

< X/Ku band internally matched power GaAs FET >

MGFK33V4045

14.0 – 14.5 GHz BAND / 2W

DESCRIPTION

The MGFK33V4045 is an internally impedance-matched GaAs power FET especially designed for use in 14.0 – 14.5 GHz band amplifiers. The hermetically sealed metal-ceramic package guarantees high reliability.

FEATURES

Internally matched to 50(ohm) system

Flip-chip mounted

- High output power
P1dB=2.0W (TYP.) @f=14.0 – 14.5GHz
- High linear power gain
GLP=7.0dB (TYP.) @f=14.0 – 14.5GHz
- High power added efficiency
P.A.E.=22% (TYP.) @f=14.0 – 14.5GHz

APPLICATION

- 14.0 – 14.5 GHz band power amplifiers

QUALITY GRADE

- IG

RECOMMENDED BIAS CONDITIONS

- VDS=8V • ID=700mA Refer to Bias Procedure

Absolute maximum ratings (Ta=25°C)

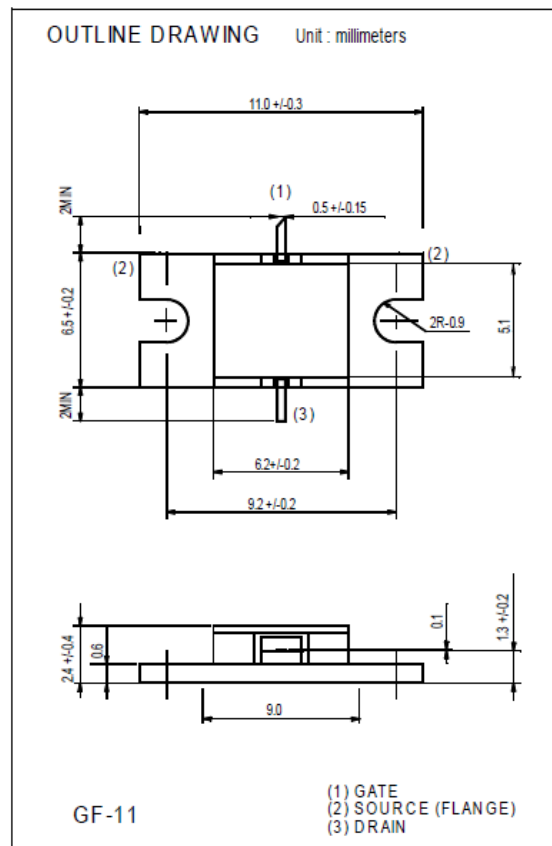
Symbol	Parameter	Ratings	Unit
VGDO	Gate to drain breakdown voltage	-15	V
VGSO	Gate to source breakdown voltage	-15	V
ID	Drain current	1800	mA
IGR	Reverse gate current	-5	mA
IGF	Forward gate current	10	mA
PT *1	Total power dissipation	17	W
Tch	Channel temperature	175	°C
Tstg	Storage temperature	-65 to +175	°C

*1 : Tc=25°C

Electrical characteristics (Ta=25°C)

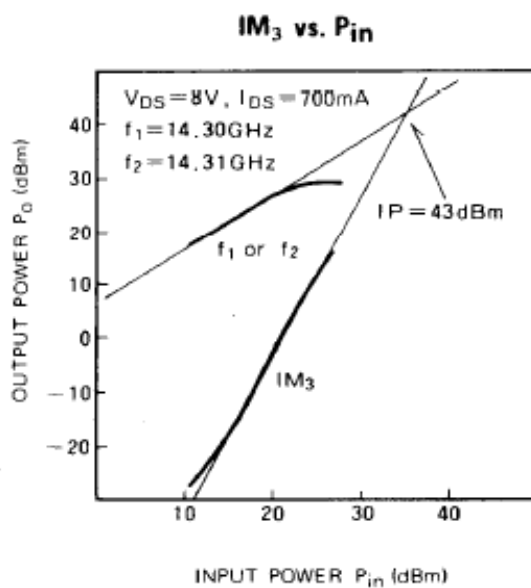
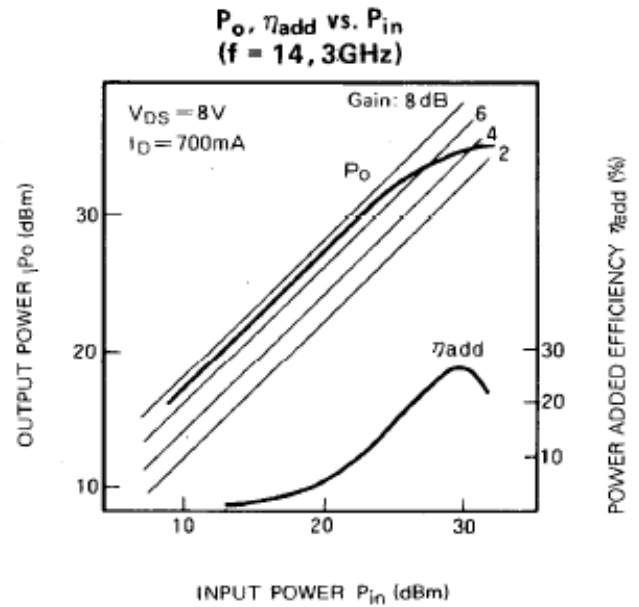
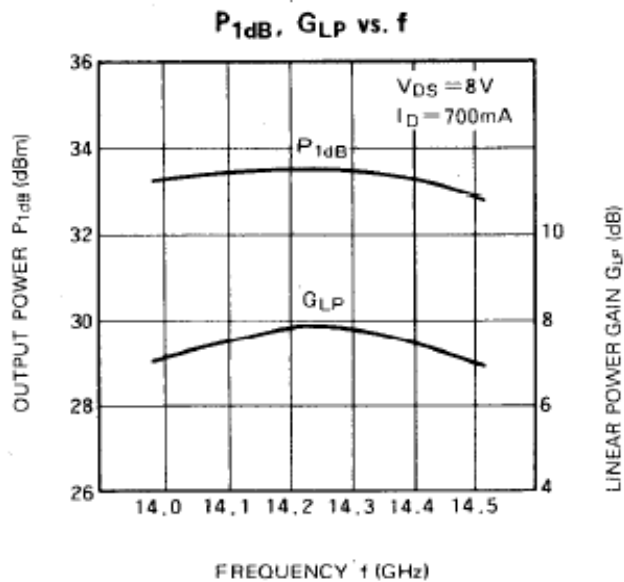
Symbol	Parameter	Test conditions	Limits			Unit
			Min.	Typ.	Max.	
IDSS	Saturated drain current	VDS=3V, VGS=0V	-	1.1	1.8	A
gm	Transconductance	VDS=3V, ID=700mA	-	600	-	mS
VGS(off)	Gate to source cut-off voltage	VDS=3V, ID=4mA	-2	-	-5	V
P1dB	Output power at 1dB gain compression	VDS=8V, ID(RF off)=700mA f=14.0 – 14.5GHz	32	33	-	dBm
GLP	Linear Power Gain		5.5	7	-	dB
PAE	Power added efficiency		-	22	-	%
Rth(ch-c) *2	Thermal resistance	delta Vf method	-	-	10	°C/W

