

# MGF2415A

## MICROWAVE POWER GaAs FET

### DESCRIPTION

The MGF2415A, power GaAs FET with an N-channel schottky gate, is designed for use in S to Ku band amplifiers.

### FEATURES

- High output power  
 $P_{1dB} = 27.5 \text{ dBm (TYP.) @ 14.5 GHz}$
- High power gain  
 $G_{LP} = 7.5 \text{ dB (TYP.) @ 14.5 GHz}$
- High power added efficiency  
 $\eta_{add} = 29\% \text{ (TYP.) @ 14.5 GHz, } P_{1dB}$

### APPLICATION

S to Ku band power amplifiers.

### QUALITY GRADE

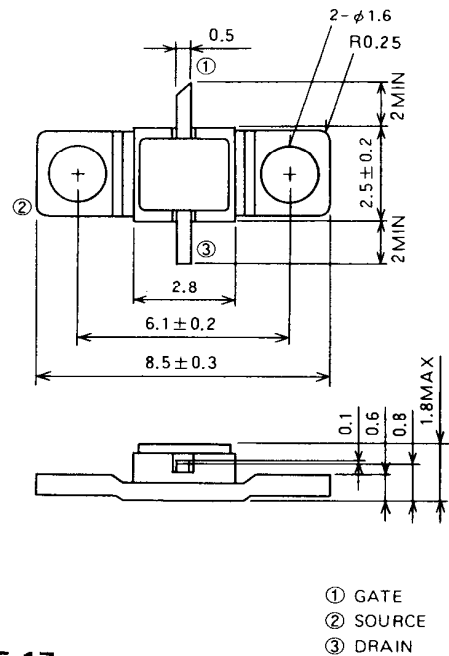
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### RECOMMENDED BIAS CONDITIONS

- $V_{DS} = 10V$
- $I_D = 150mA$
- Refer to Bias Procedure

### OUTLINE DRAWING

Unit: millimeters



GF-17

- ① GATE
- ② SOURCE
- ③ DRAIN

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

Symbol	Parameter	Ratings	Unit
$V_{GDO}$	Gate to drain voltage	-15	V
$V_{GSO}$	Gate to source voltage	-15	V
$I_D$	Drain current	400	mA
$I_{GR}$	Reverse gate current	-1.2	mA
$I_{GF}$	Forward gate current	5.0	mA
$P_T$	Total power dissipation *1	2.5	W
$T_{ch}$	Channel temperature	175	$^\circ C$
$T_{stg}$	Storage temperature	-65 ~ +175	$^\circ C$

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

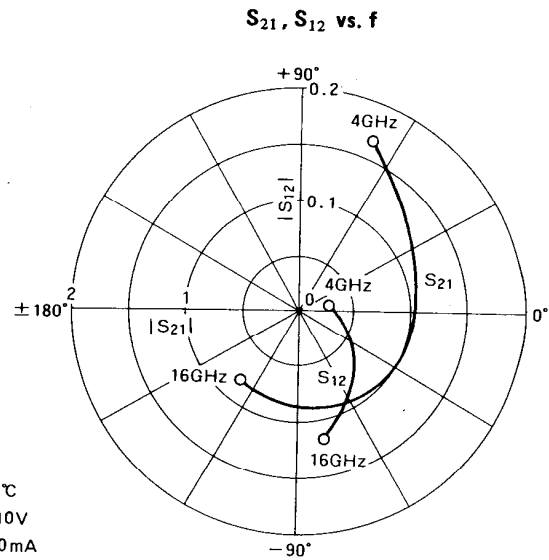
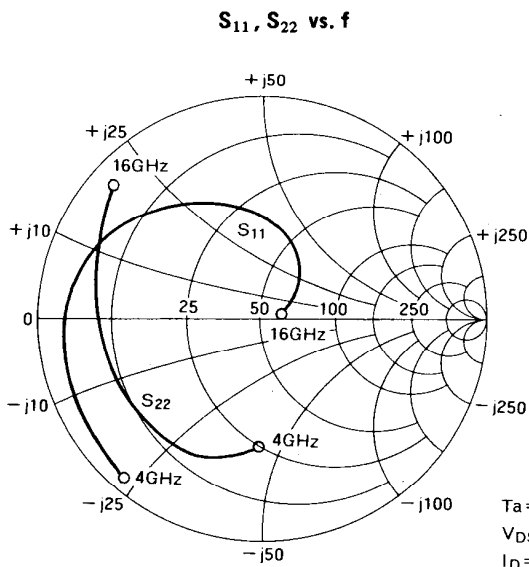
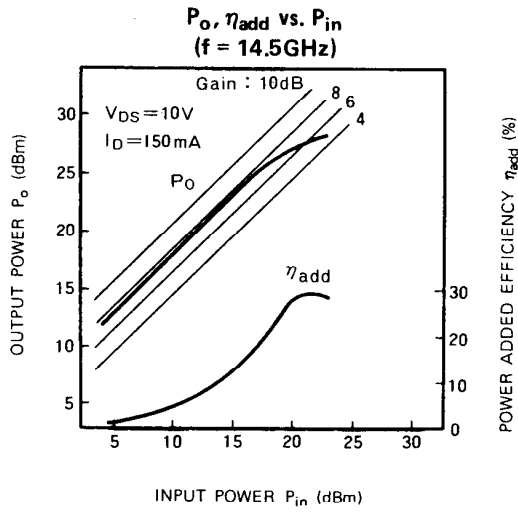
### ELECTRICAL CHARACTERISTICS ( $T_a = 25^\circ C$ )

Symbol	Parameter	Test conditions	Limits			Unit
			Min	Typ	Max	
$I_{DSS}$	Saturated drain current	$V_{DS} = 3V, V_{GS} = 0V$	200	300	400	mA
$V_{GS(off)}$	Gate to source cut-off voltage	$V_{DS} = 3V, I_D = 1mA$	-1	-2.5	-4	V
$g_m$	Transconductance	$V_{DS} = 3V, I_D = 150mA$	100	130	—	mS
$P_{1dB}$	Output power at 1dB gain compression	$V_{DS} = 10V, I_D = 150mA, f = 14.5GHz,$	26.0	27.5	—	dBm
$G_{LP}$	Linear power gain		6.5	7.5	—	dB
$\eta_{add}$	Power added efficiency at $P_{1dB}$		—	29	—	%
$R_{th(ch-c)}$	Thermal resistance *1	$\Delta V_f$ method	—	—	60	$^\circ C/W$

\*1: Channel to case

**MICROWAVE POWER GaAs FET**

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



**S PARAMETERS** ( $T_a = 25^\circ\text{C}, V_{DS} = 10\text{V}, I_D = 150\text{mA}$ )

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	0.930	-132.0	1.656	62.0	0.028	10.0	0.564	-93.5	0.774	17.7
6	0.904	-156.0	1.250	42.5	0.034	2.0	0.654	-108.0	0.884	15.7
8	0.847	-177.0	1.067	22.5	0.040	-6.0	0.699	-128.5	1.248	11.3
10	0.804	162.0	1.010	-8.5	0.045	-14.0	0.704	-149.5	1.521	9.3
12	0.709	141.0	0.968	-30.0	0.052	-22.0	0.721	-173.0	1.917	7.2
14	0.530	109.5	0.869	-78.0	0.069	-41.0	0.772	163.5	2.106	5.0
16	0.083	21.0	0.779	-130.0	0.113	-77.0	0.889	139.5	1.154	6.0