

0.5 μ m HFET Process



- 0.5 μ m HFET offers excellent linearity and power density for wireless communication amplifiers that require super high linearity
- A linearity figure of merit (IP3-P1dB) of 20 dB can be achieved
- Design kits, models and samples are available upon request
- Excellent reliability with an MTTF of 2.95E+9 hours
- This process has been qualified and in production since 2005



Example of HFET Performance at 2 GHz

- $W_g = 600\mu\text{m}$
- Frequency=2 GHz, 1 MHz spacing
- IP3 measured at +8 dBm/tone

I_{ds}	80mA ~50% I_{dss}	
V_{ds}	5V	8V
Γ_s	0.246<-56.41	0.2068<-26.88
Γ_L	0.242<-39.68	0.3357<-12.72
Gain (dB)	13.7	12
IP3 (dBm)	41.2	43
P1dB (dBm)	21.9	24.8
IP3-P1dB (dB)	19.3	18.2
IP3 / Pdc	33.0	31.2

I_{ds}	100mA ~60% I_{dss}	
V_{ds}	5V	8V
Γ_s	0.387<-75.36	0.477<-54.52
Γ_L	0.206<-93.23	0.316<-28.42
Gain (dB)	12	12.3
IP3 (dBm)	43	44
P1dB (dBm)	23	25.4
IP3-P1dB (dB)	20	18.6
IP3 / Pdc	39.9	31.4



Example of HFET Performance at 5 GHz

- $W_g = 600\mu\text{m}$
- Frequency=5 GHz, 1 MHz spacing
- IP3 measured at +8 dBm/tone

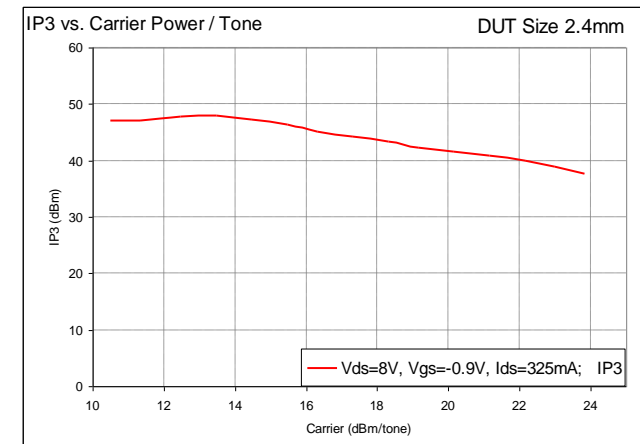
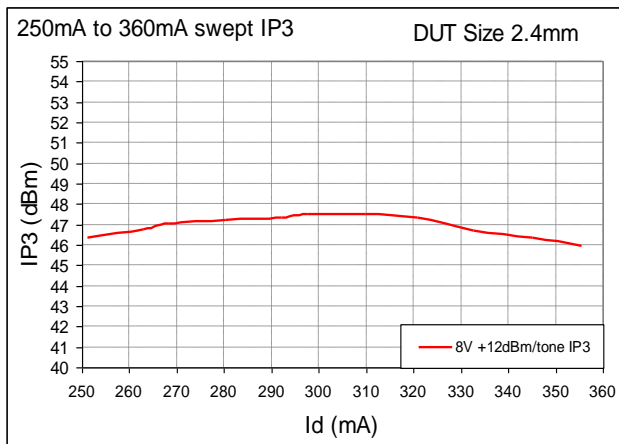
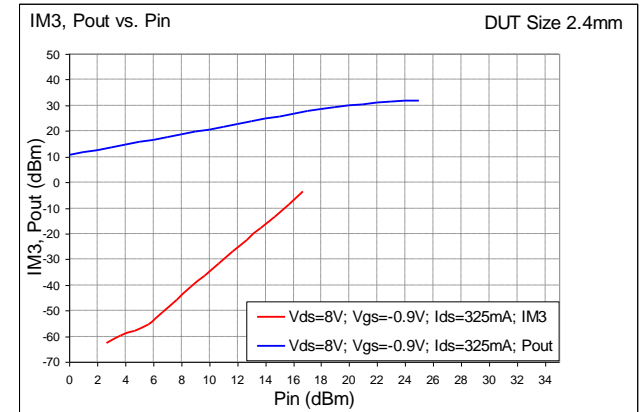
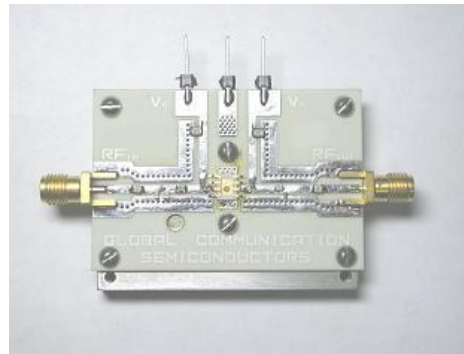
I_{ds}	80mA (~50% I_{dss})	
V_{ds}	5V	8V
Γ_s	0.6717<-168.03	0.2968<132.70
Γ_L	0.1425<65.66	0.3150<107.44
Gain (dB)	11	13
IP3 (dBm)	41.5	42.8
P1dB (dBm)	22	25.5
IP3-P1dB (dB)	19.5	17.3
IP3 / Pdc	35.3	29.8

I_{ds}	100mA (~60% I_{dss})	
V_{ds}	5V	8V
Γ_s	0.3916<175.44	0.2182<179.58
Γ_L	0.3016<122.84	0.1491<42.36
Gain (dB)	12.5	12.8
IP3 (dBm)	42.2	43
P1dB (dBm)	22.8	26
IP3-P1dB (dB)	19.4	17
IP3 / Pdc	33.2	24.9

1W HFET Performance at 2 GHz



2400um HFET Eval Board	
I_{ds}	325
% I_{dss}	50
V_{ds}	8
IP3 (dBm)	47.5
P1dB (dBm)	30
IP3-P1dB (dB)	17.5
IP3 / Pdc	21.6



2W HFET Performance at 2 GHz



4800um HFET Eval Board	
Ids	545
%Idss	42
Vds	7
IP3 (dBm)	50.5
P1dB (dBm)	33
IP3-P1dB (dB)	17.5
IP3 / Pdc	25.7

