# FOUNDRY SERVICES

united monolithic semiconductors

UMS has developed a proven family of GaAs based processes for **high performance low noise** and **high power MMICs.** These processes are extensively used by foundry customers and by UMS to offer MMIC solutions for the Defence, Automotive, Space, Telecom and Industrial markets.

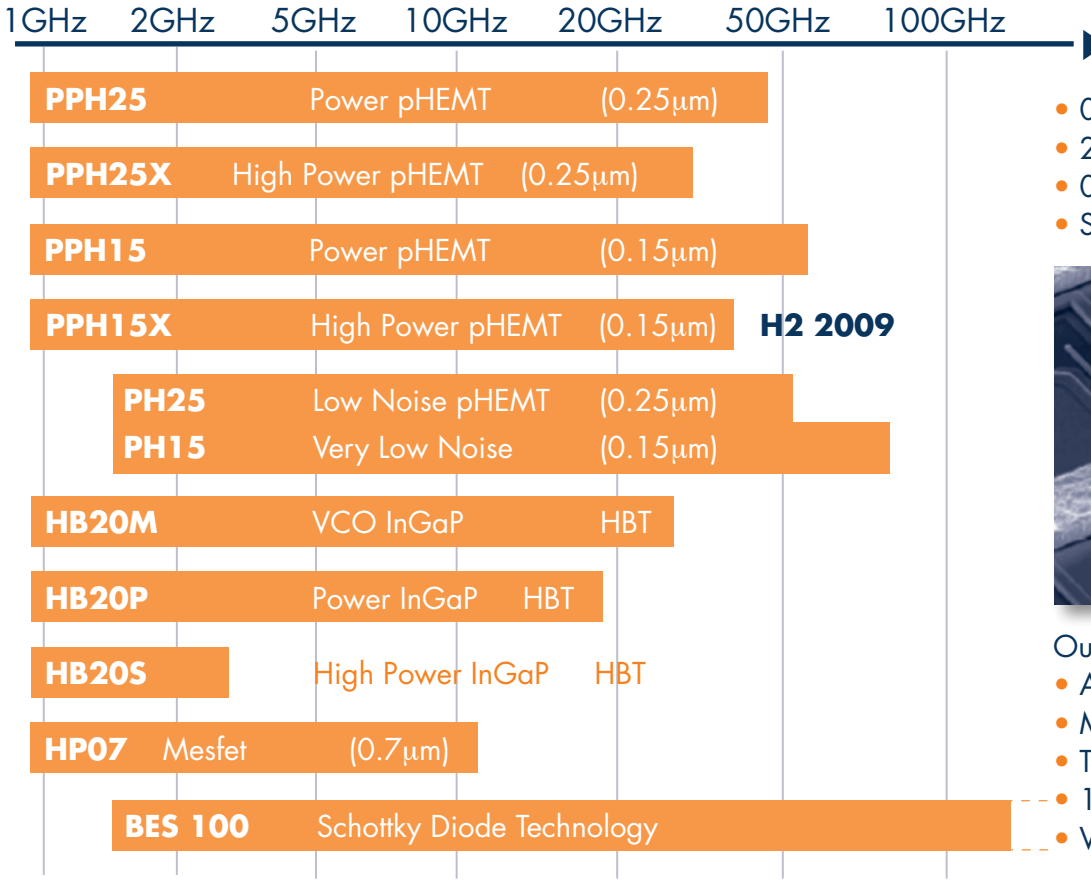
UMS **Design Manuals** and **Design Kits** developed by highly skilled engineers support the realisation of your own MMICs. During the design phase, the UMS Foundry team provides support and supplies you with wafers that meet **Process Control Monitor specifications.**

In addition, UMS offers several optional services including, **foundry training, on-wafer tests** (DC, RF, noise, power), **wafer dicing, die sorting**, **picking** and **advanced packaging.**

