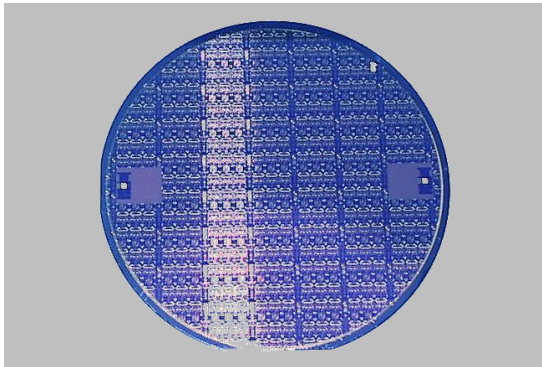




## PH10

## 0.1 $\mu$ m very low noise pHEMT



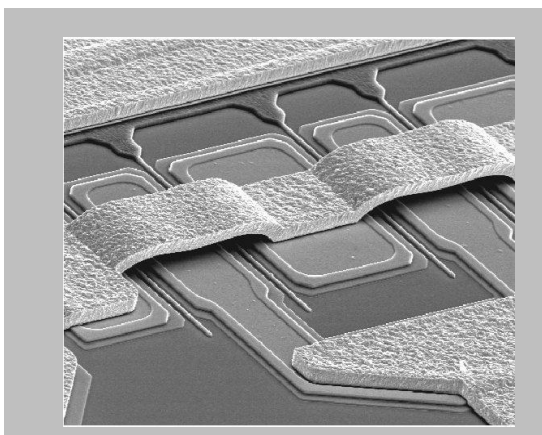
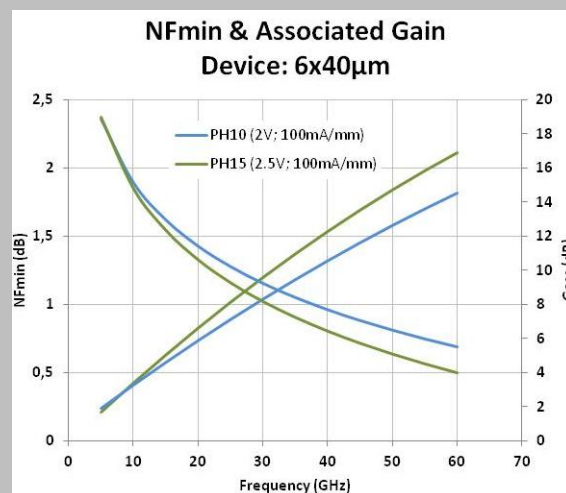
### Description

The 0.1 $\mu$ m pHEMT process is optimized for very low noise up to 110GHz. 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

- 0.1 $\mu$ m pHEMT process
- Typical Ft: 130GHz
- TaN and TiWSi resistors
- GaAs resistors
- M.I.M. capacitors
- M.I.M. capacitors over via-hole
- Air bridges
- Via-holes
- Operation Vds= 3.0V
- Wafer thickness: 70 $\mu$ m
- Wafer diameter: 100mm
- Space evaluated process according to ESA (EPPL)



### Design Kit Characteristics

- Available for ADS from Keysight and MwO from NI-AWR
- ADS PDK includes DRC rules and Momentum stack-up files
- Scalable non-linear model for FET with noise sources
- Data for spread analysis

## Electrical Characteristics

ELEMENT / Parameters	Min	Typ	Max	Units	Conditions
<b>FET /</b>					
Threshold voltage Vp	-0.7	-0.45	-0.2	V	Vds=2.0V, Ids=Idss/100
Transconductance Gmmax	625	750	-	mS/mm	Vds=2.0V, Gm_max
Saturation current Idmax	200	280	-	mA/mm	Vds=2.0V, Gmmax
Breakdown voltage Vbds	5.0	6.0	-	V	Ids= Idss/100

### Coplanar FET (2x75µm) equivalent circuit

Transconductance Gme	85	100	115	mS	Vds=3.0V, Vgs=0V
Input capacitance Cin	90	110	125	fF	Vds=3.0V, Vgs=0V
Feedback capacitance Cf	23	28	33	fF	Vds=3.0V, Vgs=0V
Output resistance Rout	80	110	140	Ω	Vds=3.0V, Vgs=0V

### TaN RESISTOR /

sheet resistance	26	30	34	Ω/square	
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### MIM CAPACITOR /

density	300	330	360	pF/mm <sup>2</sup>	@1MHz
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### TiWSi RESISTOR /

sheet resistance	800	1000	1200	Ω/square	
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### GaAs RESISTOR

Ohmic contact resistance	-	0.13	0.2	Ω.mm	
GaAs sheet resistance	100	120	130	Ω/square	

## Ordering Information

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

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

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