MITSUBISHI ELECTRIC

< 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

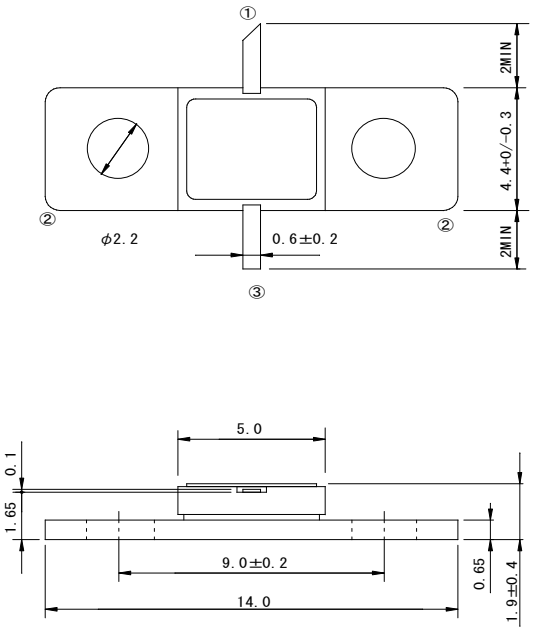
APPLICATION

- For UHF Band power amplifiers

QUALITY

- GG

OUTLINE DRAWING Unit : millimeters



GF-7

(1) GATE
(2) SOURCE (FLANGE)
(3) DRAIN

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

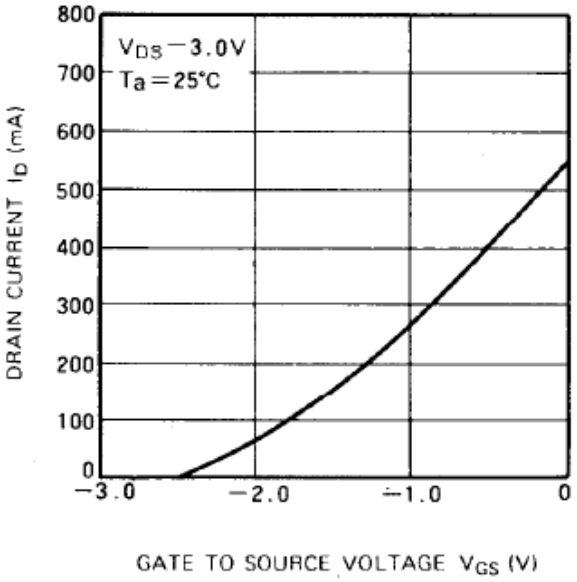
Electrical characteristics (Ta=25°C)

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	ΔVf method	-	-	40	°C/W
Rth(ch-a) *3	Thermal resistance	ΔVf method	-	-	100	°C/W

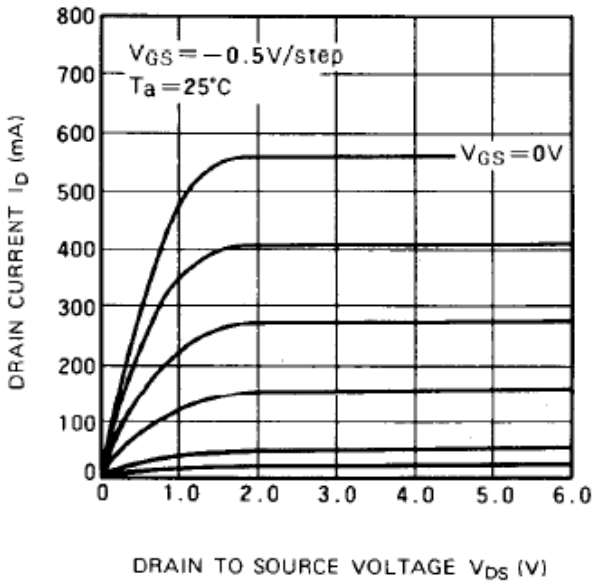
*2 :Channel-case
*3 :Channel-ambient

MGF0904A TYPICAL CHARACTERISTICS(Ta=25deg.C)

