MITSUBISHI ELECTRIC

< X/Ku band internally matched power GaAs FET >

MGFK35V4045

14.0 – 14.5 GHz BAND / 3.5W

DESCRIPTION

The MGFK35V4045 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

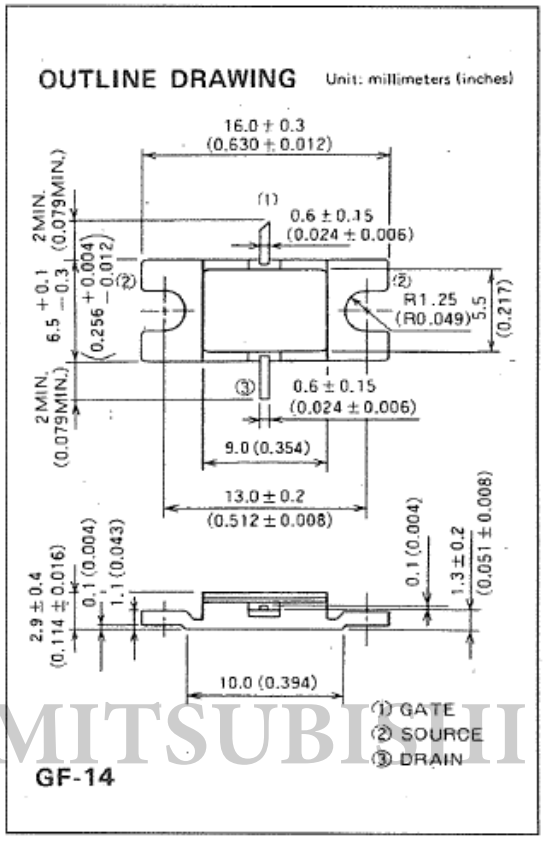
Internally matched to 50(ohm) system
Flip-chip mounted
- High output power
  P1dB=3.5W (TYP.) @f=14.0 – 14.5GHz
- High linear power gain
  GLP=6.4dB (TYP.) @f=14.0 – 14.5GHz
- High power added efficiency
  P.A.E.=20% (TYP.) @f=14.0 – 14.5GHz

APPLICATION

- 14.0 – 14.5 GHz band power amplifiers

QUALITY GRADE

- IG



RECOMMENDED BIAS CONDITIONS

- VDS=10V • ID=1.2A 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	3500	mA
IGR	Reverse gate current	-9	mA
IGF	Forward gate current	17	mA
PT *1	Total power dissipation	33.3	W
Tch	Cannel temperature	175	°C
Tstg	Storage temperature	-65 to +175	°C

*1 : Tc=25°C

Keep Safety first in your circuit designs!

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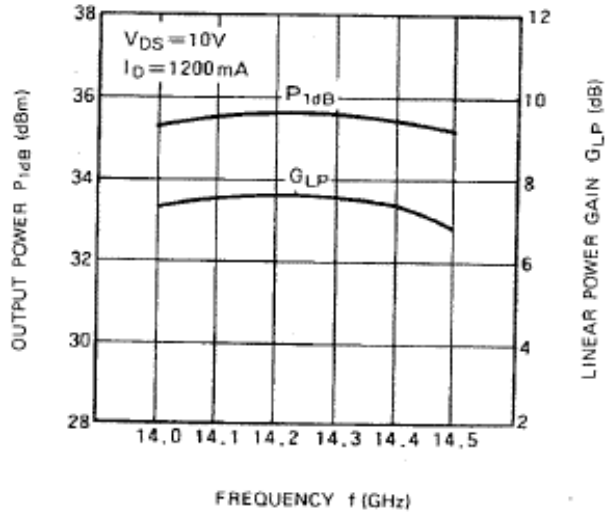
Electrical characteristics (Ta=25°C)

Symbol	Parameter	Test conditions	Limits			Unit
			Min.	Typ.	Max.	
IDSS	Saturated drain current	VDS=3V,VGS=0V	2000	2700	3500	mA
gm	Transconductance	VDS=3V,ID=1200mA	700	1000	-	mS
VGS(off)	Gate to source cut-off voltage	VDS=3V,ID=10mA	-2	-	-5	V
P1dB	Output power at 1dB gain compression	VDS=10V,ID(RF off)=1200mA	34.5	35.4	-	dBm
GLP	Linear Power Gain	f=14.0 – 14.5GHz	5.5	6.4	-	dB
PAE	Power added efficiency		-	20	-	%
Rth(ch-c) *2	Thermal resistance	delta Vf method	-	-	4.5	°C/W

