MGF2445A

MICROWAVE POWER GaAs FET

DESCRIPTION

The MGF2445A , power GaAs FET with an N-channel schottky gate , is designed for use in S to Ku band amplifiers.

FEATURES

- High output power
  P1dB = 32dBmW(TYP.) @f=12GHz
- High linear power gain
  GLP = 6.0dB(TYP) @f=12GHz

APPLICATION

- S to Ku band power amplifiers

QUALITY GRADE

- IG

RECOMMENDED BIAS CONDITIONS

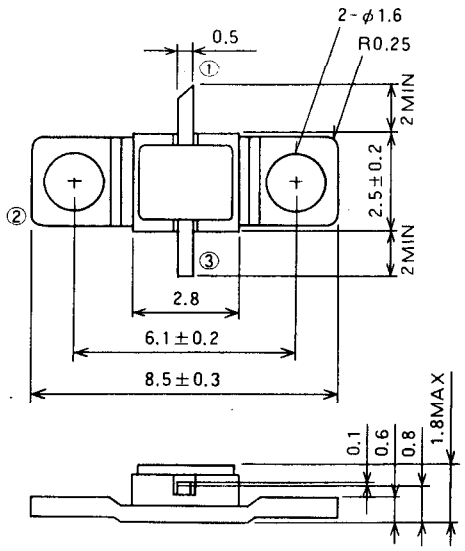
- V_{DS}=10V , I_D=450mA

Keep safety first in your circuit designs!

Mitsubishi Electric Corporation puts the maximum effort into making semiconductor products better and more reliable , but there is always the possibility that trouble may occur with them . Trouble with semiconductors may lead to personal injury , fire or property damage . Remember to give due consideration to safety when making your circuit designs , with appropriate measures such as (I) placement of substitutive , auxiliary circuits , (ii) use of non-flammable material or (iii) prevention against any malfunction or mishap.

OUTLINE DRAWING

Unit: millimeters



① GATE
② SOURCE
③ DRAIN

GF-17

ABSOLUTE MAXIMUM RATINGS (Ta=25℃)

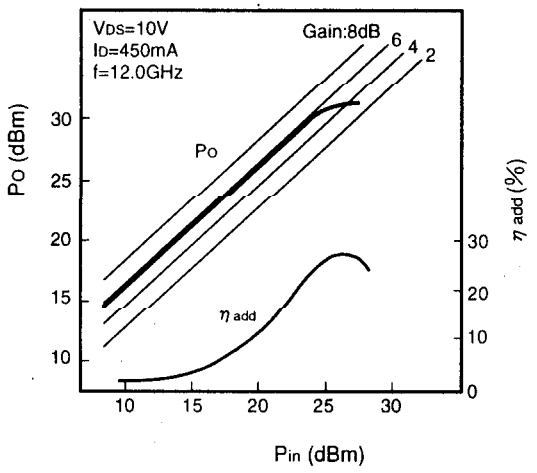
Symbol	Parameter	Ratings	Unit
V_{GDO}	Gate to drain voltage	-15	V
V_{GSO}	Gate to source voltage	-15	V
I_D	Drain current	1500	mA
I_{GR}	Reverse gate current	-3.6	mA
I_{GF}	Forward gate current	15	mA
PT	Total power dissipation	10.0	W
T_{ch}	Channel temperature	175	℃
T_{stg}	Storage temperature	-65～+175	℃

ELECTRICAL CHARACTERISTICS (Ta=25℃)

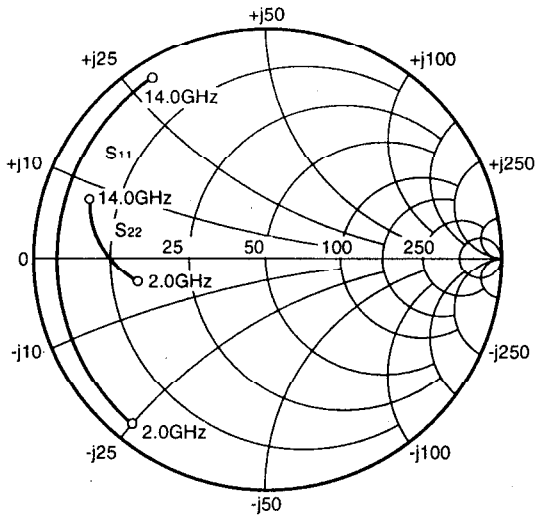
Symbol	Parameter	Test conditions	Limits			Unit
			MIN.	TYP.	MAX.	
I_{DSS}	Saturated drain current	V_{DS}=3V,VG=0V	--	--	1500	mA
gm	Transconductance	V_{DS}=0V,I_D=450mA	--	400	--	mS
$V_{GS(off)}$	Gate to source cut-off voltage	V_{DS}=3V,I_D=3mA	--	--	-4.5	V
P1dB	Output power at 1dB gain compression	V_{DS}=10V,I_D=450mA	31	32	--	dBm
GLP	Linear power gain	f=12GHz	5.5	6.0	--	dB
η add	Power added efficiency		--	20	--	%
Rth(ch-c)	Thermal resistance	ΔVf method	--	--	15	℃/W

TYPICAL CHARACTERISTICS (T_a = 25°C)

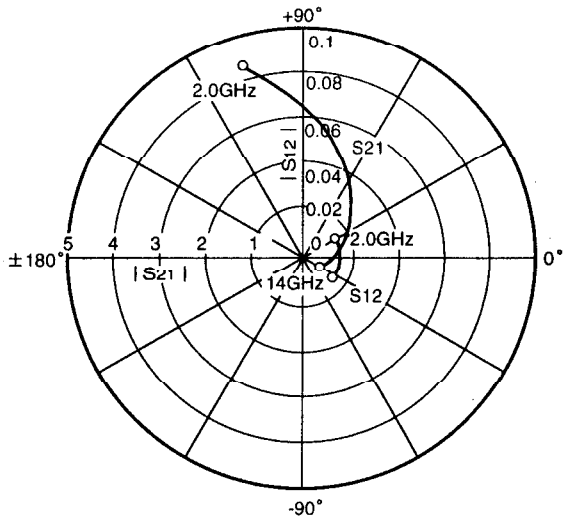
P_O & η_{add} vs. Pin



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



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



Ta=25℃
VDS=10V
ID=450mA

S PARAMETERS (T_a = 25°C, V_{DS} = 10V, I_D = 450mA)

f (GHz)	S Parameters (TYP.)							
	S_{11}		S_{21}		S_{12}		S_{22}	
	Mag.	Angle (deg.)	Mag.	Angle (deg.)	Mag.	Angle (deg.)	Mag.	Angle (deg.)
2.0	0.914	-127.4	4.336	103.4	0.011	21.9	0.589	-175.6
4.0	0.889	-167.6	2.292	71.7	0.012	0.2	0.634	-177.1
6.0	0.886	170.5	1.451	49.6	0.012	-12.4	0.682	-179.6
8.0	0.889	154.7	0.999	31.2	0.012	-22.3	0.729	176.7
10.0	0.895	141.8	0.721	14.9	0.011	-31.0	0.773	172.2
12.0	0.902	130.7	0.535	0.4	0.011	-38.8	0.811	167.3
14.0	0.910	121.1	0.406	-12.7	0.010	-45.9	0.843	162.2