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 dBm (TYP.) @ 14.5 GHz
- High power gain
  G_{LP} = 6.5 dB (TYP.) @ 14.5 GHz
- High power added efficiency
  η_{add} = 27% (TYP.) @ 14.5 GHz, P_{1dB}

APPLICATION

S to Ku band power amplifiers.

QUALITY GRADE

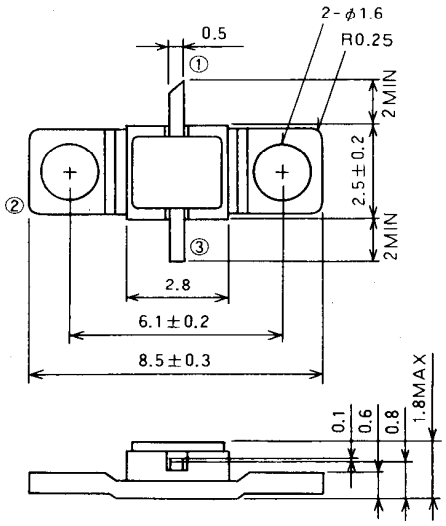
- IG

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 (Ta=25°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
Tch	Channel temperature	175	°C
Tstg	Storage temperature	−65 ~ +175	°C

*1: T_C=25°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	400	600	800	mA
$V_{GS(off)}$	Gate to source cut-off voltage	V_{DS}=3V, I_D=2mA	−1	−2.5	−4	V
gm	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	—	%
Rth(ch-c)	Thermal resistance *1	ΔV_f method	—	—	30	°C/W

*1: Channel to case

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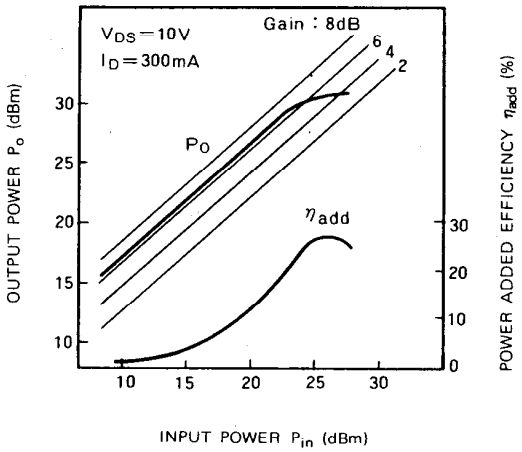
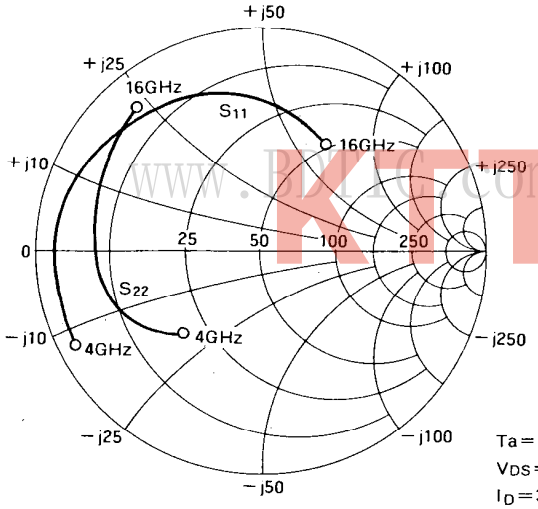
TYPICAL CHARACTERISTICS (Ta=25°C)

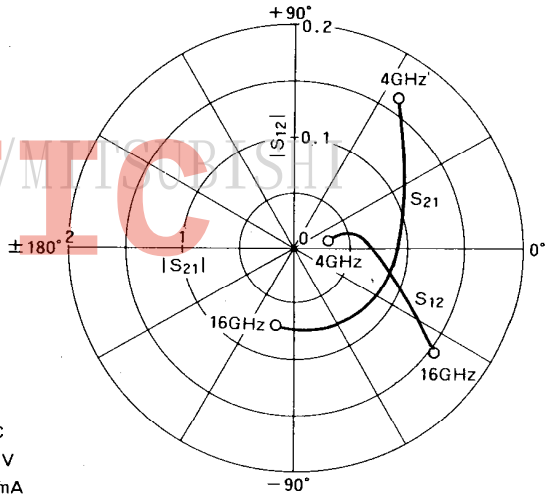
P_o, η_{add} vs. P_{in}
(f = 14.5GHz)



S_{11}, S_{22} vs. f



S_{21}, S_{12} vs. f



Ta=25°C
VDS=10V
ID=300mA

S PARAMETERS (Ta=25°C, VDS=10V, ID=300mA)

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.)	—	dB
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

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