United Monolithic Semiconductors

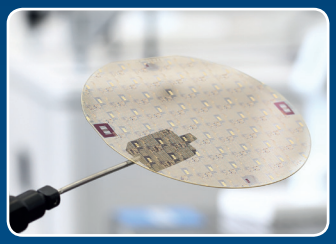
GaN TECHNOLOGY

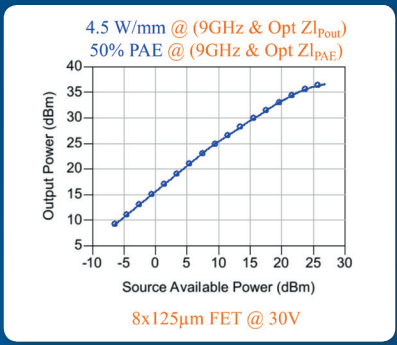
The 0.25µm GaN HEMT MMIC process

Space Evaluated Technology

GH25 GaN process is optimized for high power amplification up to 20GHz.

The power density combined with a thermal dissipative SiC substrate reaches 4.5W/mm. This MMIC process includes MIM capacitors, inductors, air bridges, metallic resistors, via through the substrate and two metal layers for interconnections. The good HEMT noise performance also allows design of LNAs up to 20GHz.





GH25 is the ideal process to design:

- High power amplifiers
- Robust LNA
- High Power switches

Applications targeted with GH25:

- Telecommunication
- Satcom
- Electronic Warfare
- Radar

Process Design Kits (PDK) include non-linear electro-thermal models, noise model, diodes & switches models, passive models, all with associated library elements.

Process main features

Element	Typical Value
Vt	-3,5V
Idss	0,86A/mm
Ids+	1A/mm
Gm	290mS/mm
Vbds	>120 Volts
VdsDC	25V (For CW Operation) • 30V in pulsed mode
Ft	25GHz
Fmax	above 50GHz
MIM density	255pF/mm2
Metallic resistors	28 and 1000 Ohms/sq
Via-holes	available on 100µm substrate thickness

Build your own solution with UMS

www.ums-gaas.com

Who better than our customers can speak about GH25 ?

"Reliable models. We were please to find an excellent agreement between simulations and measurement results.

Professional Test Jig design and qualification test services. Very pleased by the quality of service."

Maurizio Cirillo, Head of RF & Microwave Hardware Development - Rheinmetall Italia S.p.A

"GH25 PDK comes with a comprehensive set of reliable actives and passives models for the design of state-of-the-art broadband PAs. UMS foundry service supports the designer throughout post-layouting phase, from DRC analysis to process yield optimization."

Diego Palombini, PhD, Microwave Engineer Elettronica S.p.A.

"The UMS PDK for GH25 facilitated a first pass success of a 10W K-band HPA. Correlations between measured and simulated results were excellent for both small and large signal conditions."

Thomas Young, Senior MMIC Designer – Arralis

"We used the UMS GH25 technology to deliver a 40W transmit/receive MMIC for a European space project. We observed good agreement between measured results and the foundry models."

Senior Engineer VIPER RF

"Thanks to the high-performance GH25 process and its very accurate and complete in-house models with a user-friendly interface, all the targeted performances of our X and wideband band HPAs have been achieved with only one run."

Components Team THALES DMS

"We experienced several designs based on GH25 GaN process with nice measured results. Good 'simulation / measurement' agreements are obtained thanks to the electrical modeling accuracy and the useful help and guidelines given by UMS."

D. Langrez, Head of MMIC Design Team, Thales Alenia Space - France

"We use GH25 since many years. During this time the PDK has been improved continuously. Due to the perfect prediction even complex MMICs can be successfully designed. The spread of the technology is pleasantly low, it seems that the technology is very stable."

Patrick Schuh, Expert for GaN based circuits & RF power modules - HENSOLDT

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