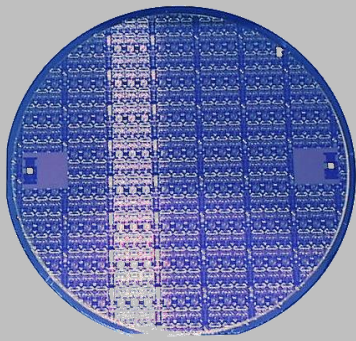


PPH15X-20

0.15 μ m power pHEMT



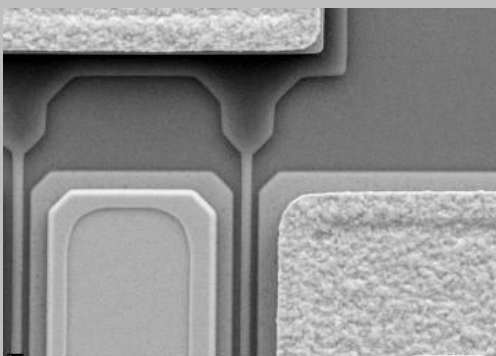
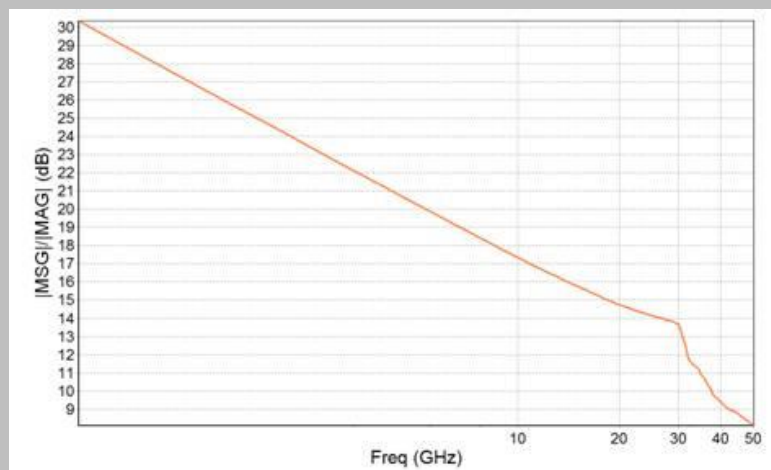
Description

This 0.15 μ m pHEMT process is optimized for wideband high power amplification up to 45GHz. 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 : 70GHz
- Power density: 800mW/mm
- TaN and TiWSi resistors
- GaAs resistors
- M.I.M. capacitors (standard & high density)
- Air bridges
- Via-holes
- Operation V_{ds} = 6.0V
- V_{bds} > 12.0V
- Wafer thickness: 70 μ m
- Wafer diameter: 100mm



Design Kit Characteristics

- Available for ADS from Keysight, MWO from AWR
- Scalable models for passive devices
- Non-linear model for source grounded FET

Electrical Characteristics

ELEMENT / Parameters	Min	Typ	Max	Units	Conditions
FET /					
Threshold voltage Vp	-1.2	-0.95	-0.7	V	Vds=2.0V, Ids=Idss/100
Transconductance Gm	430	-	-	mS/mm	Vds=2.0V, Vgs=0V
Saturation current Idss	270	-	-	mA/mm	Vds=2.0V, Vgs=0V
Breakdown voltage Vbds	12	14	18	V	Ids= Idss/100

Coplanar FET (2x75µm) equivalent circuit

Transconductance Gme	45	60	75	mS	Vds=3.0V, Vgs=0V
Input capacitance Cin	100	130	160	fF	Vds=3.0V, Vgs=0V
Feedback capacitance Cf	12	15	18	fF	Vds=3.0V, Vgs=0V
Output resistance Rout	300	400	500	Ω	Vds=3.0V, Vgs=0V

TaN RESISTOR /

sheet resistance	26	30	34	Ω/square	
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MIM CAPACITOR /

Standard Density	240	250	280	pF/mm2	@1MHz
High Density	550	625	700	pF/mm2	@1MHz

TiWSi RESISTOR /

sheet resistance	800	1000	1200	Ω/square	
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GaAs RESISTOR

Ohmic contact resistance		0.12	0.3	Ω.mm	
GaAs sheet resistance	85	95	105	Ω/square	

Ordering Information

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

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