

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

# MGF0904A

L & S BAND / 0.6W

non - matched

## DESCRIPTION

The MGF0904A, GaAs FET with an N-channel schottky gate, is designed for use in UHF band amplifiers.

## FEATURES

- High output power  
Po=28.0dBm(TYP.) @f=1.65GHz,Pin=15dBm
- High power gain  
Gp=13.0dB(TYP.) @f=1.65GHz,Pin=15dBm
- High power added efficiency  
P.A.E =40%(TYP.) @f=1.65GHz,Pin=15dBm

## APPLICATION

- For UHF Band power amplifiers

## QUALITY

- GG

## RECOMMENDED BIAS CONDITIONS

- Vds=8V • Ids=200mA • Rg=500Ω 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           | 800         | mA   |
| IGR    | Reverse gate current    | -2.5        | mA   |
| IGF    | Forward gate current    | 5.4         | mA   |
| PT*1   | Total power dissipation | 3.75        | W    |
| Tch    | Cannel temperature      | 175         | °C   |
| Tstg   | Storage temperature     | -65 to +175 | °C   |

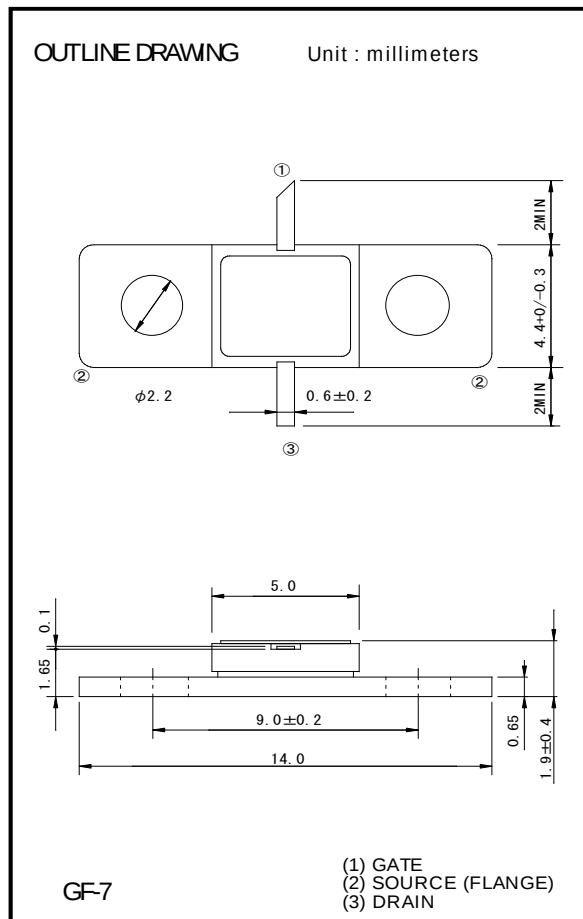
\*1:Tc=25°C

## Electrical characteristics (Ta=25°C)

| Symbol       | Parameter                      | Test conditions         | Limits |      |      | Unit |
|--------------|--------------------------------|-------------------------|--------|------|------|------|
|              |                                |                         | Min.   | Typ. | Max. |      |
| IDSS         | Saturated drain current        | VDS=3V,VGS=0V           | 400    | 550  | 800  | mA   |
| gm           | Transconductance               | VDS=3V,ID=300mA         | 120    | 200  | -    | mS   |
| VGS(off)     | Gate to source cut-off voltage | VDS=3V,ID=2.5mA         | -1     | -3   | -5   | V    |
| Po           | Output power                   | VDS=8V,ID(RF off)=200mA | 26     | 28   | -    | dBm  |
| P.A.E.       | Power added efficiency         | f=1.65GHz,Pin=15dBm     | -      | 40   | -    | %    |
| Rth(ch-c) *2 | Thermal resistance             | Δ Vf method             | -      | -    | 40   | °C/W |
| Rth(ch-a) *3 | Thermal resistance             | Δ Vf method             | -      | -    | 100  | °C/W |

