MITSUBISHI ELECTRIC

< C band internally matched power GaAs FET >

MGFC42V6472A

6.4 – 7.2 GHz BAND / 16W

DESCRIPTION

The MGFC42V6472A is an internally impedance-matched GaAs power FET especially designed for use in 6.4 – 7.2 GHz band amplifiers. The hermetically sealed metal-ceramic package guarantees high reliability.

FEATURES

Internally matched to 50(ohm) system
- High output power
  P1dB=16W (TYP.) @f=6.4 – 7.2GHz
- High power gain
  GLP=8.0dB (TYP.) @f=6.4 – 7.2GHz
- High power added efficiency
  P.A.E.=31% (TYP.) @f=6.4 – 7.2GHz
- Low distortion [item -51]
  IM3=-45dBc (TYP.) @Po=31.0dBm S.C.L

APPLICATION

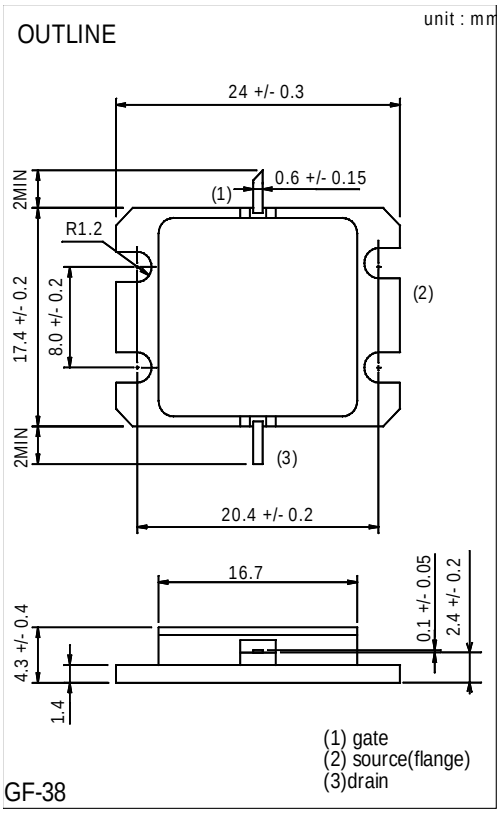
- item 01 : 6.4 – 7.2 GHz band power amplifier
- item 51 : 6.4 – 7.2 GHz band digital radio communication

QUALITY

- IG

RECOMMENDED BIAS CONDITIONS

- VDS=10V • ID=4.5A • RG=25ohm 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	15	A
IGR	Reverse gate current	-40	mA
IGF	Forward gate current	84	mA
PT *1	Total power dissipation	93.7	W
Tch	Cannel temperature	175	°C
Tstg	Storage temperature	-65 to +175	°C

*1 : Tc=25°C

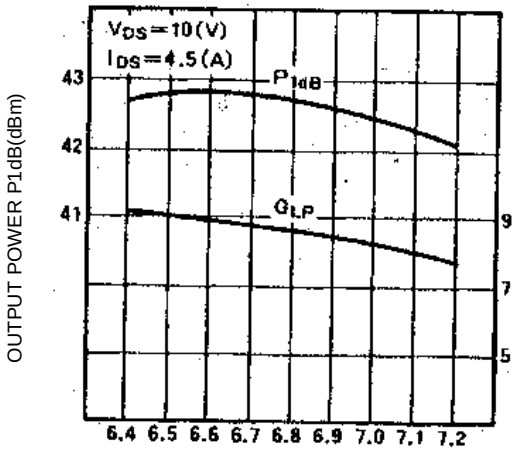
Electrical characteristics (Ta=25°C)

