

Features

Freq: 27~30GHz
 Gain: 22dB
 Output Power: 32dBm
 PAE: 35%
 Supply Voltage: +6V
 Supply Current: 450mA
 Chip Size: 2.45mm×1.2mm×0.1mm

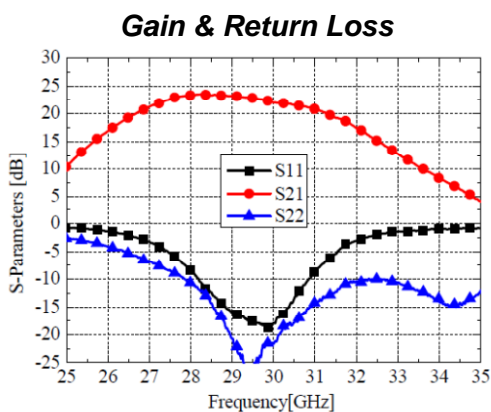
General Description

The HG138F is a GaAs pHEMT MMIC Power Amplifier operating between 27 and 30 GHz. The amplifier has been optimized to provide 22dB gain, 32 dBm of saturated power, and 35% PAE.

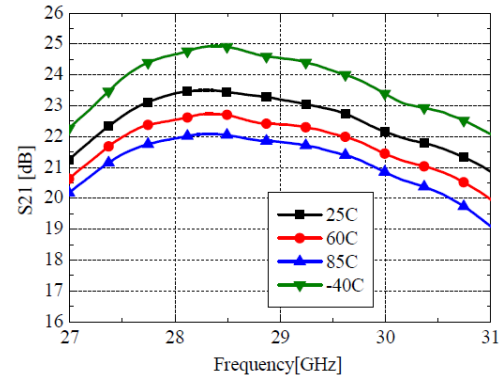
Electrical Specifications ($T_A=25^\circ\text{C}$, $V_{dd}=+6\text{V}$, $V_g = -0.8\text{V}$)

Parameter	Min.	Typ.	Max.
Freq(GHz)	27~30		
Gain (dB)	—	22	—
Input Return Loss (dB)	—	10	—
Output Return Loss (dB)	—	15	—
Output Power for 1 dB Compression(dBm)	—	31	—
Saturation Power (dBm)	—	32	—
PAE	—	35%	—