\*2 :Channel-case

\*3 :Channel-ambient

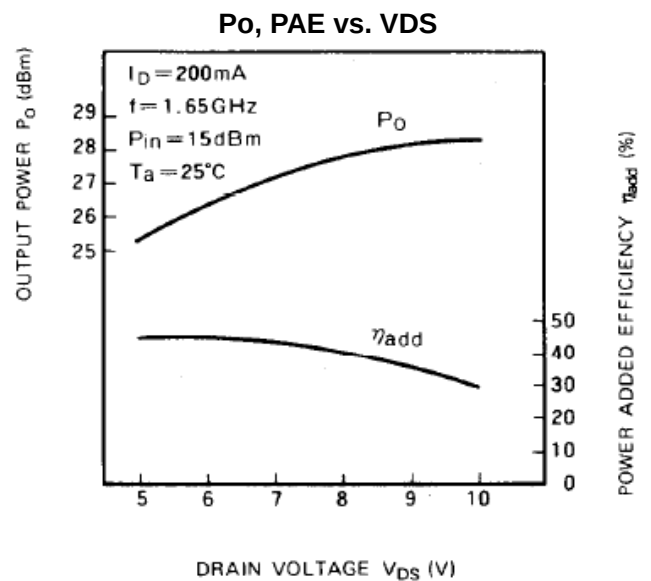
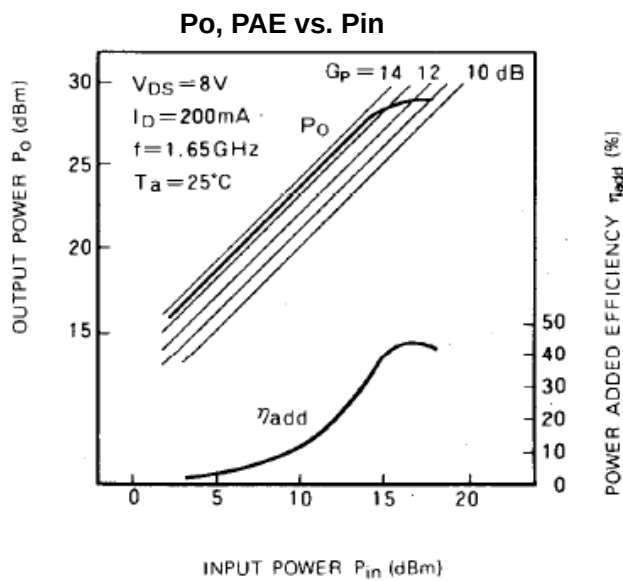
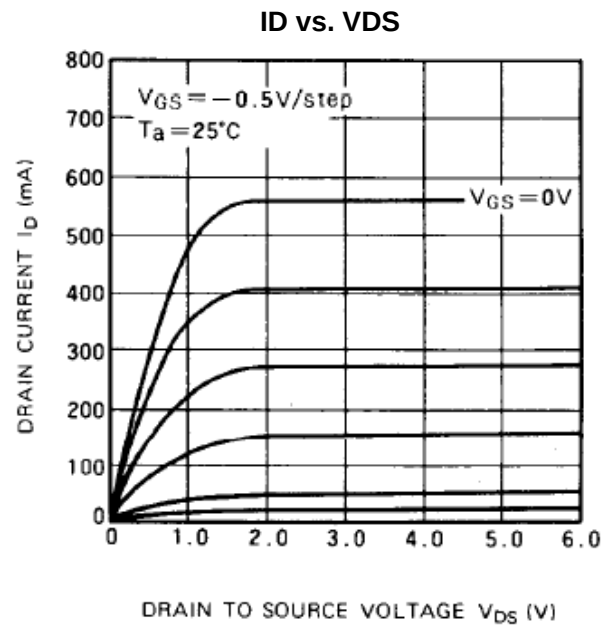
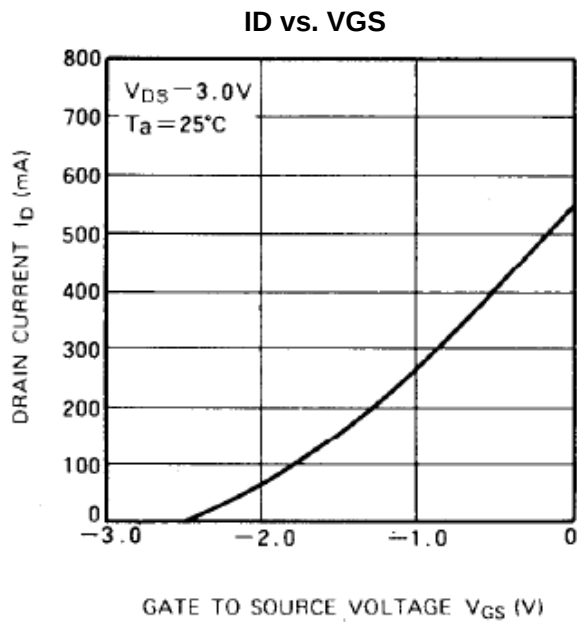


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### MGF0904A TYPICAL CHARACTERISTICS( $T_a=25^{\circ}\text{C}$ )