Symbol	Parameter	Test conditions	Limits			Unit
			Min.	Typ.	Max.	
IDSS	Saturated drain current	VDS=3V,VGS=0V	-	9	12	A
gm	Transconductance	VDS=3V,ID=4.4A	-	4	-	S
VGS(off)	Gate to source cut-off voltage	VDS=3V,ID=80mA	-2	-3	-4	V
P1dB	Output power at 1dB gain compression	VDS=10V,ID(RF off)=4.5A	41.5	42.5	-	dBm
GLP	Linear Power Gain	f=6.4 – 7.2GHz	7	8	-	dB
ID	Drain current		-	4.5	-	A
P.A.E.	Power added efficiency		-	31	-	%
IM3 *2	3rd order IM distortion		-42	-45	-	dBc
Rth(ch-c) *3	Thermal resistance	delta Vf method	-	-	1.6	°C/W

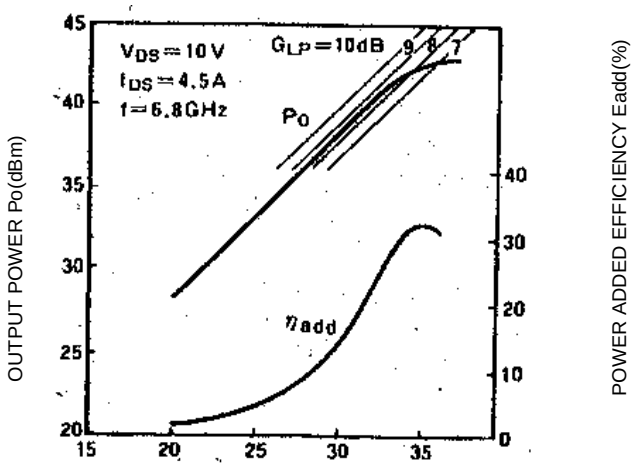
*2 :item -51 ,2 tone test,Po=31.0dBm Single Carrier Level ,f=7.2GHz,delta f=10MHz
*3 :Channel-case

MGFC42V6472A TYPICAL CHARACTERISTICS(Ta=25deg.C)

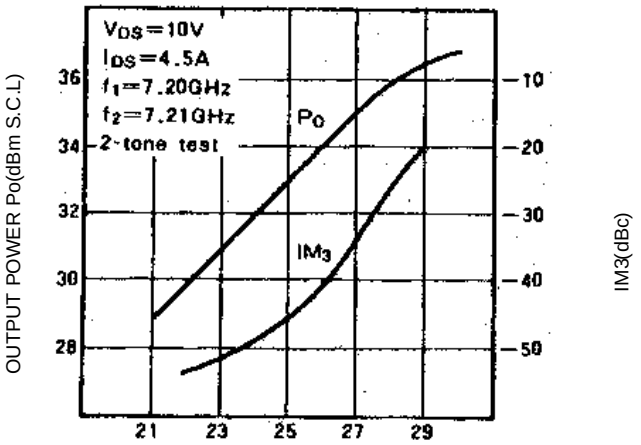
P1dB,Glp VS. f



Po,Eadd VS. Pin



Po,IM3 VS. Pin



MGFC42V6472A S-parameters(Ta=25deg.C , VDS=10(V),IDS=4.5(A))

f	S Parameters (TYP.)							
	S_{11}		S_{21}		S_{12}		S_{22}	
(GHz)	Magn.	Angle(deg.)	Magn.	Angle(deg.)	Magn.	Angle(deg.)	Magn.	Angle(deg.)
6.40	0.41	77	2.83	-95	0.068	-147	0.30	67
6.50	0.40	59	2.80	-111	0.072	-162	0.35	59
6.60	0.38	42	2.78	-127	0.075	-177	0.40	54
6.70	0.36	26	2.72	-143	0.078	167	0.42	48
6.80	0.33	11	2.64	-158	0.080	151	0.44	42
6.90	0.28	-3	2.60	-173	0.081	137	0.45	36
7.00	0.22	-20	2.57	171	0.082	122	0.44	32
7.10	0.17	-46	2.53	157	0.084	108	0.43	28
7.20	0.14	-91	2.50	141	0.086	93	0.40	26

Keep safety first in your circuit designs!

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