MGF2407A

MICROWAVE POWER GaAs FET

DESCRIPTION

The MGF2407A, power GaAs FET with an N-channel schottky gate, is designed for use in S to Ku band amplifiers.

FEATURES

- High output power
  P_{1dB} = 24.5 dBm (TYP.) @ 14.5 GHz
- High power gain
  G_{LP} = 8 dB (TYP.) @ 14.5 GHz
- High power added efficiency
  η_{add} = 30% (TYP.) @ 14.5 GHz, P_{1dB}

APPLICATION

S to Ku band power amplifiers.

QUALITY GRADE

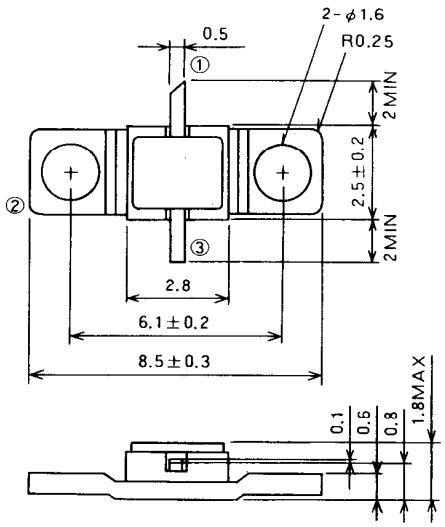
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RECOMMENDED BIAS CONDITIONS

- V_{DS}=10V
- I_D=75mA
- Refer to Bias Procedure

OUTLINE DRAWING

Unit: millimeters



① GATE
② SOURCE
③ DRAIN

GF-17

ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

Symbol	Parameter	Ratings	Unit
V_{GDO}	Gate to drain voltage	−15	V
V_{GSO}	Gate to source voltage	−15	V
I_D	Drain current	200	mA
I_{GR}	Reverse gate current	−0.6	mA
I_{GF}	Forward gate current	2.5	mA
P_T	Total power dissipation *1	1.5	W
Tch	Channel temperature	175	°C
Tstg	Storage temperature	−65~+175	°C

*1: T_C=25°C

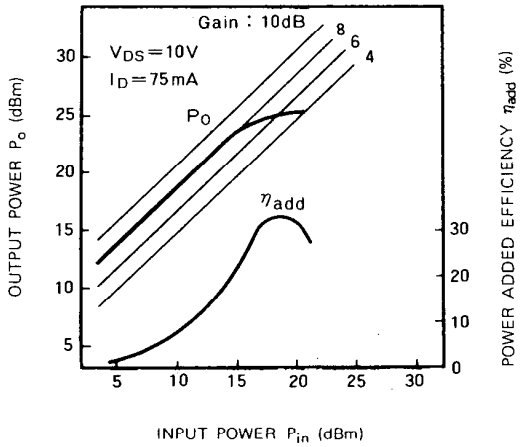
ELECTRICAL CHARACTERISTICS (Ta=25°C)

Symbol	Parameter	Test conditions	Limits			Unit
			Min	Typ	Max	
I_{DSS}	Saturated drain current	V_{DS}=3V, V_{GS}=0V	100	150	200	mA
$V_{GS(off)}$	Gate to source cut-off voltage	V_{DS}=3V, I_D=0.5mA	−1	−2.5	−4	V
gm	Transconductance	V_{DS}=3V, I_D=75mA	50	65	—	mS
P_{1dB}	Output power at 1dB gain compression	V_{DS}=10V, I_D=75mA, f=14.5GHz,	23.0	24.5	—	dBm
G_{LP}	Linear power gain		7.0	8.0	—	dB
ηadd	Power added efficiency at P_{1dB}		—	30	—	%
Rth(ch-c)	Thermal resistance *1	ΔV_f method	—	—	100	°C/W

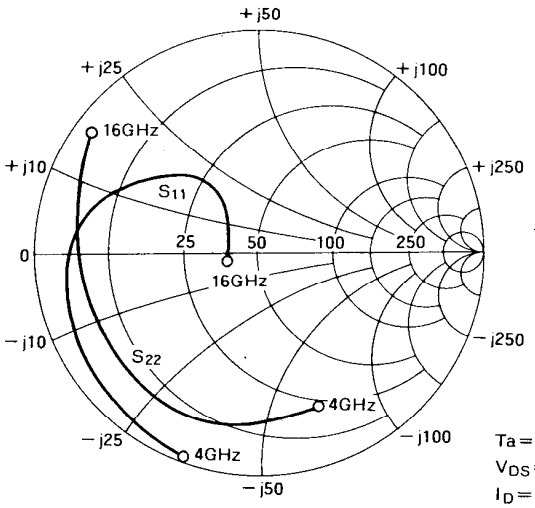
*1: Channel to case

TYPICAL CHARACTERISTICS (T_a=25°C)

P_o, η_{add} vs. P_{in} (f = 14.5GHz)

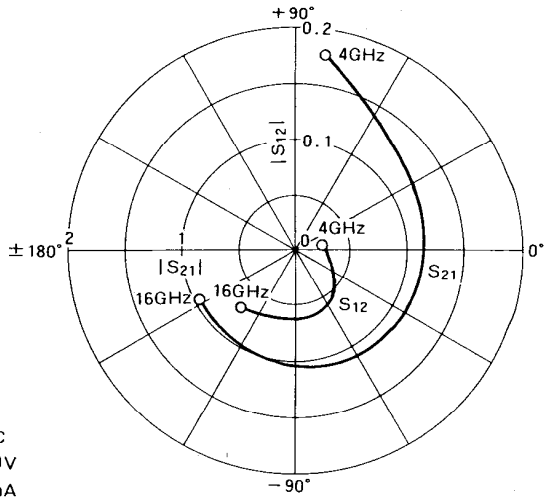


S_{11}, S_{22} vs. f



Ta=25℃
VDS=10V
ID=75mA

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



S PARAMETERS (T_a=25°C, V_{DS}=10V, I_D=75mA)

f (GHz)	S Parameters (TYP.)								K	MSG/MAG
	S_{11}		S_{21}		S_{12}		S_{22}			
	Magn.	Angle (deg.)	Magn.	Angle (deg.)	Magn.	Angle (deg.)	Magn.	Angle (deg.)	—	dB
4	0.968	−112.5	1.766	81.5	0.024	− 6.0	0.713	− 70.5	0.380	18.7
6	0.929	−135.5	1.279	48.5	0.028	− 6.0	0.758	− 93.5	0.813	16.6
8	0.891	−157.5	1.147	26.0	0.033	− 17.0	0.777	−116.0	0.948	15.4
10	0.833	−180.0	1.111	− 5.0	0.041	− 30.5	0.782	−139.0	1.176	11.8
12	0.719	158.0	1.080	− 36.0	0.050	− 50.0	0.793	−164.5	1.583	8.9
14	0.469	133.5	1.030	− 85.0	0.059	− 82.0	0.818	168.0	2.276	6.1
16	0.172	−165.5	0.967	−153.0	0.073	−123.0	0.911	144.5	1.245	8.2

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