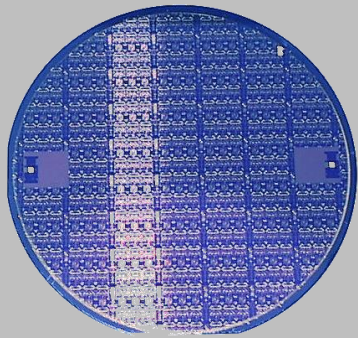


PH10-20

0.1 μ m very low noise pHEMT



Description

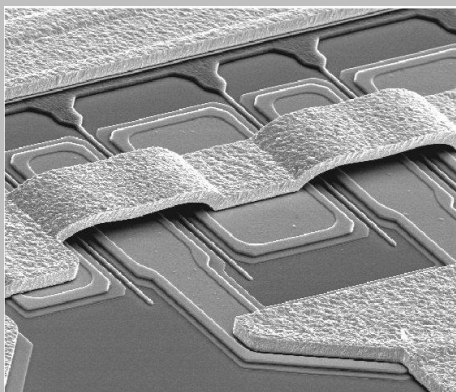
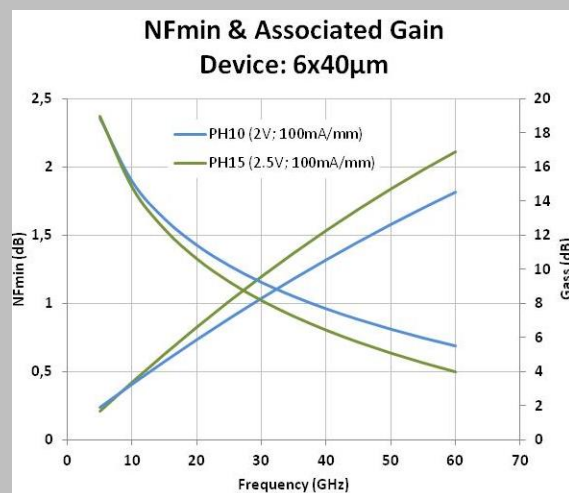
The 0.1 μ m pHEMT process is optimized for very low noise up to 110GHz. The process includes two metal interconnect layers, precision TaN resistors, high values TiWSi resistors, two densities of MIM capacitors and MIM over via capacitors, air-bridges, hot-vias and via-holes through the substrate.

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

Process Data Sheet

0.1µm very low noise pHEMT PH10-20

ELEMENT / Parameters	Min	Typ	Max	Units	Conditions
FET /					
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 /

Standard density	230	250	270	pF/mm2	@1MHz
High density (DHD)	550	625	700	pF/mm2	@1MHz

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-rf.com>

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

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