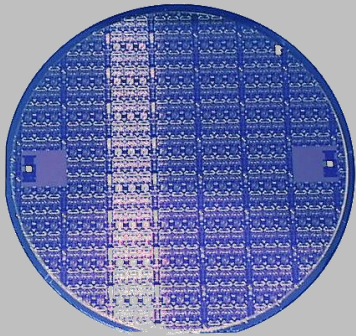


PH15

0.15 μ m very low noise pHEMT



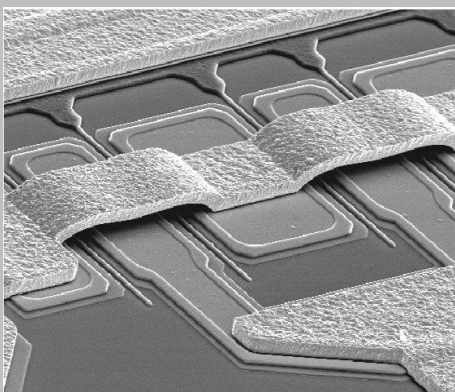
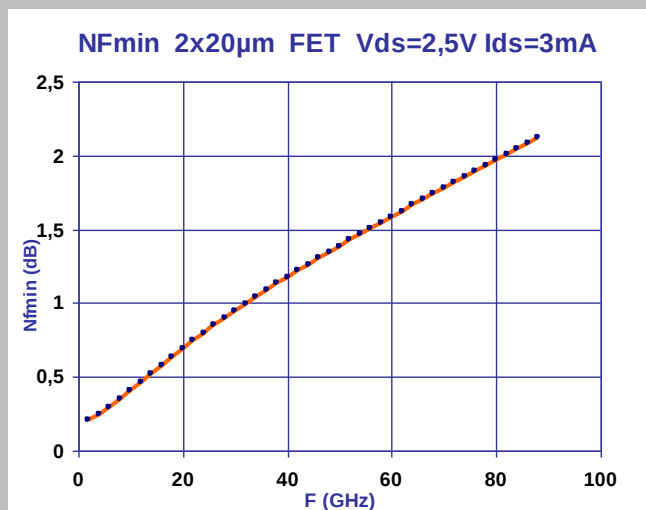
Description

The 0.15 μ m pHEMT process is optimized for very low noise 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

- 0.15 μ m pHEMT process
- Typical f_t : 110GHz
- TaN and TiWSi resistors
- GaAs resistors
- M.I.M. capacitors
- Air bridges
- Via-holes
- Operation V_{ds} = 2.5V
- Wafer thickness: 100 μ m
- Wafer diameter: 100mm
- Space evaluated process according to ESA (EPPL)



Design Kit Characteristics

- Available for ADS from Keysight, MWO from AWR and Nexxim from Ansoft
- DRC on line with ADS DK
- Schematic entry with autolayout generation
- Scalable models for passive devices
- Scalable non-linear model for FET with noise
- Scalable non linear model forwarded diodes (mixers and detectors)
- 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=2.0V, Ids=Idss/100
Transconductance Gmmax	580	650	-	mS/mm	Vds=2.0V, Gm_max
Saturation current Idmax	220	280	-	mA/mm	Vds=2.0V, Gmmax
Breakdown voltage Vbds	4.5	6	-	V	Ids= Idss/100

Coplanar FET (2x75µm) equivalent circuit

Transconductance Gme	80	95	110	mS	Vds=3.0V, Vgs=0V
Input capacitance Cin	80	110	140	fF	Vds=3.0V, Vgs=0V
Feedback capacitance Cf	20	25	30	fF	Vds=3.0V, Vgs=0V
Output resistance Rout	130	160	190	Ω	Vds=3.0V, Vgs=0V

TaN RESISTOR /

sheet resistance	26	30	34	Ω/square	
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MIM CAPACITOR /

density	290	330	370	pF/mm2	@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	0.3	Ω.mm	
GaAs sheet resistance	100	120	140	Ω/square	

Ordering Information

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

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