

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

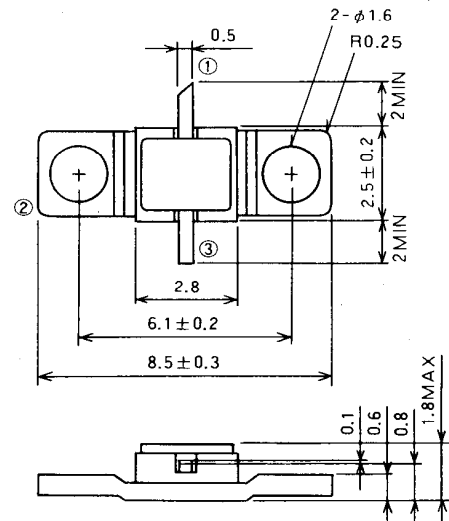
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RECOMMENDED BIAS CONDITIONS

- $V_{DS} = 10V$
- $I_D = 300mA$
- Refer to Bias Procedure

OUTLINE DRAWING

Unit: millimeters



- ① GATE
- ② SOURCE
- ③ DRAIN

GF-17

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

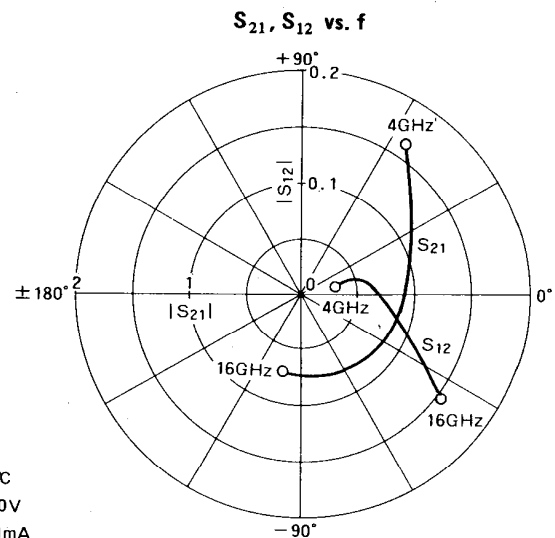
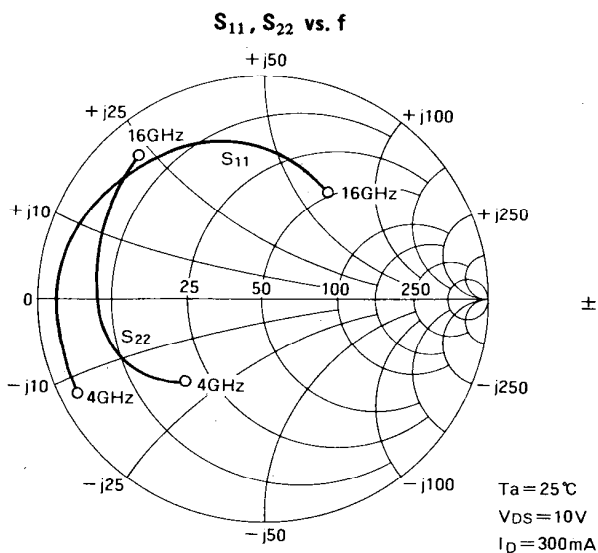
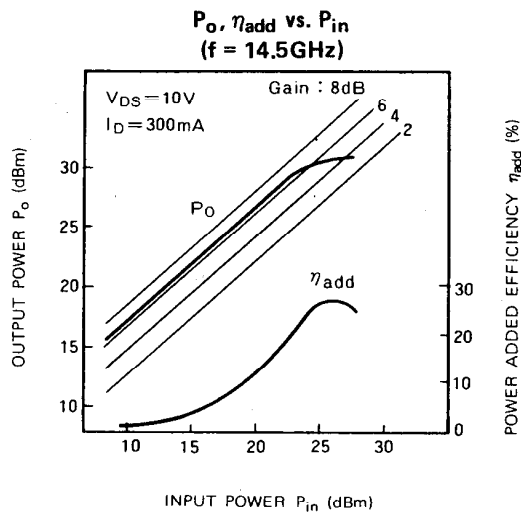
Symbol	Parameter	Ratings	Unit
V_{GDO}	Gate to drain voltage	-15	V
V_{GSO}	Gate to source voltage	-15	V
I_D	Drain current	800	mA
I_{GR}	Reverse gate current	-2.4	mA
I_{GF}	Forward gate current	10.0	mA
P_T	Total power dissipation *1	5.0	W
T_{ch}	Channel temperature	175	$^\circ\text{C}$
T_{stg}	Storage 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
η_{add}	Power added efficiency at P_{1dB}		—	27	—	%
$R_{th(ch-c)}$	Thermal resistance *1	ΔV_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
	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