

# MGF2430A

## MICROWAVE POWER GaAs FET

### DESCRIPTION

The MGF2430A, power GaAs FET with an N-channel schottky gate, is designed for use in S to Ku band amplifiers.

### FEATURES

- High output power  
 $P_{1dB} = 30.5 \text{ dBm (TYP.) @ 14.5 GHz}$
- High power gain  
 $G_{LP} = 6.5 \text{ dB (TYP.) @ 14.5 GHz}$
- High power added efficiency  
 $\eta_{add} = 27\% \text{ (TYP.) @ 14.5 GHz, } P_{1dB}$

### APPLICATION

S to Ku band power amplifiers.

### QUALITY GRADE

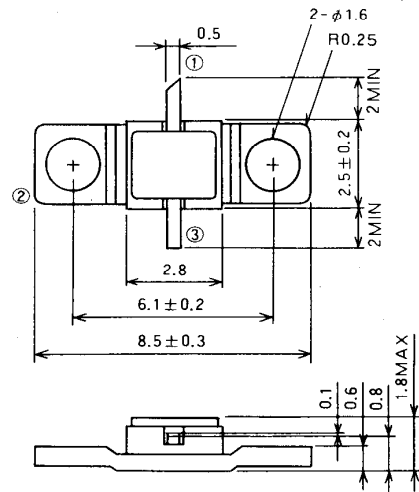
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### RECOMMENDED BIAS CONDITIONS

- $V_{DS} = 10V$
- $I_D = 300mA$
- 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	800	mA
$I_{GR}$	Reverse gate current	-2.4	mA
$I_{GF}$	Forward gate current	10.0	mA
$P_T$	Total power dissipation *1	5.0	W
$T_{ch}$	Channel temperature	175	$^\circ\text{C}$
$T_{stg}$	Storage temperature	-65 ~ +175	$^\circ\text{C}$

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

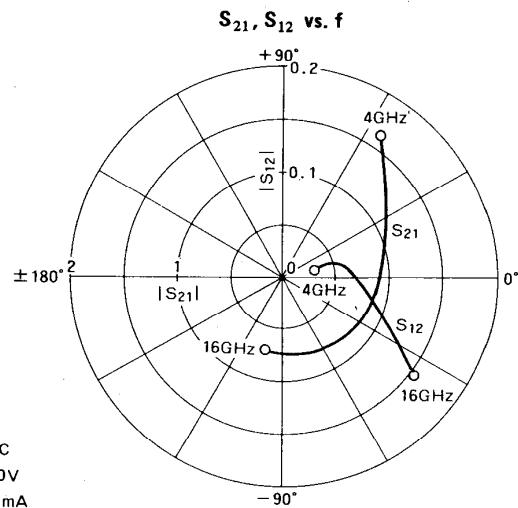
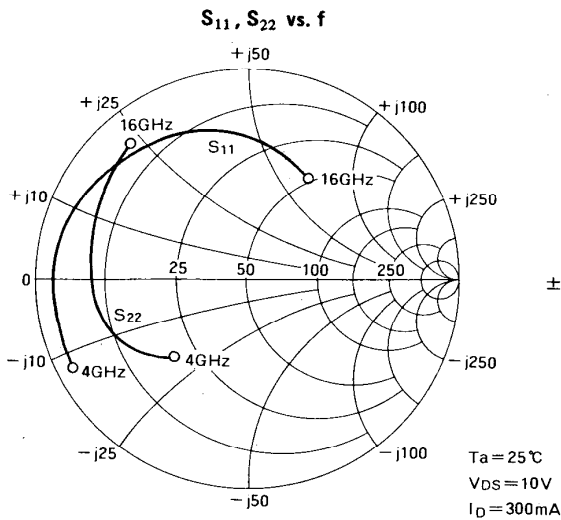
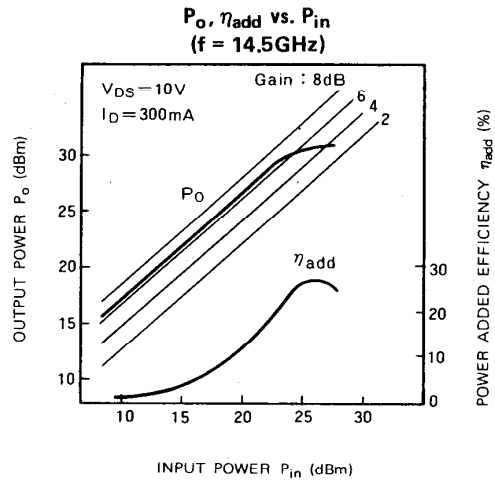
### ELECTRICAL CHARACTERISTICS ( $T_a = 25^\circ\text{C}$ )

Symbol	Parameter	Test conditions	Limits			Unit
			Min	Typ	Max	
$I_{DSS}$	Saturated drain current	$V_{DS} = 3V, V_{GS} = 0V$	400	600	800	mA
$V_{GS(off)}$	Gate to source cut-off voltage	$V_{DS} = 3V, I_D = 2mA$	-1	-2.5	-4	V
$g_m$	Transconductance	$V_{DS} = 3V, I_D = 300mA$	200	260	—	mS
$P_{1dB}$	Output power at 1dB gain compression	$V_{DS} = 10V, I_D = 300mA, f = 14.5GHz,$	29.0	30.5	—	dBm
$G_{LP}$	Linear power gain		5.5	6.5	—	dB
$\eta_{add}$	Power added efficiency at $P_{1dB}$		—	27	—	%
$R_{th(ch-c)}$	Thermal resistance *1	$\Delta V_f$ method	—	—	30	$^\circ\text{C/W}$

\*1: Channel to case

**MICROWAVE POWER GaAs FET**

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



**S PARAMETERS** ( $T_a=25^\circ\text{C}, V_{DS}=10\text{V}, I_D=300\text{mA}$ )

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	0.934	-153.0	1.641	57.0	0.030	18.0	0.513	-132.0	0.501	17.4
6	0.900	-168.0	1.109	34.0	0.035	19.0	0.620	-142.0	0.969	15.0
8	0.853	173.0	0.927	13.0	0.043	20.0	0.699	-161.5	0.811	13.3
10	0.813	153.0	0.830	-13.0	0.052	18.5	0.723	180.0	1.008	11.5
12	0.750	131.5	0.788	-41.0	0.058	13.0	0.754	162.0	1.331	7.9
14	0.790	105.0	0.730	-69.0	0.083	-7.5	0.783	146.0	1.108	7.4
16	0.530	61.0	0.689	-104.0	0.153	-37.0	0.836	132.0	0.681	6.5