

# 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

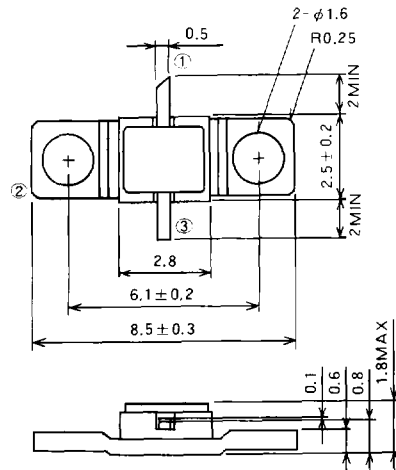
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### RECOMMENDED BIAS CONDITIONS

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

### OUTLINE DRAWING

Unit: millimeter



- ① GATE
- ② SOURCE
- ③ DRAIN

GF-17

### ABSOLUTE MAXIMUM RATINGS (Ta = 25°C)

Symbol	Parameter	Rating	Unit
$V_{GD0}$	Gate to drain voltage	-15	V
$V_{GS0}$	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	°C
$T_{sig}$	Storage temperature	-65 ~ +175	°C

\* 1:  $T_C = 25^\circ C$

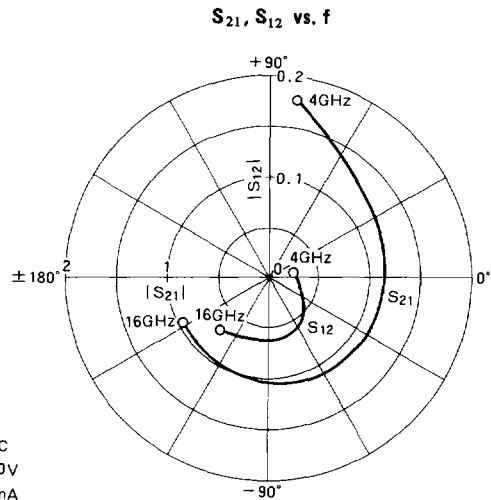
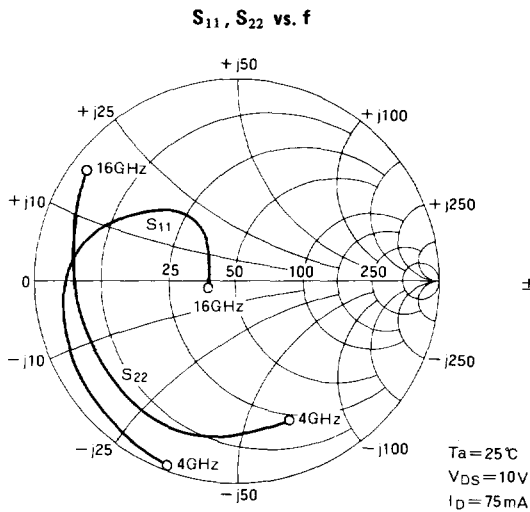
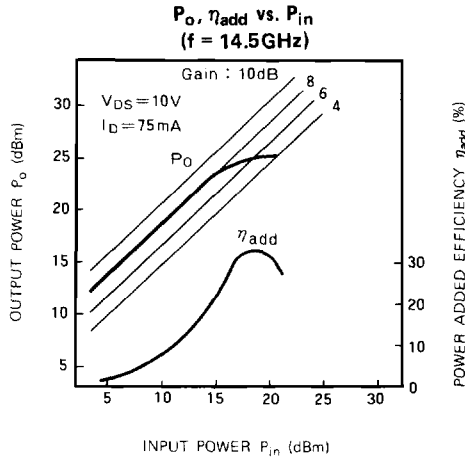
### ELECTRICAL CHARACTERISTICS (Ta = 25°C)

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
$g_m$	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	°C/W

\* 1: Channel to case

**MICROWAVE POWER GaAs FET**

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



**S PARAMETERS** ( $T_a = 25^\circ\text{C}$ ,  $V_{DS} = 10\text{V}$ ,  $I_D = 75\text{mA}$ )

f (GHz)	S Parameters (TYP.)								K	MSG/MAG dB
	$S_{11}$		$S_{21}$		$S_{12}$		$S_{22}$			
	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