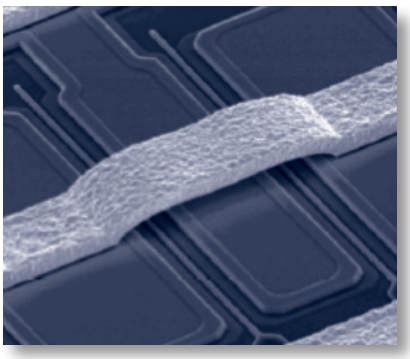
This comprehensive range of services fully contributes to successful partnerships with customers involved in different areas of activities for example *Defence, Space, Telecom and ISM.*

## RF & mm-wave applications

UMS offers access to fully tested, high-performance and reliable GaAs processes for MMIC design and production. Our UMS state-of-the-art HBT and pHEMT technologies as well as support services, will allow you to efficiently design and have your own circuits manufactured.




- 0.25 & 0.15µm pHEMT
- 2µm HBT technology
- 0.7µm MESFET
- Schottky technology



Our processes include:

- Air bridges
- MIM capacitors
- TaN and TiWSi resistors
- 100µm & 70µm thinning
- Via-holes

# Open processes

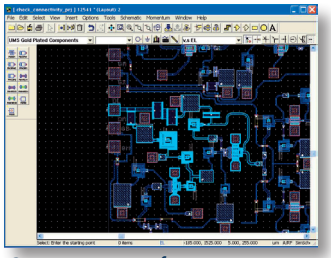
| Process | PH25 Low Noise | PH15 Low Noise | PPH25 Power | PPH25X Power | PPH15 Power | HB20P Power | HB20S High Power | HB20M VCO | HP07 | BES |
|---|---|---|---|---|---|---|---|---|---|---|
| **Active device** | pHEMT | pHEMT | pHEMT | pHEMT | pHEMT | HBT | HBT | HBT | MESFET | Schottky |
| **Power Density** | 250mW/mm | 300mW/mm | 700mW/mm | 900mW/mm | 600mW/mm | 3500mW/mm | 5000mW/mm | 2000mW/mm | 400mW/mm | - |
| **Gate Length** | 0.25µm | 0.15µm | 0.25µm | 0.25 µm | 0.15µm | 2µm Emitter width | 2µm Emitter width | 2µm Emitter width | 0.7µm | 1µm |
| **Ids (gm max) Ids sat/Ic** | 200mA/mm 500mA/mm | 220mA/mm 550mA/mm | 200mA/mm 500mA/mm | 170mA/mm 450mA/mm | 300mA/mm 600mA/mm | 0.3mA/µm² | 0.2mA/µm² | 0.3mA/µm² | 300mA/mm 450mA/mm | - |
| **$V_{BDS}$ / $V_{BCE}$** | > 6V | > 4.5V | > 12V | > 18V | > 8V | > 16V | > 35V | > 14V | > 14V | < -5V (Anode/ Cathode |
| **Cut off freq.** | 90GHz | 110GHz | 50GHz | 45GHz | 75GHz | 25GHz | 12GHz | 30GHz | 15GHz | 3THz |
| **Vpinch** | - 0.8V | - 0.7V | - 0.9V | - 0.9V | - 0.9V | - | - | - | - 4.0V | - |
| **Gm max / β** | 560mS/mm | 640mS/mm | 450mS/mm | 400mS/mm | 550mS/mm | 70 | 50 | 60 | 110mS/mm | - |
| **Noise / Gain** | 0.6dB / 13dB @10GHz 2dB / 8dB @40GHz | 0.5dB / 14dB @10GHz 1.9dB / 6dB @60GHz | 0.6dB / 12dB @10GHz | - | 1.6dB / 7dB @40GHz | - | - | - | - | - |

# Foundry Course

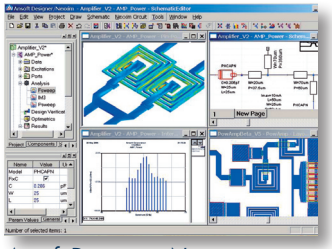
The UMS Foundry Training Course gives you the opportunity to have access to the complete MMIC design methodology provided by our experienced Product Line designers and engineers. Topics presented cover all needed aspects: process, modelling, CAD, reliability, packaging, electrical measurement, picking.

