MITSUBISHI ELECTRIC

< C band internally matched power GaAs FET >

MGFC45V4450A

4.4 – 5.0 GHz BAND / 32W

DESCRIPTION

The MGFC45V4450A is an internally impedance-matched GaAs power FET especially designed for use in 4.4 – 5.0 GHz band amplifiers. The hermetically sealed metal-ceramic package guarantees high reliability.

FEATURES

Class A operation
Internally matched to 50(ohm) system
- High output power
  P1dB=32W (TYP.) @f=4.4 – 5.0GHz
- High power gain
  GLP=10.0dB (TYP.) @f=4.4 – 5.0GHz
- High power added efficiency
  P.A.E.=34% (TYP.) @f=4.4 – 5.0GHz
- Low distortion [item -51]
  IM3=-45dBc (TYP.) @Po=34.5dBm S.C.L

APPLICATION

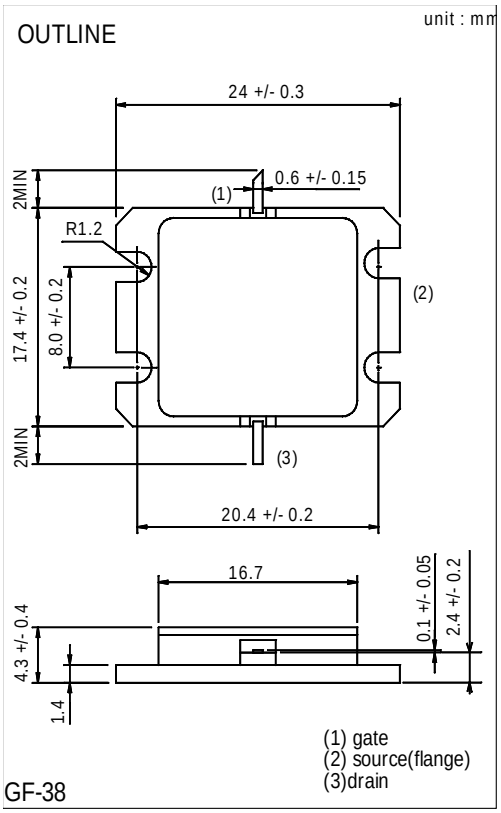
- item 01 : 4.4 – 5.0 GHz band power amplifier
- item 51 : 4.4 – 5.0 GHz band digital radio communication

QUALITY

- IG

RECOMMENDED BIAS CONDITIONS

- VDS=10V • ID=8.0A • RG=25ohm



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	20	A
IGR	Reverse gate current	-80	mA
IGF	Forward gate current	168	mA
PT *1	Total power dissipation	150	W
Tch	Cannel temperature	175	°C
Tstg	Storage temperature	-65 to +175	°C

*1 : Tc=25°C

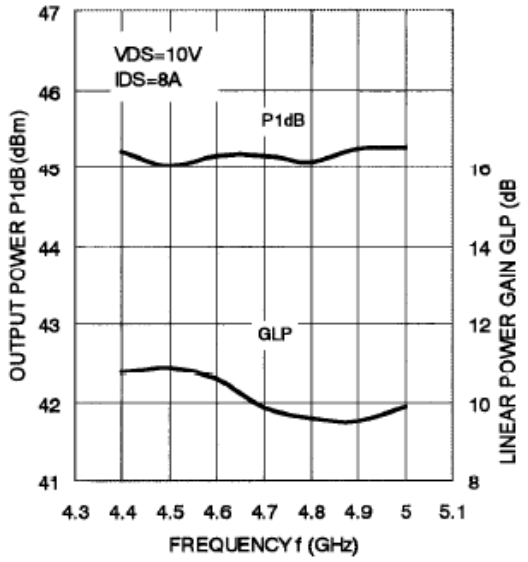
Electrical characteristics (Ta=25°C)

