MGFC45V4450A

4.4 - 5.0GHz BAND 32W INTERNALLY MATCHED GaAs FET

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 - 5.0 GHz
High power gain
GLP = 10 dB (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 ratio communication

QUALITY GRADE

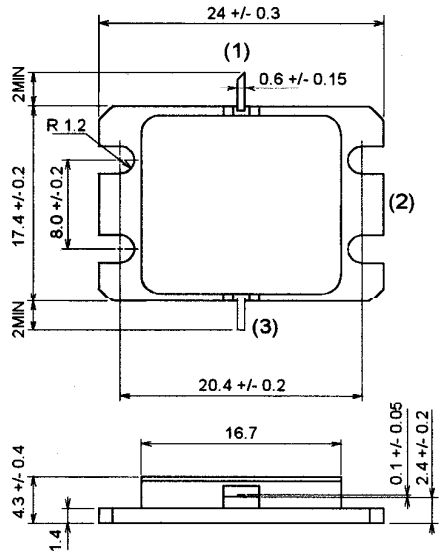
IG

RECOMMENDED BIAS CONDITIONS

VDS = 10 (V)
ID = 8 (A)
RG=25 (ohm)

OUTLINE DRAWING

Unit : millimeters



GF-38

(1) GATE
(2) SOURCE (FLANGE)
(3) DRAIN

ABSOLUTE MAXIMUM RATINGS (Ta=25deg.C)

Symbol	Parameter	Ratings	Unit
VGDO	Gate to drain voltage	-15	V
VGSO	Gate to source 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	Channel temperature	175	deg.C
Tstg	Storage temperature	-65 / +175	deg.C

*1 : Tc=25deg.C

< 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 (1)placement of substitutive, auxiliary circuits, (2)use of non-flammable material or (3)prevention against any malfunction or mishap.

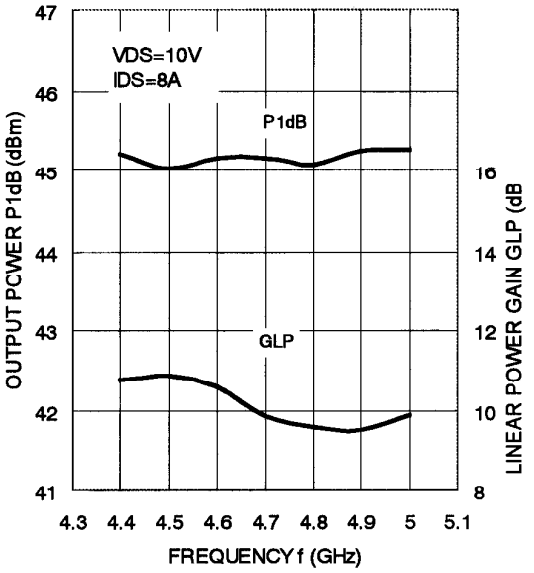
ELECTRICAL CHARACTERISTICS (Ta=25deg.C)

Symbol	Parameter	Test conditions	Limits			Unit
			Min.	Typ.	Max.	
IDSS	Saturated drain current	VDS = 3V , VGS = 0V	-	24	-	A
gm	Transconductance	VDS = 3V , ID = 8A	-	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)=8A, f=4.4 - 5.0GHz	44	45	-	dBm
GLP	Linear power gain		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	deg.C/W

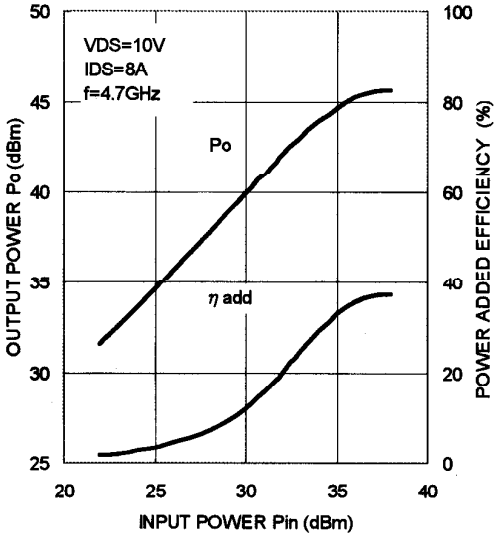
*2 : item -51,2 tone test,Po=34.5dBm Single Carrier Level,f=4.4,3.5,5.0GHz,delta f=10MHz
*3 : Channel-case

TYPICAL CHARACTERISTICS

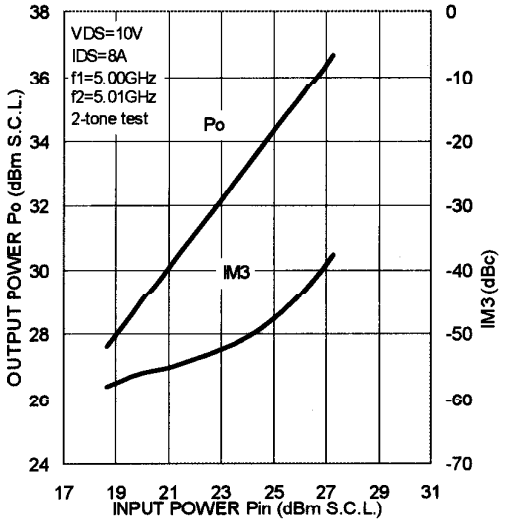
P1dB,GLP vs. f



Po, P.A.E. vs. Pin



Po,IM3 vs. Pin



S parameters (Ta=25deg.C , VDS=10(V),IDS=8(A))

f	S-Parameter (TYP.)							
	S_{11}		S_{21}		S_{12}		S_{22}	
(GHz)	Magn.	Angle(deg.)	Magn.	Angle(deg.)	Magn.	Angle(deg.)	Magn.	Angle(deg.)
4.4	0.58	-132	0.04	2	2.881	54	0.30	-56
4.5	0.59	-163	0.04	-21	2.936	31	0.23	-82
4.6	0.58	171	0.05	-52	2.865	8	0.16	-125
4.7	0.59	151	0.05	-67	2.782	-12	0.18	-170
4.8	0.56	134	0.05	-94	2.670	-32	0.24	160
4.9	0.54	120	0.05	-112	2.628	-51	0.32	138
5.0	0.50	111	0.06	-129	2.528	-70	0.38	125

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