

MGFC44V4450

4.4 ~ 5.0GHz BAND 24W INTERNALLY MATCHED GaAs FET

DESCRIPTION

The MGFC44V4450 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

- Internally matched to 50Ω system
- High output power
P1dB = 25W (TYP.) @ f=4.4 ~ 5.0 GHz
- High power gain
GLP = 10.0 dB (TYP.) @ f=4.4 ~ 5.0 GHz
- High power added efficiency
η_{add} = 35 % (TYP.) @ f=4.4 ~ 5.0 GHz
- Low Distortion[Item-51]
IM3=-45 dBc(TYP.)@P_o-33.5dBm S.C.L.

APPLICATION

4.4 ~ 5.0GHz band amplifiers

QUALITY GRADE

IG

RECOMMENDED BIAS CONDITIONS

- V_{DS} = 10V
- I_D = 6.4 A
- R_g=25(Ω) Refer to Bias Procedure

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Ratings	Unit
V _{GDO}	Gate to drain voltage	-15	V
V _{GSO}	Gate to source voltage	-15	V
I _D	Drain current	20	A
I _{GR}	Reverse gate current	-60	mA
I _{GF}	Forward gate current	126	mA
P _T	Total power dissipation *1	93	W
T _{ch}	Channel temperature	175	°C
T _{stg}	Storage temperature	-65 ~ +175	°C

*1 : T_c=25°C

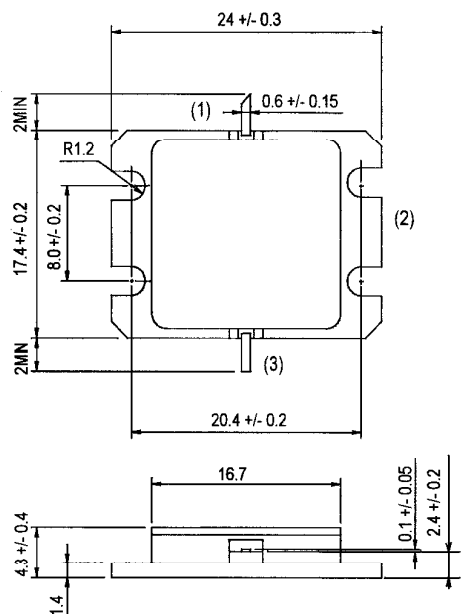
ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Test conditions	Limits			Unit
			Min	Typ	Max	
I _{DSS}	Saturated drain current	V _{DS} = 3V , V _{GS} = 0V	-	18	-	A
G _m	Transconductance	V _{DS} = 3V , I _D = 6.4A	-	6.5	-	S
V _{GS(off)}	Gate to source cut-off volt.	V _{DS} = 3V , I _D = 120mA	-2	-	-5	V
P _{1dB}	Output power at 1dB gain compression	V _{DS} = 10V , I _D = 6.4A , f = 4.4 ~ 5.0 GHz	43	44	-	dBm
G _{LP}	Linear power gain		10	11	-	dB
η _{add}	Power added efficiency		-	35	-	%
IM3 *2	3rd order IM distortion		-42	-45	-	dBc
R _{th(ch-c)}	Thermal resistance *1		ΔVf method	-	-	1.6

*1 : Channel to case

*2 : Item-51, 2tone test, P_o=33.5dBm Single Carrier Level, f=5.0GHz, Δf=10MHz

OUTLINE DRAWING Unit:millimeters



GF-38

- (1) GATE
- (2) SOURCE(FIANGE)
- (3) DRAIN

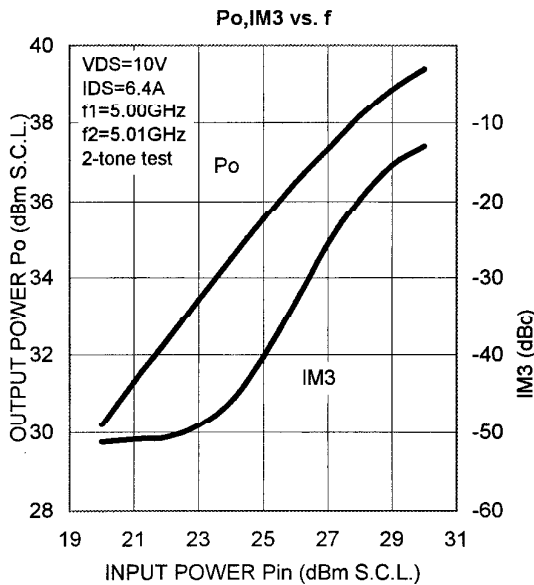
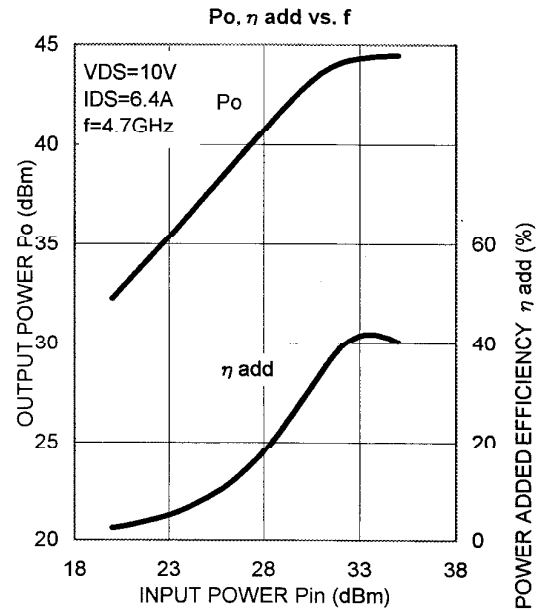
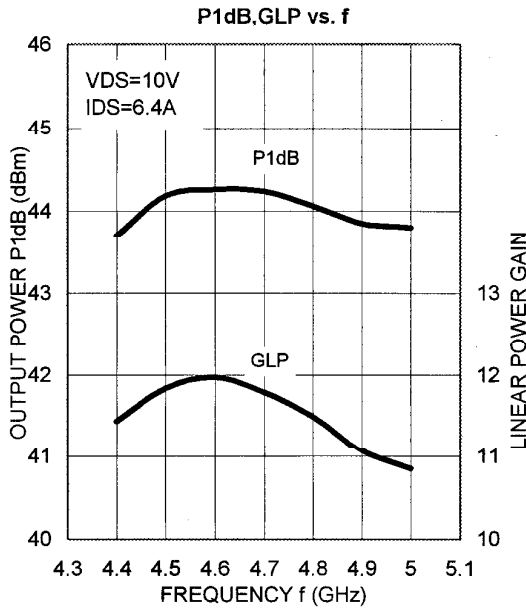
< Keep safety first in your circuit designs! >

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

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TYPICAL CHARACTERISTICS (Ta=25°C)



S PARAMETERS (Ta=25°C, VDS=10V, IDS=6.4A)

f (GHz)	S Parameters (TYP.)							
	S11		S21		S12		S22	
	Magn.	Angle(deg.)	Magn.	Angle(deg.)	Magn.	Angle(deg.)	Magn.	Angle(deg.)
4.4	0.45	-147	3.55	38	0.033	-20	0.33	-56
4.5	0.40	179	3.69	13	0.047	-46	0.26	-85
4.6	0.37	147	3.74	-11	0.046	-72	0.23	-117
4.7	0.31	116	3.70	-34	0.053	-100	0.23	-152
4.8	0.26	79	3.66	-57	0.064	-121	0.23	-179
4.9	0.18	30	3.55	-81	0.070	-143	0.24	157
5.0	0.20	-32	3.40	-105	0.072	-164	0.21	140