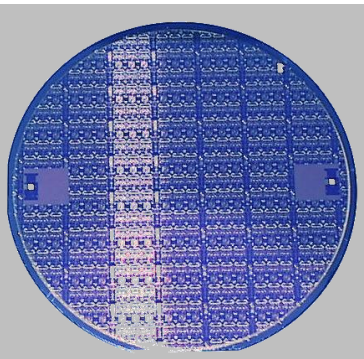
Foundry Process Data Sheet

United Monolithic Semiconductors

PH25 — 0.25µm low noise pHEMT



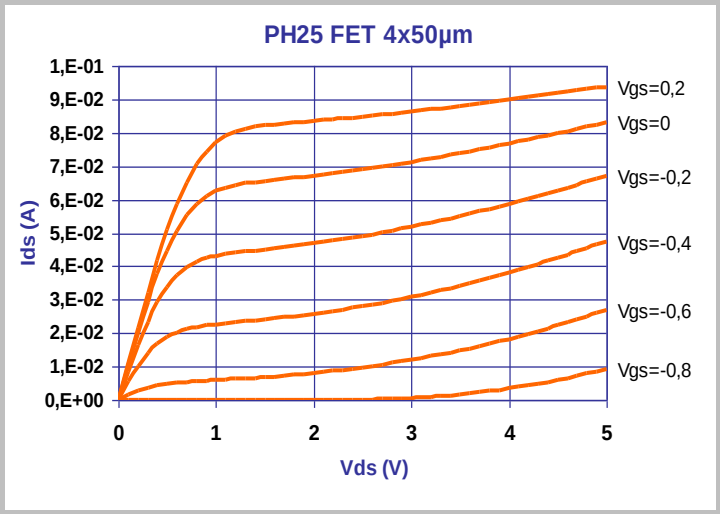
Description

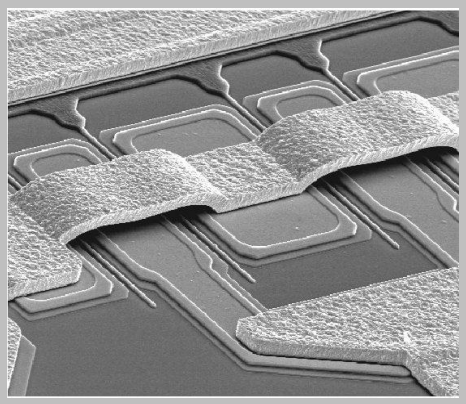
The 0.25µm pHEMT process is optimized for low noise and multipurpose operation up to 60GHz. The process includes two metal interconnect layers, precision TaN resistors, high values TiWSi resistors, MIM capacitors, air-bridges and via-holes through the substrate.

Overcoating layer is available as an option.

Main Features

- 0.25µm pHEMT process
- Typical Ft: 90GHz
- TaN and TiWSi resistors
- GaAs resistors
- M.I.M. capacitors
- Air bridges
- Via-holes
- Operation Vds= 3V
- Wafer thickness: 100µm
- Wafer diameter: 100mm
- Space evaluated process according to ESA (EPPL)





Design Kit Characteristics

- Available for ADS from Keysight, MwO from NI-AWR
- ADS PDK includes DRC rules and Momentum stack-up files
- Schematic entry with autolayout generation
- Scalable models for passive devices
- Scalable non-linear models for FET
- Scalable linear and noise model for FET
- Scalable models for series and parallel switch configuration
- Scalable non linear models for reversed (varactors) and forwarded diodes (mixers)
- Data for spread analysis

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Electrical Characteristics

ELEMENT / Parameters	Min	Typ	Max	Units	Conditions
FET /					
Threshold voltage Vp	-1.0	-0.75	-0.5	V	Vds=2.5V,Ids=Idss/100
Transconductance Gm	400	550	-	mS/mm	Vds=2.5V, Vgs=0V
Saturation current Idss	200	340	460	mA/mm	Vds=2.5V, Vgs=0V
Breakdown voltage Vbds	6	7.5	-	V	Ids= Idss/100
Coplanar FET (2x75µm) equivalent circuit					
Transconductance Gme	70	85	100	mS	Vds=3.0V, Vgs=0V
Input capacitance Cin	120	150	180	fF	Vds=3.0V, Vgs=0V
Feedback capacitance Cf	20	25	30	fF	Vds=3.0V, Vgs=0V
Output resistance Rout	160	220	300	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	-	0.15	0.3	Ω.mm	
GaAs sheet resistance	100	120	140	Ω/square	

Ordering Information

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

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