MGF0905A

L, S BAND POWER GaAs FET

DESCRIPTION

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

FEATURES

- High output power
  P_O = 34dBm (TYP.) @ f = 1.65GHz, P_{in} = 26dBm
- High power gain
  G_P = 8dB (TYP.) @ f = 1.65GHz, P_{in} = 26dBm
- High power added efficiency
  η_{add} = 40% (TYP.) @ f = 1.65GHz, P_{in} = 26dBm

APPLICATION

For UHF Band power amplifiers

QUALITY GRADE

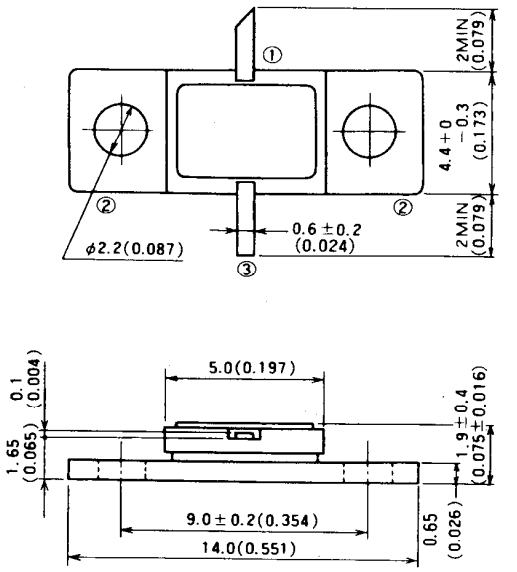
- GG

RECOMMENDED BIAS CONDITIONS

- V_{DS}=8V
- I_D=800mA
- Rg=100Ω
- Refer to Bias Procedure

OUTLINE DRAWING

Unit: millimeters (inches)



① GATE
② SOURCE
③ DRAIN

GF-7

ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

Symbol	Parameter	Ratings	Unit
V_{GSO}	Gate to source voltage	−17	V
V_{GDO}	Gate to drain voltage	−17	V
I_D	Drain current	3200	mA
I_{GR}	Reverse gate current	−10	mA
I_{GF}	Forward gate current	21.5	mA
P_T	Total power dissipation *1	12	W
T_{ch}	Channel temperature	175	°C
T_{stg}	Storage temperature	−65~+175	°C

*1: T_C=25°C

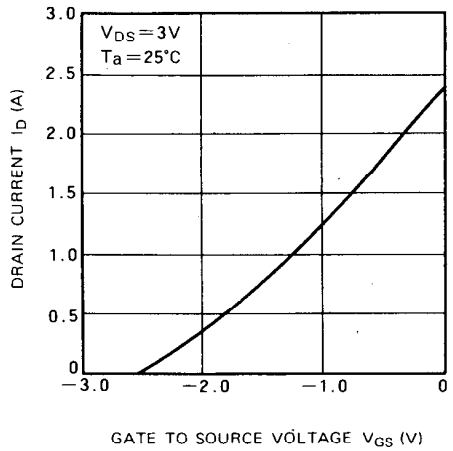
ELECTRICAL CHARACTERISTICS (Ta=25°C)

Symbol	Parameter	Test conditions	Limits			Unit
			Min	Typ	Max	
I_{DSS}	Saturated drain current	V_{DS}=3V, V_{GS}=0V	1600	2400	3200	mA
$V_{GS(off)}$	Gate to source cut-off voltage	V_{DS}=3V, I_D=10mA	−1	−3	−5	V
g_m	Transconductance	V_{DS}=3V, I_D=800mA	500	800	—	mS
P_O	Output power	V_{DS}=8V, I_D=800mA, f=1.65GHz, P_{in}=26dBm	33	34	—	dBm
η_{add}	Power added efficiency		—	40	—	%
$R_{th(ch-c)}$	Thermal resistance *1	ΔV_f method	—	—	12.5	°C/W
$R_{th(ch-a)}$	Thermal resistance *2	ΔV_f method	—	—	72.5	°C/W

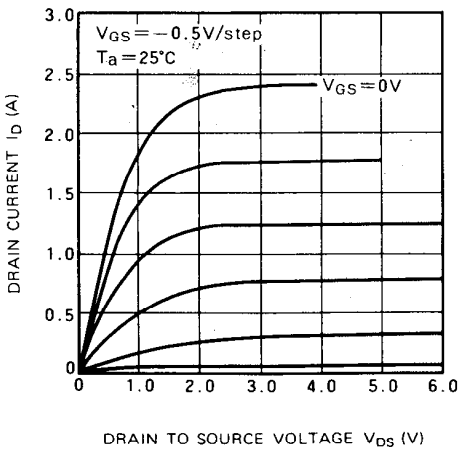
*1: Channel to case *2: Channel to ambient

