

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

### APPLICATION

S to Ku band power amplifiers.

### QUALITY GRADE

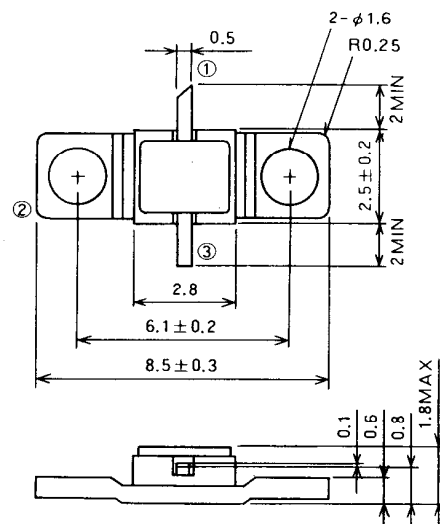
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### RECOMMENDED BIAS CONDITIONS

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

### OUTLINE DRAWING

Unit: millimeters



- ① GATE
- ② SOURCE
- ③ DRAIN

GF-17

### ABSOLUTE MAXIMUM RATINGS ( $T_a = 25^\circ\text{C}$ )

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
$T_{ch}$	Channel temperature	175	$^\circ\text{C}$
$T_{stg}$	Storage temperature	-65 ~ +175	$^\circ\text{C}$

\*1:  $T_C = 25^\circ\text{C}$

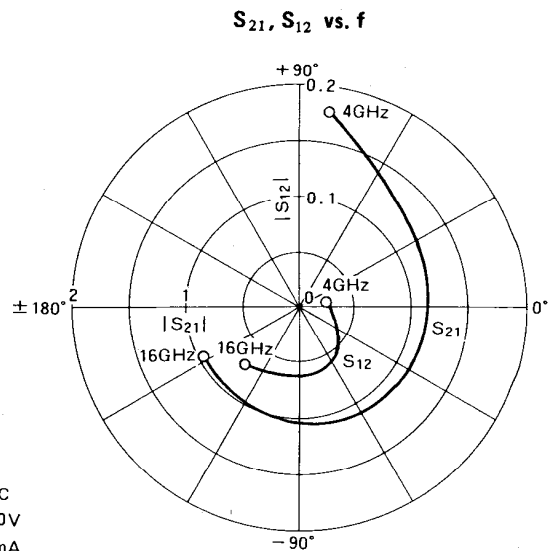
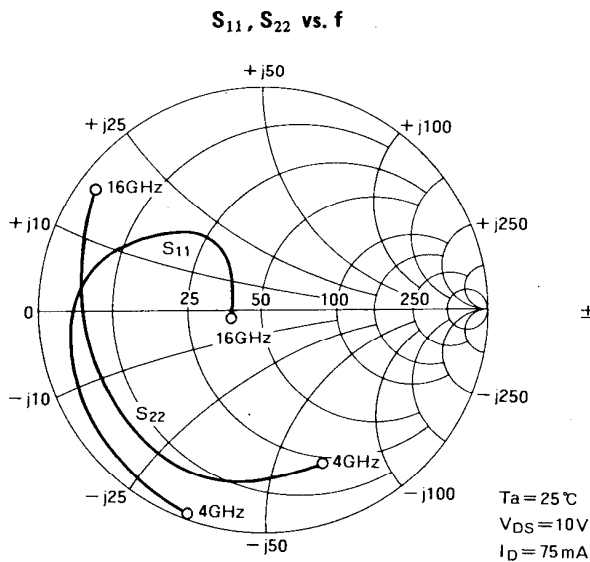
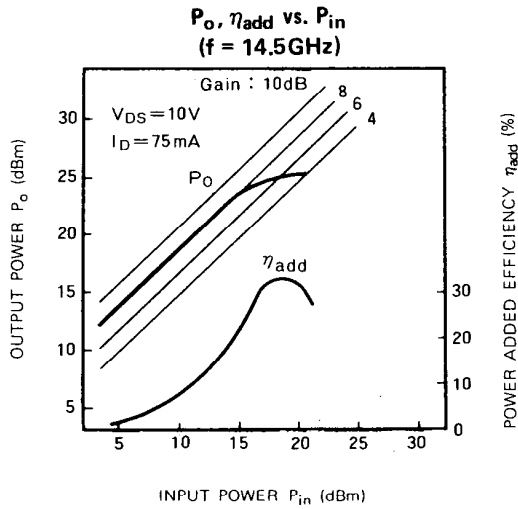
### ELECTRICAL CHARACTERISTICS ( $T_a = 25^\circ\text{C}$ )

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
$g_m$	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
$\eta_{add}$	Power added efficiency at $P_{1dB}$		—	30	—	%
$R_{th(ch-c)}$	Thermal resistance *1	$\Delta V_f$ method	—	—	100	$^\circ\text{C/W}$

\*1: Channel to case

**MICROWAVE POWER GaAs FET**

**TYPICAL CHARACTERISTICS (Ta = 25°C)**



**S PARAMETERS (Ta = 25°C, V<sub>DS</sub> = 10V, I<sub>D</sub> = 75mA)**

f (GHz)	S Parameters (TYP.)								K	MSG/MAG dB
	S <sub>11</sub>		S <sub>21</sub>		S <sub>12</sub>		S <sub>22</sub>			
	Magn.	Angle (deg.)	Magn.	Angle (deg.)	Magn.	Angle (deg.)	Magn.	Angle (deg.)		
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