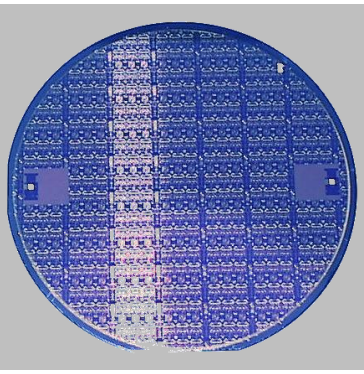
Foundry Process Data Sheet

United Monolithic Semiconductors

PH10

0.1µm very low noise pHEMT



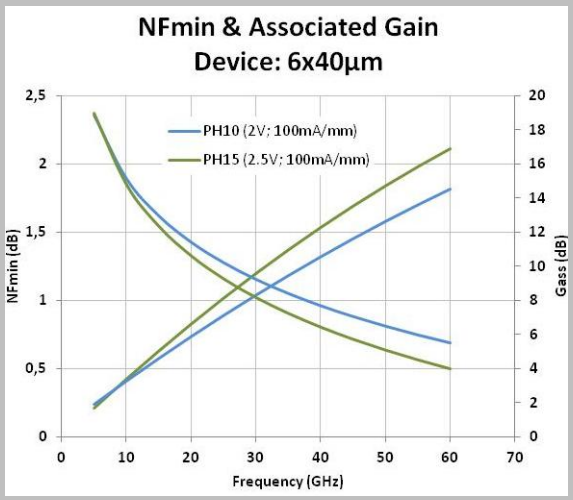
Description

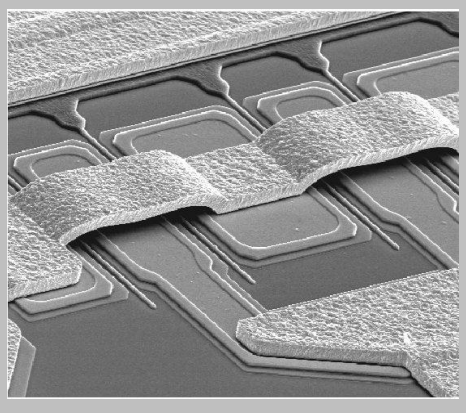
The 0.1µm pHEMT process is optimized for very low noise up to 110GHz. The process includes two metal interconnect layers, precision TaN resistors, high values TiWSi resistors, MIM capacitors, air-bridges and via-holes through the substrate.

Overcoating layer is available as an option.

Main Features

- 0.1µm 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: 70µm
- 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

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Electrical Characteristics

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	
MIM CAPACITOR /					
density	300	330	360	pF/mm2	@1MHz
TiWSi RESISTOR /					
sheet resistance	800	1000	1200	Ω/square	
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

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