

< High-power GaAs FET (small signal gain stage)>

# MGF0905A

L & S BAND / 2.5W

non - matched

## DESCRIPTION

The MGF0905A, GaAs FET with an N-channel schottky gate, is designed for use in UHF band amplifiers.

## FEATURES

- High output power  
Po=34.0dBm(TYP.) @f=1.65GHz,Pin=26dBm
- High power gain  
Gp=8.0dB(TYP.) @f=1.65GHz,Pin=26dBm
- High power added efficiency  
P.A.E =40%(TYP.) @f=1.65GHz,Pin=26dBm

## APPLICATION

- For UHF Band power amplifiers

## QUALITY

- GG

## RECOMMENDED BIAS CONDITIONS

- Vds=8V • Ids=800mA • Rg=100Ω Refer to Bias Procedure

## Absolute maximum ratings (Ta=25°C)

| Symbol | Parameter               | Ratings     | Unit |
|--------|-------------------------|-------------|------|
| VGDO   | Gate to drain voltage   | -17         | V    |
| VGSO   | Gate to source voltage  | -17         | V    |
| ID     | Drain current           | 3200        | mA   |
| IGR    | Reverse gate current    | -10         | mA   |
| IGF    | Forward gate current    | 21.5        | mA   |
| PT*1   | Total power dissipation | 12          | W    |
| Tch    | Channel temperature     | 175         | °C   |
| Tstg   | Storage temperature     | -65 to +175 | °C   |

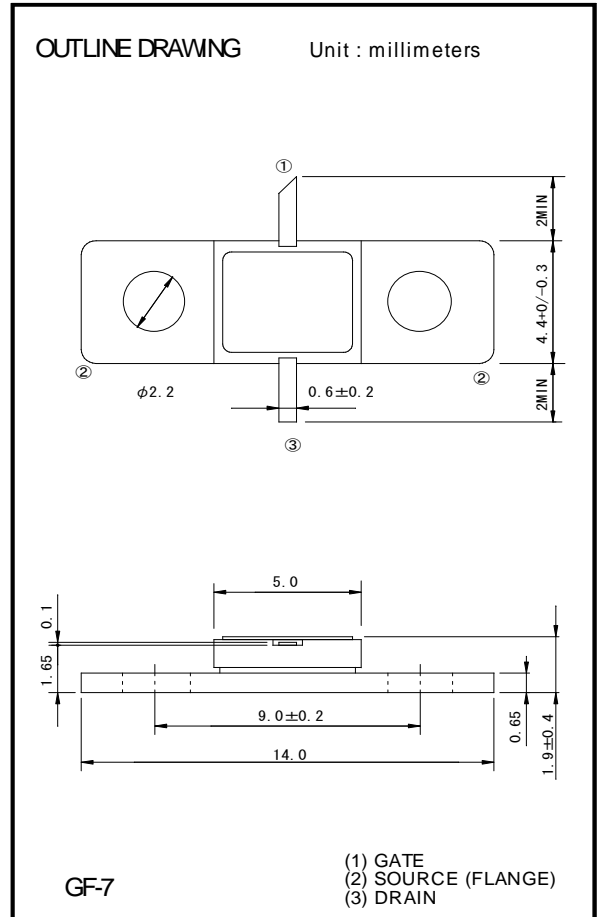
\*1:Tc=25°C

## Electrical characteristics (Ta=25°C)

| Symbol       | Parameter                      | Test conditions         | Limits |      |      | Unit |
|--------------|--------------------------------|-------------------------|--------|------|------|------|
|              |                                |                         | Min.   | Typ. | Max. |      |
| IDSS         | Saturated drain current        | VDS=3V,VGS=0V           | 1600   | 2400 | 3200 | mA   |
| gm           | Transconductance               | VDS=3V,ID=800mA         | 500    | 800  | -    | mS   |
| VGS(off)     | Gate to source cut-off voltage | VDS=3V,ID=10mA          | -1     | -3   | -5   | V    |
| Po           | Output power                   | VDS=8V,ID(RF off)=800mA | 33     | 34   | -    | dBm  |
| P.A.E.       | Power added efficiency         | f=1.65GHz,Pin=26dBm     | -      | 40   | -    | %    |
| Rth(ch-c) *2 | Thermal resistance             | Δ Vf method             | -      | -    | 12.5 | °C/W |
| Rth(ch-a) *3 | Thermal resistance             | Δ Vf method             | -      | -    | 72.5 | °C/W |