TYPICAL CHARACTERISTICS

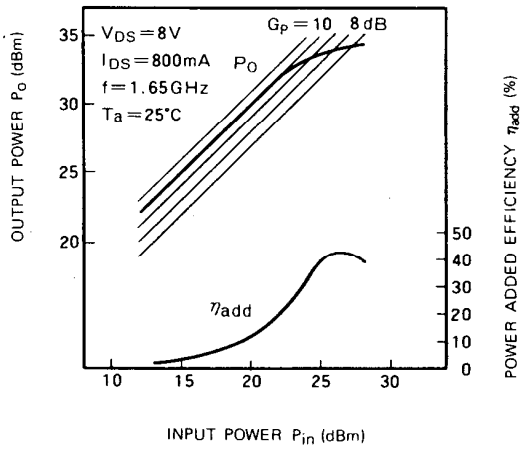
I_D vs. V_{GS}



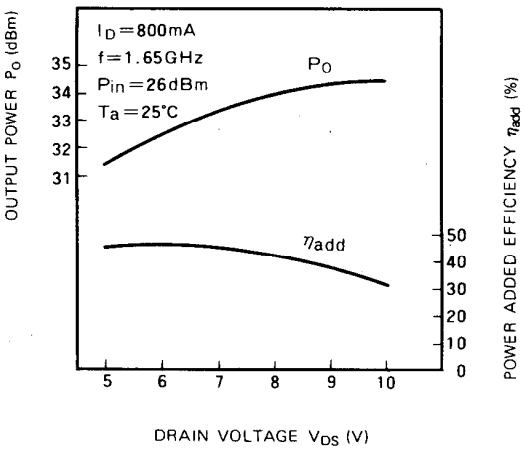
I_D vs. V_{DS}



P_o, η_{add} vs. P_{in}



P_o, η_{add} vs. V_{DS}



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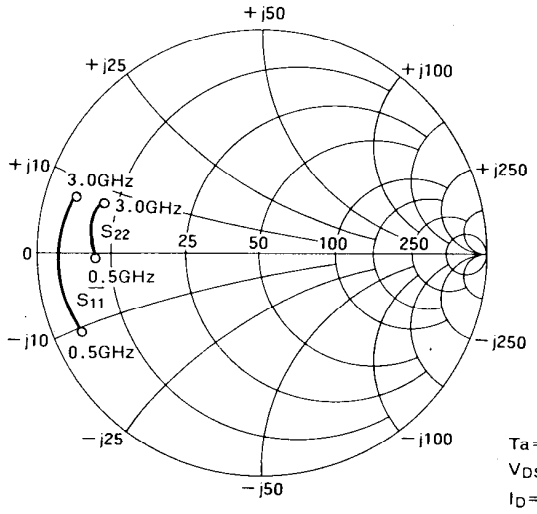
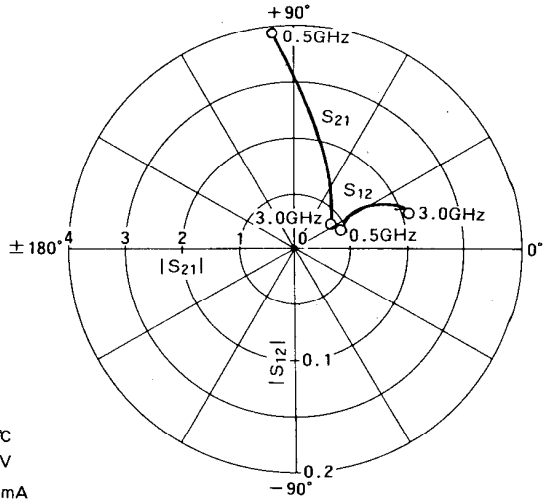
S_{11}, S_{22} vs. f



Ta=25℃
V_{DS}=8V
I_D=800mA

S_{21}, S_{12} vs.f



S PARAMETERS (Ta=25°C, V_{DS}=8V, I_D=800mA)

f (GHz)	S_{11}		S_{21}		S_{12}		S_{22}		K	MSG/MAG
	Magn.	Angle (deg.)	Magn.	Angle (deg.)	Magn.	Angle (deg.)	Magn.	Angle (deg.)	—	dB
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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