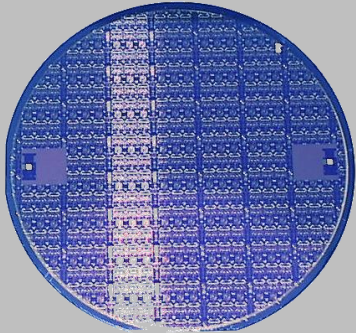




PH10-10

0.1 μ m very low noise pHEMT



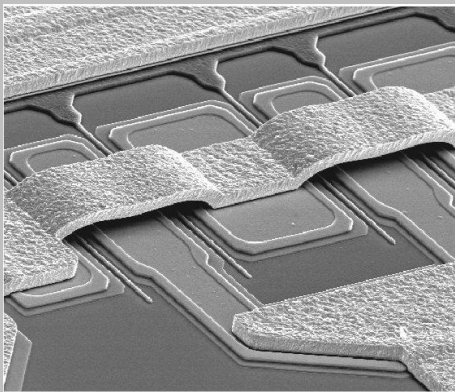
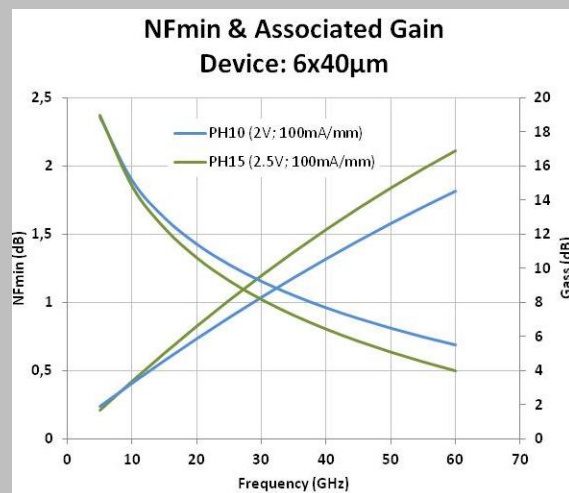
Description

The 0.1 μ 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.
Hot-vias are available as an option

Main Features

- 0.1 μ m pHEMT process
- Typical F_t : 130GHz
- TaN and TiWSi resistors
- GaAs resistors
- M.I.M. capacitors
- M.I.M. capacitors over via-hole
- Air bridges
- Via-holes
- Operation V_{ds} = 2V to 3V
- Wafer thickness: 70 μ m
- Wafer diameter: 100mm



Design Kit Characteristics

- Available for ADS from Keysight.
- DRC on line with ADS DK
- Scalable non-linear model for FET with noise
- Scalable models for passive devices
- Scalable non-linear models for FET (2 & 3 ports)
- Scalable models for series and parallel switch configuration
- Scalable non linear models for diodes (mixers)
- Data for spread analysis

Electrical Characteristics

ELEMENT / Parameters	Min	Typ	Max	Units	Conditions
FET /					
Threshold voltage V_p	-0.7	-0.45	-0.2	V	$V_{ds}=2.0V, I_{ds}=I_{dss}/100$
Transconductance G_{mmax}	625	750	-	mS/mm	$V_{ds}=2.0V, G_{m_max}$
Saturation current I_{dmax}	200	280	-	mA/mm	$V_{ds}=2.0V, G_{mmax}$
Breakdown voltage V_{bds}	5.0	6.0	-	V	$I_{ds}= I_{dss}/100$

Coplanar FET (2x75 μ m) equivalent circuit

Transconductance G_{me}	85	100	115	mS	$V_{ds}=3.0V, V_{gs}=0V$
Input capacitance C_{in}	90	110	125	fF	$V_{ds}=3.0V, V_{gs}=0V$
Feedback capacitance C_f	23	28	33	fF	$V_{ds}=3.0V, V_{gs}=0V$
Output resistance R_{out}	80	110	140	Ω	$V_{ds}=3.0V, V_{gs}=0V$

TaN RESISTOR /

sheet resistance	26	30	34	Ω /square	
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MIM CAPACITOR /

density	300	330	360	pF/mm ²	@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 & Tel: +33 1 69 86 32 00 / Fax: + 33 1 69 86 34 34

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