

1 µm Schottky diode
Fully optical process
Typical Ft: 3THz
TaN and TiWSi resistors
GaAs resistors
M.I.M. capacitors
Air bridges
Via-holes
Wafer thickness: 100µm
Wafer diameter: 100mm
Space evaluated process according to ESA (EPPL)

UMS ULRC-20|GaAs

Fully optical process
M.I.M. capacitors
Inductors
Metallic resistors
TaN and TiWSi resistors
Via holes through the GaAs substrate
Thick Au lines
Wafer thickness: 100µm
Wafer diameter: 4”
Optional coating compatible with plastic package

www.europractice.com

Would you like to discover more?

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