Symbol	Parameter	Test conditions	Limits			Unit
			Min.	Typ.	Max.	
IDSS	Saturated drain current	VDS=3V,VGS=0V	-	24	-	A
gm	Transconductance	VDS=3V,ID=8.0A	-	8	-	S
VGS(off)	Gate to source cut-off voltage	VDS=3V,ID=160mA	-2	-	-5	V
P1dB	Output power at 1dB gain compression	VDS=10V,ID(RF off)=8.0A	44	45	-	dBm
GLP	Linear Power Gain	f=4.4 – 5.0GHz	9	10	-	dB
ID	Drain current		-	8	-	A
P.A.E.	Power added efficiency		-	34	-	%
IM3 *2	3rd order IM distortion		-42	-45	-	dBc
Rth(ch-c) *3	Thermal resistance	delta Vf method	-	0.8	1	°C/W

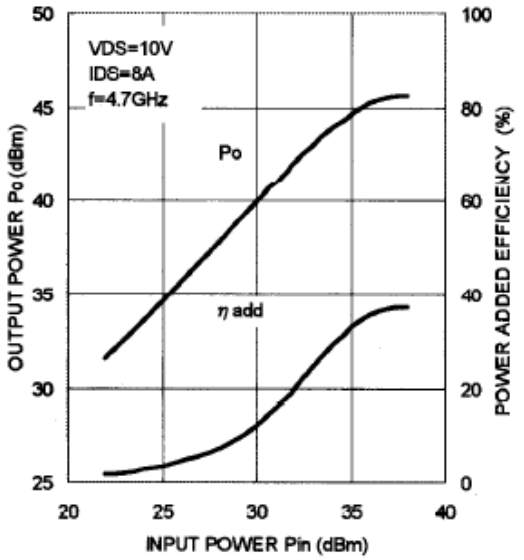
*2 :item -51 ,2 tone test,Po=34.5dBm Single Carrier Level ,f=4.4,4.7,5.0GHz,delta f=10MHz
*3 :Channel-case

MGFC45V4450A TYPICAL CHARACTERISTICS(Ta=25deg.C)

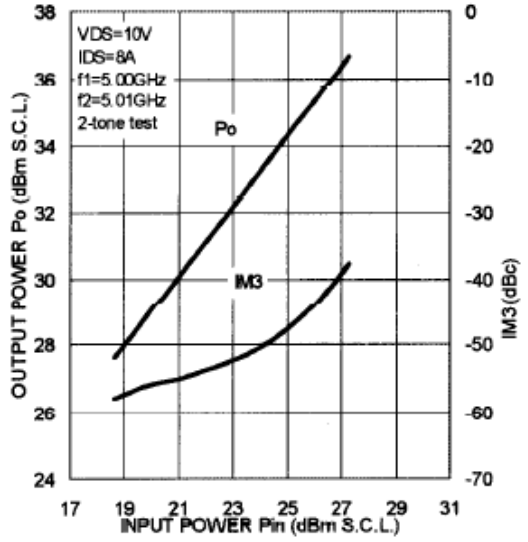
P1dB,GLP vs. f



Po,PAE vs. Pin



Po,IM3 vs. Pin



MGFC45V4450A S-parameters(Ta=25deg.C , VDS=10(V),IDS=8.0(A))

f (GHz)	S Parameters(Typ.)							
	S11		S21		S12		S22	
	Magn.	Angle(deg.)	Magn.	Angle(deg.)	Magn.	Angle(deg.)	Magn.	Angle(deg.)
4.4	0.58	-132	2.881	54	0.04	2	0.30	-56
4.5	0.59	-163	2.936	31	0.04	-21	0.23	-82
4.6	0.58	171	2.865	8	0.05	-52	0.16	-125
4.7	0.59	151	2.782	-12	0.05	-67	0.18	-170
4.8	0.56	134	2.670	-32	0.05	-94	0.24	160
4.9	0.54	120	2.628	-51	0.05	-112	0.32	138
5.0	0.50	111	2.528	-70	0.06	-129	0.38	125

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