\*2 :Channel-case

\*3 :Channel-ambient

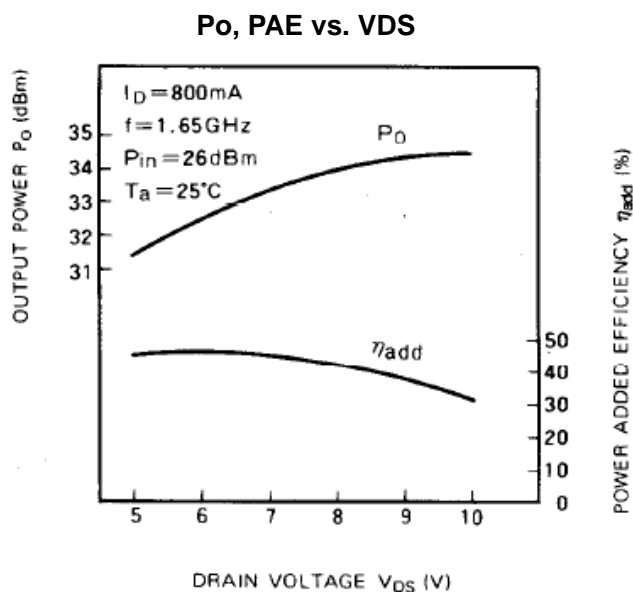
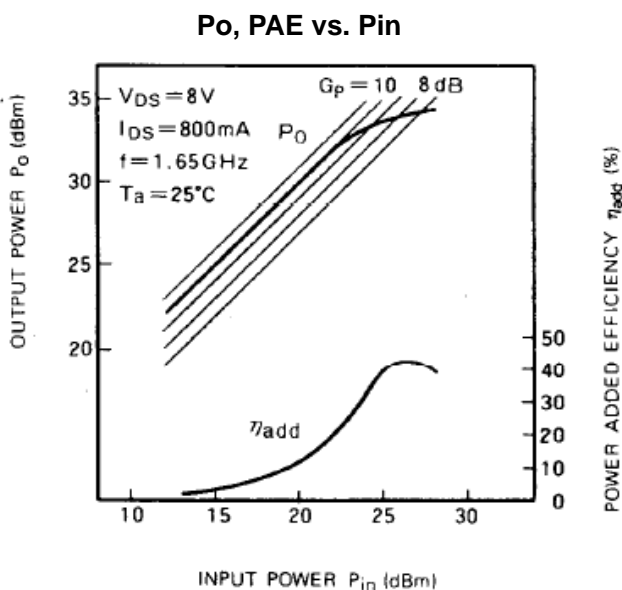
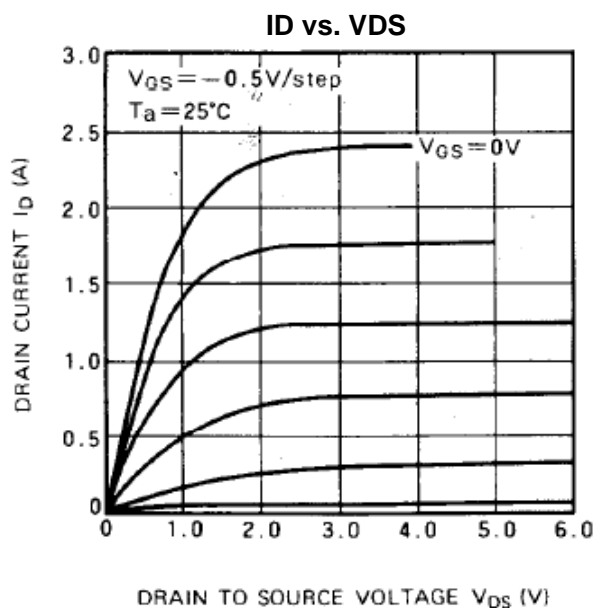
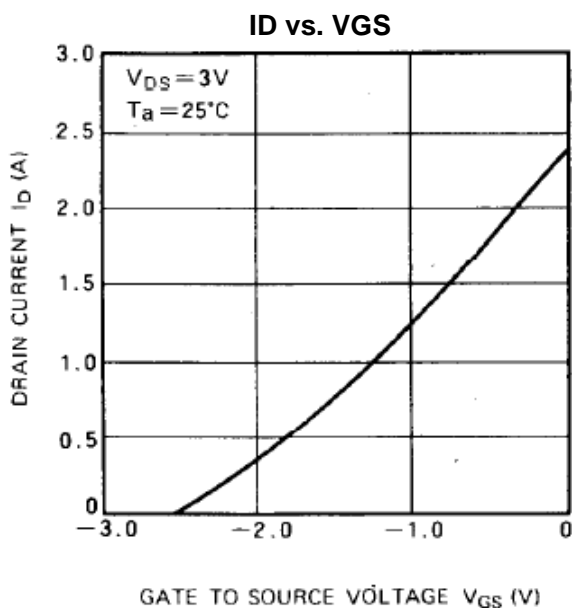