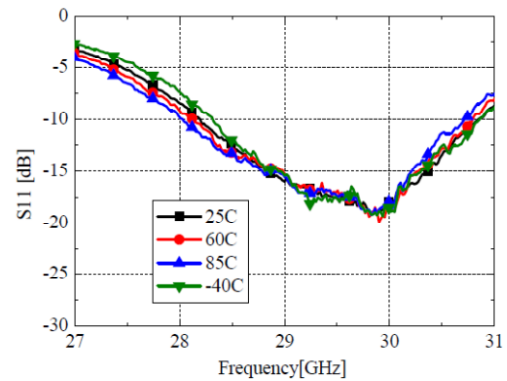
Measured Performance



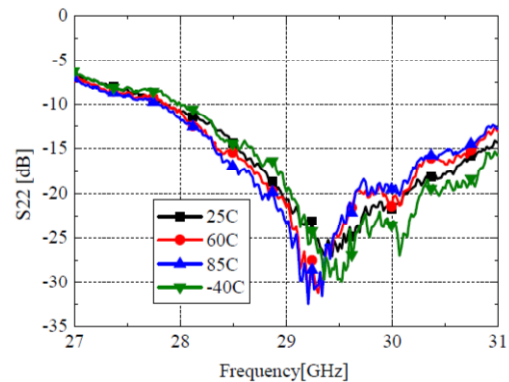
Gain vs. Temperature



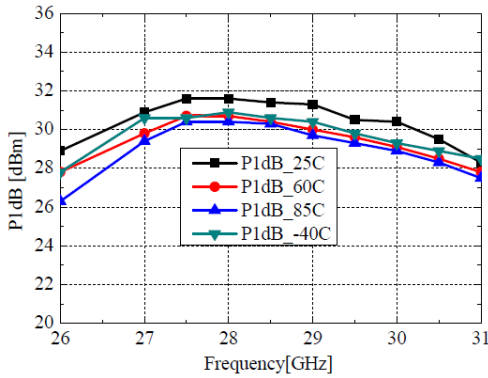
Input Return Loss vs. Temperature



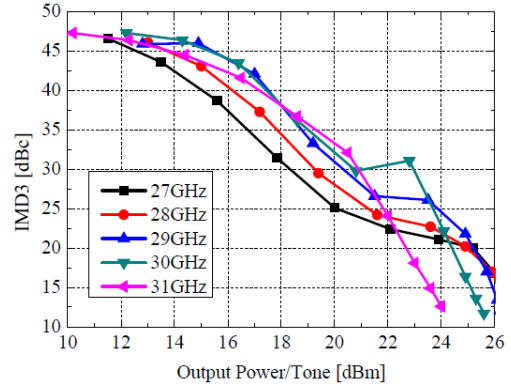
Output Return Loss vs. Temperature



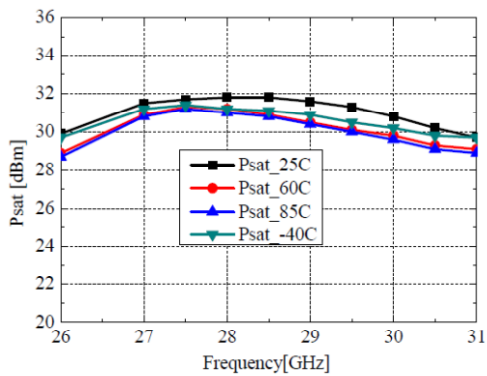
P1dB vs. Temperature



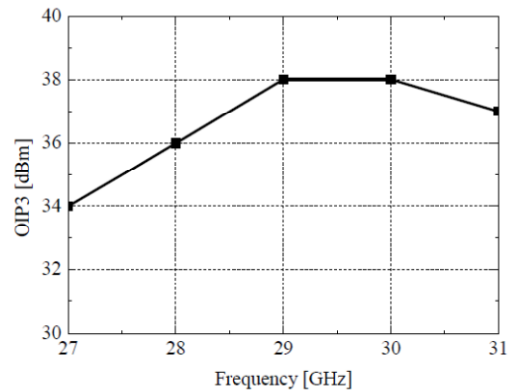
IMD3 vs. Freq.



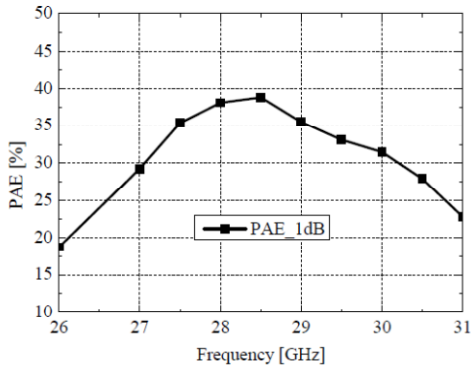
Psat vs. Temperature



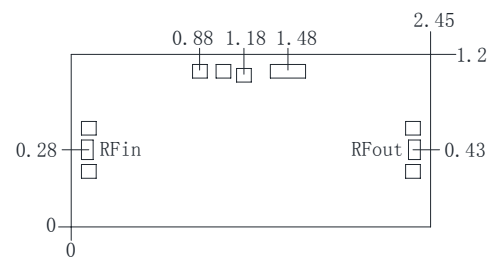
Output IP3@Pout/tone=17dBm



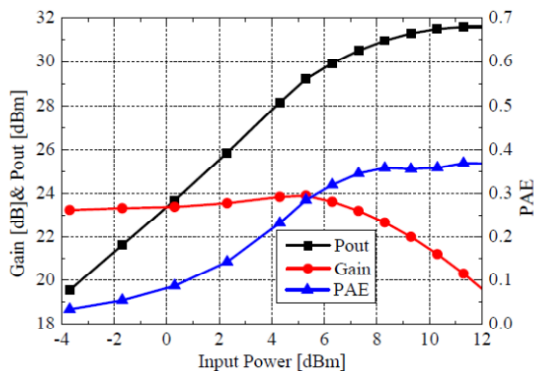
PAE



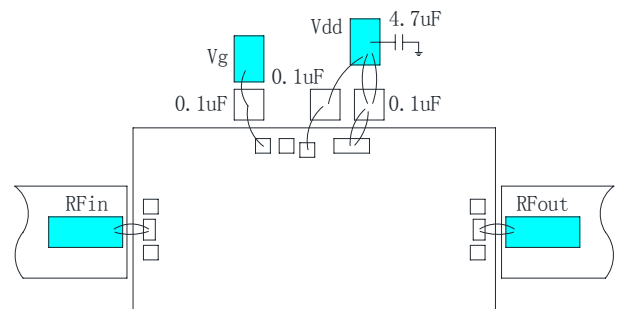
Outline Drawing (mm)



Gain & PAE & Pout



Assembly Diagram



Absolute Maximum Ratings

Supply Voltage	+6.5V
RF Input Power	+20dBm
Operating Temperature	-55°C ~ 125°C
Storage Temperature	-65°C ~ 150°C

Notes:

1. The chip should be stored in a dry and nitrogen environment, and used in a clean environment.
2. GaAs material is brittle, can not touch the surface of the chip, must be careful when using.
3. The chip is welding with conductive adhesive or alloy (alloy temperature should not exceed 300°C, and no more than 30 sec.), and should make it fully grounded.
4. The chip microwave port and substrate gap is not exceeding 0.05mm, with 50µm double gold ribbon bonding, suggested length of gold wire 250~400µm.
5. Chip microwave port with a DC blocking capacitor.
6. The chip is sensitive to static electricity, and should be protected against static electricity during storage and use.