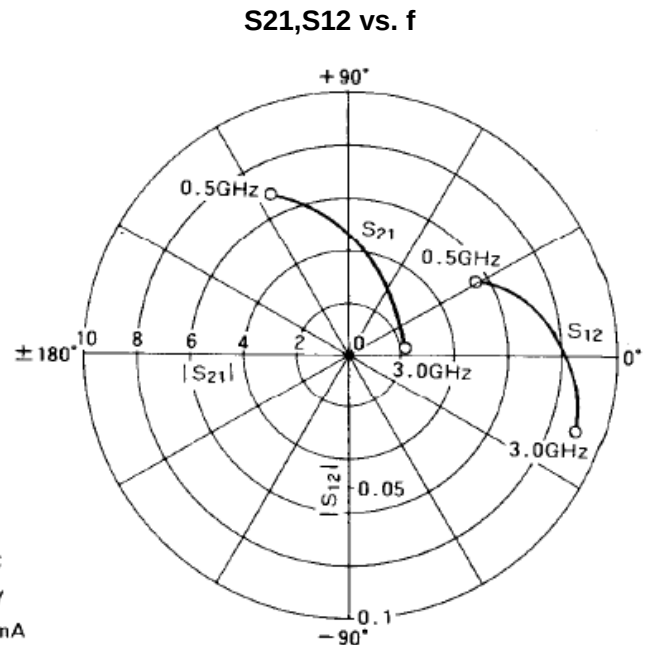
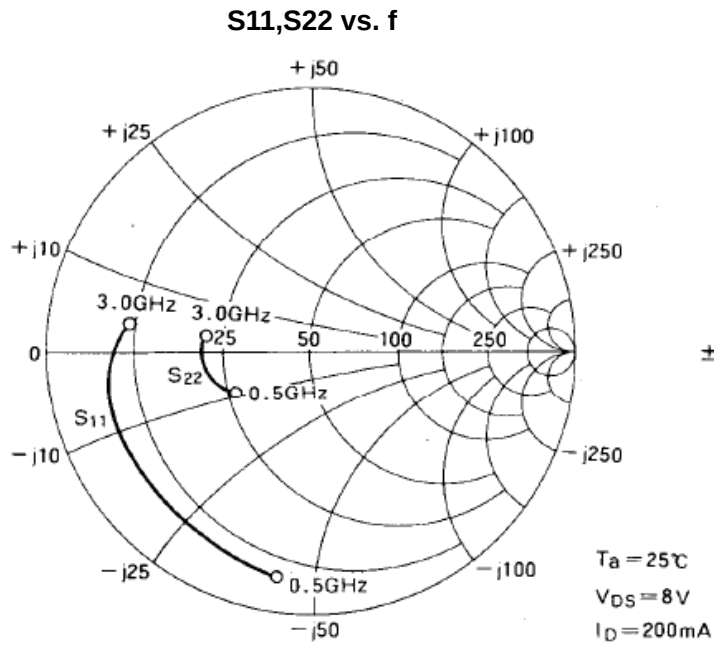
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MGF0904A S-parameters( Ta=25deg.C , VDS=8(V),IDS=200(mA) )



| f<br>(GHz) | S Parameters(Typ.) |             |       |             |       |             |       |             |       |         |
|------------|--------------------|-------------|-------|-------------|-------|-------------|-------|-------------|-------|---------|
|            | S11                |             | S21   |             | S12   |             | S22   |             | K     | MSG/MAG |
|            | Magn.              | Angle(deg.) | Magn. | Angle(deg.) | Magn. | Angle(deg.) | Magn. | Angle(deg.) | -     | dB      |
| 0.5        | 0.851              | -99.0       | 6.855 | 116.0       | 0.055 | 31.0        | 0.338 | -149.0      | 0.277 | 21.0    |
| 1.0        | 0.801              | -138.0      | 4.265 | 89.0        | 0.064 | 22.5        | 0.368 | -162.0      | 0.521 | 18.2    |
| 1.5        | 0.788              | -161.5      | 3.192 | 71.0        | 0.072 | 13.0        | 0.390 | -173.3      | 0.655 | 16.5    |
| 2.0        | 0.740              | -177.0      | 2.544 | 52.0        | 0.079 | 4.0         | 0.409 | -178.0      | 0.847 | 15.1    |
| 2.5        | 0.713              | 176.5       | 2.180 | 30.0        | 0.085 | -7.0        | 0.411 | 177.0       | 0.940 | 14.1    |
| 3.0        | 0.670              | 171.5       | 2.040 | 9.0         | 0.091 | -18.0       | 0.402 | 172.0       | 1.070 | 11.9    |

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