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## MGF0905A TYPICAL CHARACTERISTICS (Ta=25deg.C)



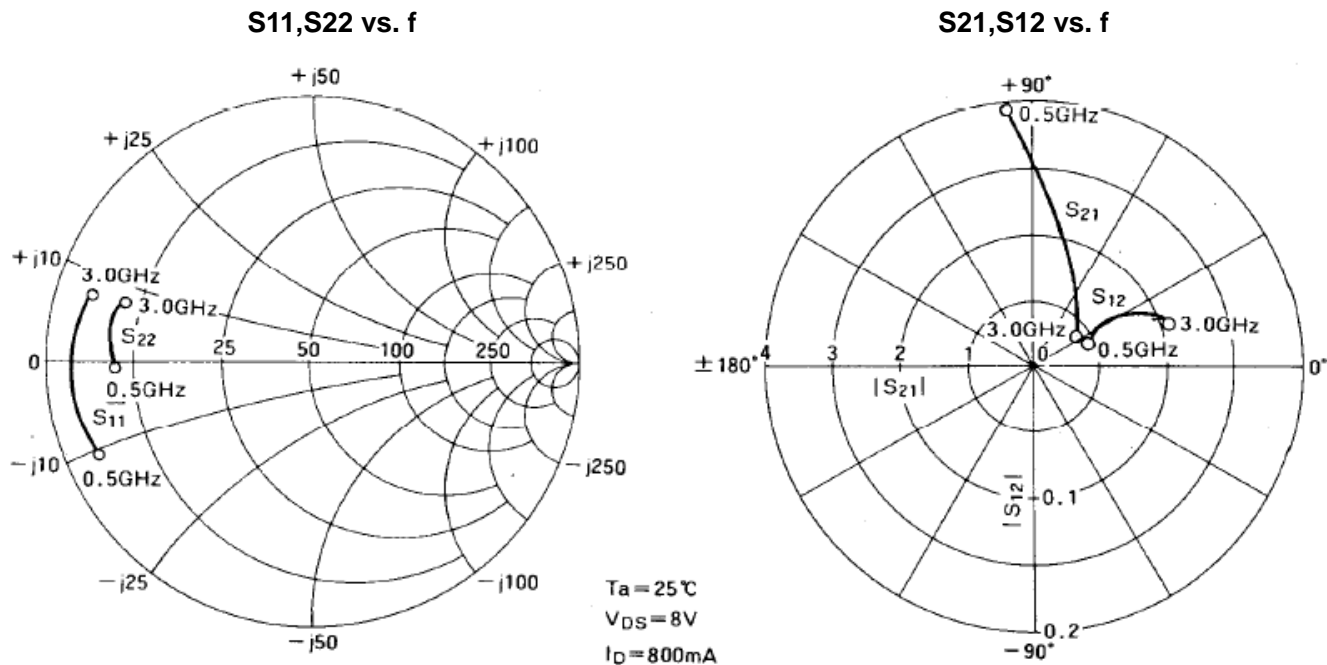
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## MGF0905A S-parameters (Ta=25deg.C , VDS=8(V),IDS=800(mA) )



| f<br>(GHz) | S Parameters(Typ.) |             |       |             |       |             |       |             |       |               |
|------------|--------------------|-------------|-------|-------------|-------|-------------|-------|-------------|-------|---------------|
|            | S11                |             | S21   |             | S12   |             | S22   |             | K     | MSG/MAG<br>dB |
|            | Magn.              | Angle(deg.) | Magn. | Angle(deg.) | Magn. | Angle(deg.) | Magn. | Angle(deg.) |       |               |
| 0.5        | 0.861              | -155.5      | 3.895 | 96.0        | 0.022 | 25.0        | 0.731 | -179.0      | 0.806 | 22.5          |
| 1.0        | 0.887              | -170.5      | 1.999 | 78.0        | 0.025 | 33.0        | 0.753 | 175.5       | 1.133 | 16.8          |
| 1.5        | 0.894              | 177.0       | 1.485 | 68.0        | 0.033 | 33.0        | 0.747 | 172.5       | 1.175 | 14.0          |
| 2.0        | 0.887              | 173.0       | 1.205 | 58.0        | 0.039 | 29.0        | 0.743 | 169.5       | 1.205 | 12.2          |
| 2.5        | 0.877              | 169.0       | 1.000 | 48.5        | 0.047 | 24.0        | 0.738 | 166.5       | 1.221 | 10.4          |
| 3.0        | 0.864              | 165.0       | 0.795 | 35.0        | 0.054 | 18.0        | 0.723 | 164.0       | 1.365 | 8.1           |

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