*2 : Channel-case



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 measure such as (i) placement of substitutive, auxiliary circuits, (ii) use of non-flammable material or (iii) prevention against any malfunction or mishap.

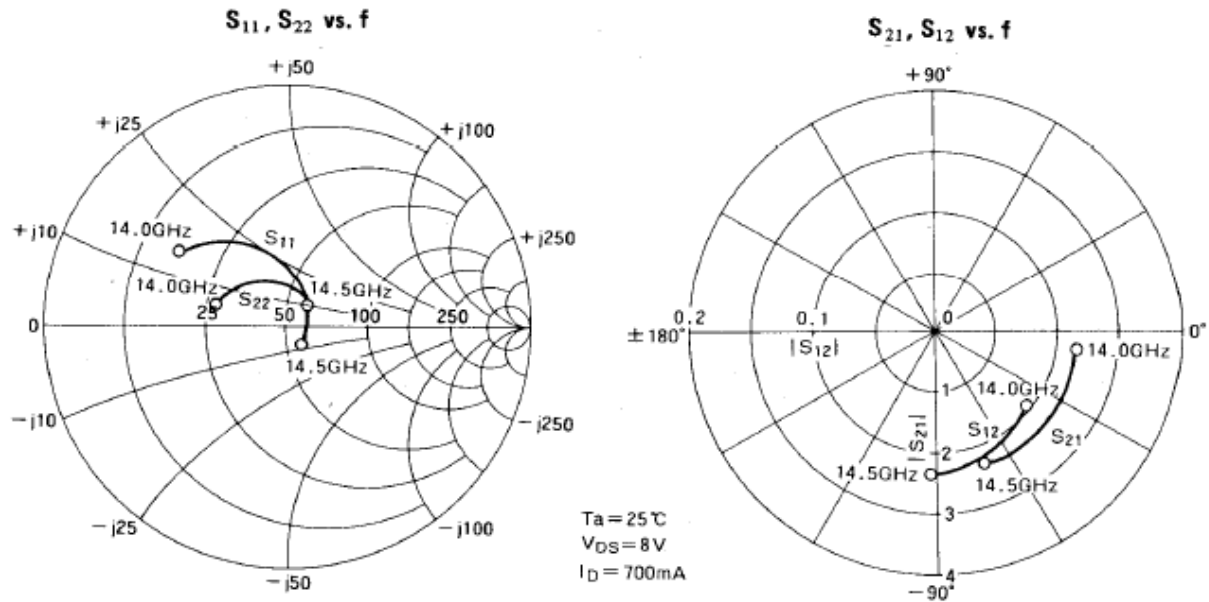
MGFK33V4045 TYPICAL CHARACTERISTICS



MGFK33V4045

14.0 – 14.5 GHz BAND / 2W

MGFK33V4045 S-parameters(Ta=25deg.C , VDS=8(V),IDS=700(mA))



f (GHz)	S Parameters(Typ.)							
	S11		S21		S12		S22	
	Magn.	Angle(deg.)	Magn.	Angle(deg.)	Magn.	Angle(deg.)	Magn.	Angle(deg.)
14.0	0.50	136	2.28	-10	0.099	-41	0.32	164
14.1	0.38	121	2.35	-25	0.108	-52	0.29	153
14.2	0.27	103	2.39	-38	0.113	-61	0.25	142
14.3	0.19	78	2.43	-51	0.127	-71	0.20	130
14.4	0.13	42	2.37	-62	0.134	-82	0.15	115
14.5	0.18	5	2.29	-72	0.142	-93	0.12	93

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