Technological processes, design flows and production constraints are addressed in detail during these 2-day sessions.

# Design Kits

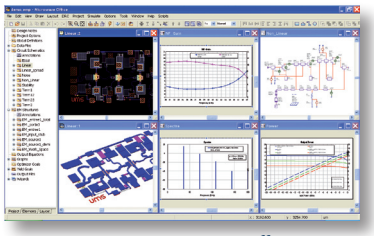


*Connectivity verification (Agilent-ADS)*



*Ansoft Designer - Nexxim*

UMS modelling and CAD Teams work on well established and advanced process technologies in order to provide complete and accurate Design Kits (DK). These include active (small and large signal scalable models) and passive accurate models directly linked to auto-layout and libraries options, compatible with your tools and operating systems. Related issues such as thermal behaviour, noise parameters, technological spreads are also addressed.



*Microwave Office (AWR)*

UMS Design Kits are fully compatible with Microwave Office from AWR, ADS from Agilent for all processes and Nexxim from Ansoft for PH15, BES and HB20P.

Early access to advanced process may be offered under specific conditions for development purpose. In such a case, the customer will be provided with a preliminary DK which will be regularly updated with the latest information.

# Basic Services

**The basic UMS Foundry Service includes:**

- Delivery of a Design Kit related to suitable process, compliant with your Operating System and your simulation tools,
- Layout verification (3 DRC runs) and Foundry Design Review (FDR),
- Mask manufacturing,
- Wafers manufacturing: 2 wafers for a prototyping run,
- RF & DC PCMs measurements and visual inspection for wafer acceptance,
- Delivery of wafers in GelPak® Box or diced on UV-Film,
- Lot tracking tool available on our website.


**The basic service may be completed with the following options:**

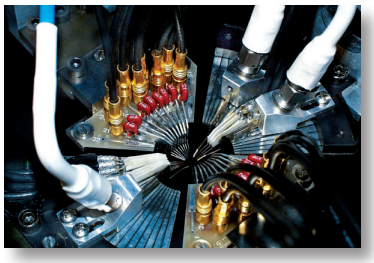
- Foundry course training in UMS-Orsay (2-day session),
- Design consulting by skilled designers,
- On-wafer DC or RF testing,
- Delivery of tested and visually inspected chips according to the required level (commercial, space),
- Picking and delivery of KGD in GelPak® Box,
- Production of ASICs: production consulting and product review,
- Early access to process in development through specific conditions.

# Measurements

In addition to wafer fabrication, UMS provides a unique set of automated on-wafer testing solutions for circuit characterization and sorting according to your product specifications.
More than 12 automatic test stations, including one very high volume tester, enable full circuits characterization from 1 to 100GHz.
100% functional on-wafer tests are available (S parameters, Noise, Power, DC).

Individual die numbering allows identification of chips for sorting and picking, according to your sorting criteria definition.

Manufacturing and production support and services can also be offered at this level in order to help you to improve the yield of your circuits.



# Quality

All of the processes used for Foundry services are designed and continuously improved to the benefit of our customers.

PH25, PPH15, PPH25, PPH25X, HB20P, HB20M, HB20S, HP07 and PH15 have already been successfully evaluated by the European Space Agencies.

UMS is certified ISO 9001, ISO 14001 and ISO TS16949.

# Contact UMS

UMS is continuously improving and developing technologies to meet the needs of the market place. In addition to Foundry services, UMS offers a complete family of microwave products and solutions, both in standard and ASIC forms. Advanced packaging is also available.

## For further information about our products and ASICs, please contact:

**UMS Marketing and Sales Department**
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## For further technical information about foundry services, please contact our foundry team:

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## Visit our Website for more info:

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