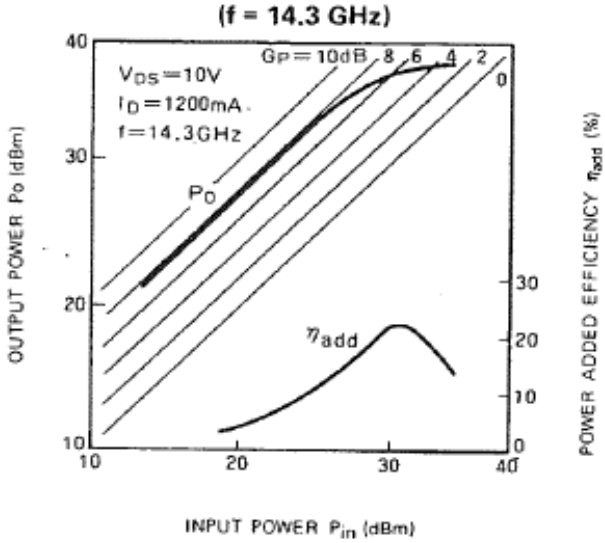
*2 : Channel-case

MGFK35V4045 TYPICAL CHARACTERISTICS

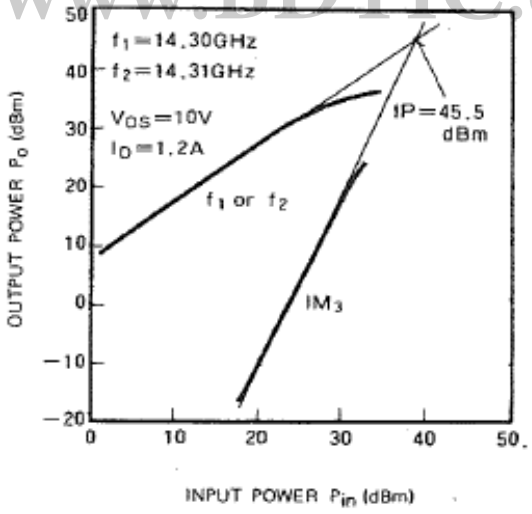
P_{1dB}, G_{LP} vs. f



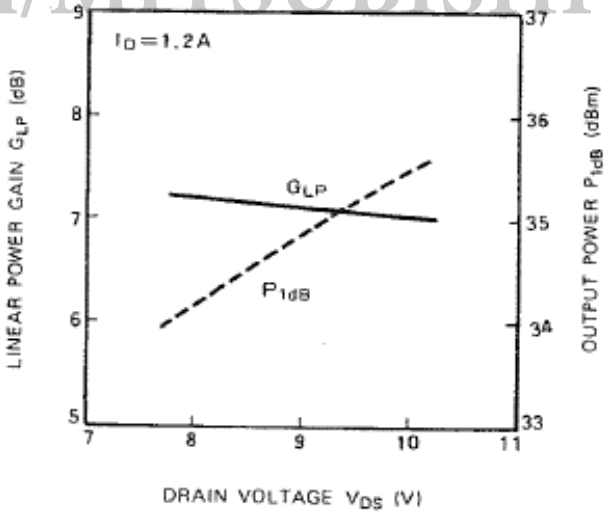
P_o, η_{add} vs. P_{in} (f = 14.3 GHz)



IM_3 vs. Pin



G_{LP} & P_{1dB} vs. V_{DS} (f = 14.3 GHz)



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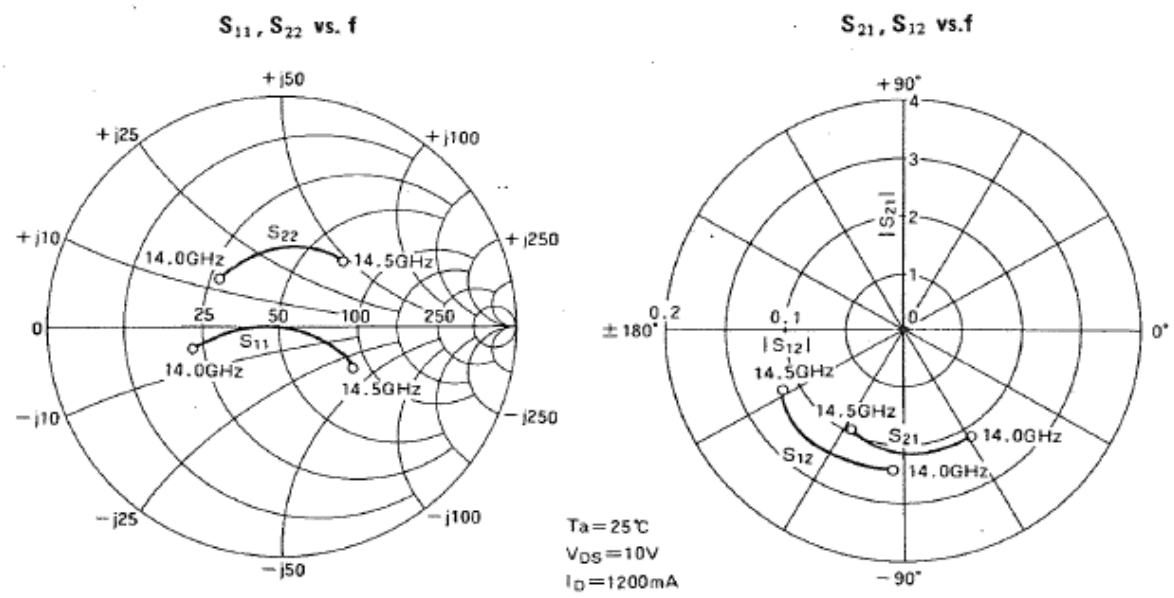
MGFK35V4045 S-parameters(Ta=25deg.C , VDS=10(V),IDS=1200(mA))



f (GHz)	S Parameters(Typ.)							
	S11		S21		S12		S22	
	Magn.	Angle(deg.)	Magn.	Angle(deg.)	Magn.	Angle(deg.)	Magn.	Angle(deg.)
14.0	0.391	-164	2.089	-58	0.137	-94	0.324	139
14.1	0.224	-173	2.163	-70	0.139	-105	0.322	117
14.2	0.091	176	2.188	-82	0.141	-118	0.331	98
14.3	0.052	-3	2.163	-93	0.143	-130	0.342	78
14.4	0.052	-22	2.113	-105	0.140	-141	0.362	62
14.5	0.337	-32	1.995	-117	0.127	-152	0.397	47

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