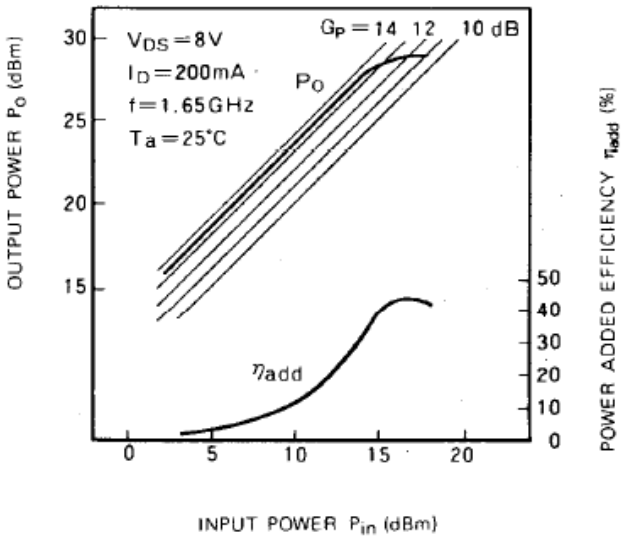
ID vs. VGS



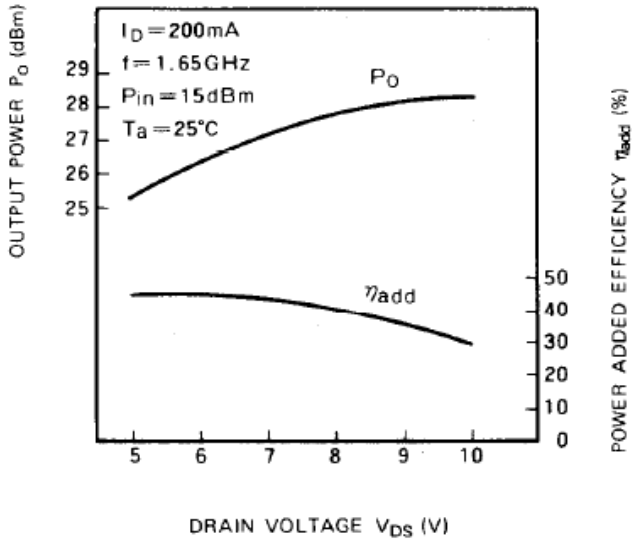
ID vs. VDS



Po, PAE vs. Pin



Po, PAE vs. VDS



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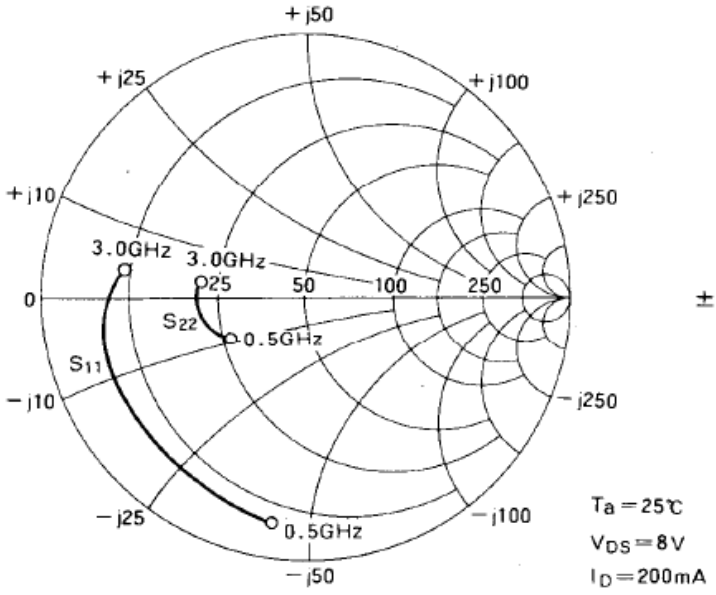
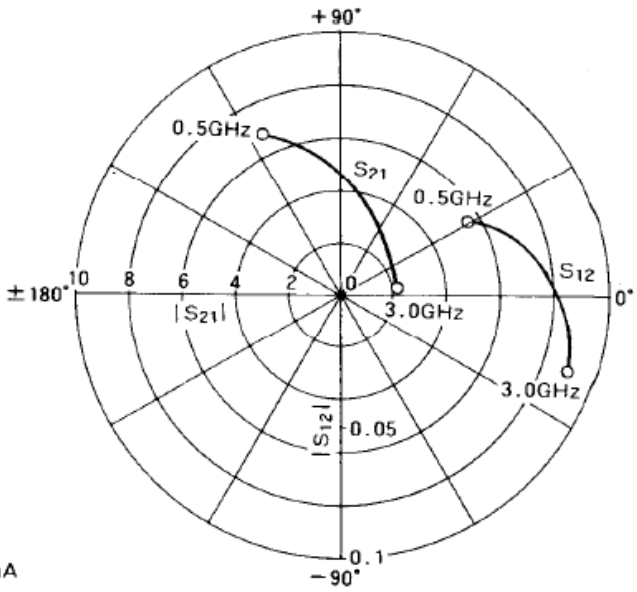
MGF0904A S-parameters(Ta=25deg.C , VDS=8(V),IDS=200(mA))

S11,S22 vs. f



S21,S12 vs. f



f (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

Keep safety first in your circuit designs!

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