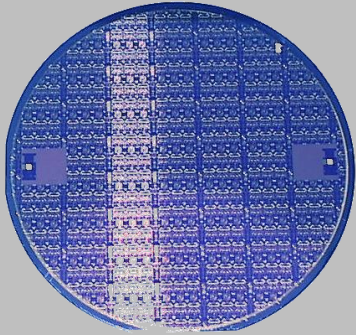


## PH25

## 0.25 $\mu$ m low noise pHEMT



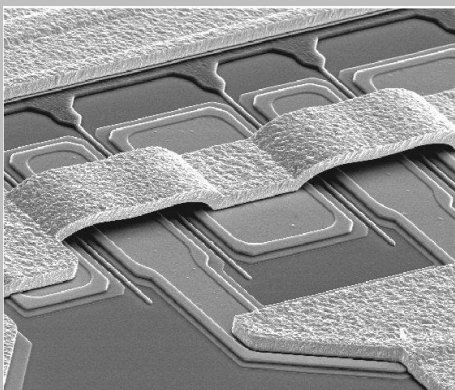
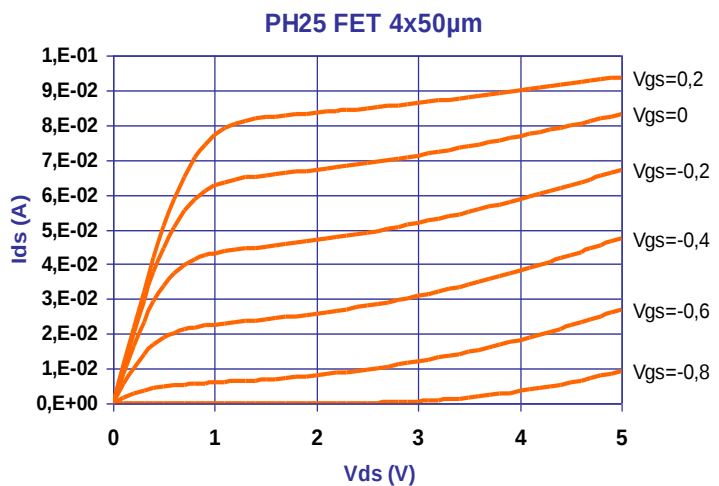
### Description

The 0.25 $\mu$ m pHEMT process is optimized for low noise and multipurpose operation up to 60GHz. The process includes two metal interconnect layers, precision TaN resistors, high values TiWSi resistors, MIM capacitors, air-bridges and via-holes through the substrate.

Overcoating layer is available as an option.

### Main Features

- 0.25 $\mu$ m pHEMT process
- Typical  $F_t$ : 90GHz
- TaN and TiWSi resistors
- GaAs resistors
- M.I.M. capacitors
- Air bridges
- Via-holes
- Operation  $V_{ds}$ = 3V
- Wafer thickness: 100 $\mu$ m
- Wafer diameter: 100mm
- Space evaluated process according to ESA (EPPL)



### Design Kit Characteristics

- Available for ADS from Keysight, MWO from AWR
- DRC on line with ADS DK
- Schematic entry with autolayout generation
- Scalable models for passive devices
- Scalable non-linear models for FET
- Scalable linear and noise model for FET
- Scalable models for series and parallel switch configuration
- Scalable non linear models for reversed (varactors) and forwarded diodes (mixers)
- Temperature effect
- Data for spread analysis

## Electrical Characteristics

| ELEMENT / Parameters    | Min  | Typ   | Max  | Units | Conditions             |
|-------------------------|------|-------|------|-------|------------------------|
| FET /                   |      |       |      |       |                        |
| Threshold voltage Vp    | -1.0 | -0.75 | -0.5 | V     | Vds=2.5V, Ids=Idss/100 |
| Transconductance Gm     | 400  | 550   | -    | mS/mm | Vds=2.5V, Vgs=0V       |
| Saturation current Idss | 200  | 340   | 460  | mA/mm | Vds=2.5V, Vgs=0V       |
| Breakdown voltage Vbds  | 6    | 7.5   | -    | V     | Ids= Idss/100          |

### Coplanar FET (2x75μm) equivalent circuit

|                         |     |     |     |    |                  |
|-------------------------|-----|-----|-----|----|------------------|
| Transconductance Gme    | 70  | 85  | 100 | mS | Vds=3.0V, Vgs=0V |
| Input capacitance Cin   | 120 | 150 | 180 | fF | Vds=3.0V, Vgs=0V |
| Feedback capacitance Cf | 20  | 25  | 30  | fF | Vds=3.0V, Vgs=0V |
| Output resistance Rout  | 160 | 220 | 300 | Ω  | Vds=3.0V, Vgs=0V |

### TaN RESISTOR /

|                  |    |    |    |          |  |
|------------------|----|----|----|----------|--|
| sheet resistance | 26 | 30 | 34 | Ω/square |  |
|------------------|----|----|----|----------|--|

### MIM CAPACITOR /

|         |     |     |     |        |       |
|---------|-----|-----|-----|--------|-------|
| density | 300 | 330 | 360 | pF/mm2 | @1MHz |
|---------|-----|-----|-----|--------|-------|

### TiWSi RESISTOR /

|                  |     |      |      |          |  |
|------------------|-----|------|------|----------|--|
| sheet resistance | 800 | 1000 | 1200 | Ω/square |  |
|------------------|-----|------|------|----------|--|

### GaAs RESISTOR

|                          |     |      |     |          |  |
|--------------------------|-----|------|-----|----------|--|
| Ohmic contact resistance | -   | 0.15 | 0.3 | Ω.mm     |  |
| GaAs sheet resistance    | 100 | 120  | 140 | Ω/square |  |

## Ordering Information

Visit our Website for more info: <http://www.ums-rf.com>

Please contact our Sales at: [marketing.sales@ums-rf.com](mailto:marketing.sales@ums-rf.com) & Tel: +33 1 69 86 32 00 / Fax: + 33 1 69 86 34 34

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