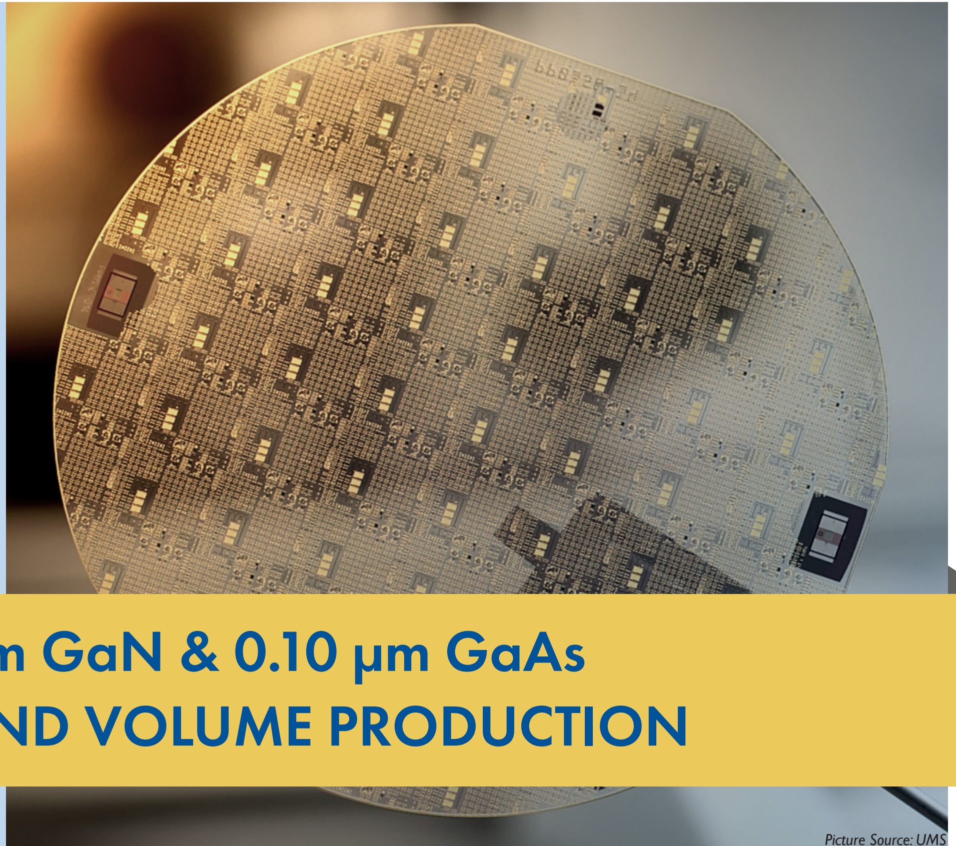

UMS 0.25, 0.15 μm GaN & 0.10 μm GaAs PROTOTYPING AND VOLUME PRODUCTION

Picture Source: UMS

EUROPRACTICE provides users with access to UMS GaN and GaAs technologies for Multi-Project-Wafer prototyping and Small Volume Production.

Why EUROPRACTICE?

- Affordable and easy access to Prototyping and Small Volume Production services for academia and industry.
- MPW (Multi-Project-Wafer) runs for various technologies, including ASICs, Photonics, MEMS and more.
- Advanced packaging, system integration solutions and test services.

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 than12dB 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.

Technology Details

GH25 - 0.25µm GaN HEMT	GH15 - 0.15µm GaN HEMT	PH10 - 0.1µm Low Noise GaAs pHEMT
AlGaN/GaN on SiC, 100µm thickness	AlGaN/GaN on SiC, 70µm thickness	GaAs pHEMT, 70µm thickness
4.5 W/mm power density	4.2 W/mm power density	Gm >750mS/mm at Vds=2.0V
Ids+: 1A/mm, Gm: 290mS/mm	Ids+: 1.45A/mm, Gm: 405mS/mm	Idss >200mA/mm at Vds=2.V
Biasing up to 30V	Biasing up to 25V	Vbds: 6V
Vbds > 100V	Vbds > 80V	330pF/mm² MIM density
255pF/mm² MIM density	255 and 355 pF/mm² MIM density	30 &1000 Ohms/sq metallic resistors
30 &1000 Ohms/sq metallic resistors	30 &1000 Ohms/sq metallic resistors	120 Ohms/sq GaAs resistor
Via-holes, 2 metal layers	Via-holes, 2 metal layers	Via-holes, 2 metal layers
Electro-thermal non-linear transistor model	Electro-thermal non-linear transistor model	Cold FET and passives models
Power amplification up to 20GHz	Power amplification up to 40GHz	

Would you like to discover more?

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