

**MGFC44V4450**

4.4 ~ 5.0GHz BAND 24W INTERNALLY MATCHED GaAs FET

**DESCRIPTION**

The MGFC44V4440 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<sub>add</sub> = 35 % (TYP.) @ f=4.4 ~ 5.0 GHz
- Low Distortion[Item-51]  
IM3=-45 dBc(TYP.)@P<sub>o</sub>-33.5dBm S.C.L.

**APPLICATION**

4.4 ~ 5.0GHz band amplifiers

**QUALITY GRADE**

IG

**RECOMMENDED BIAS CONDITIONS**

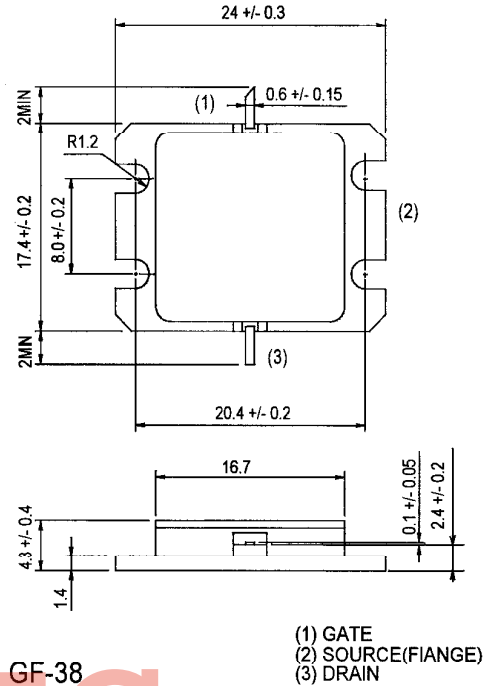
- V<sub>DS</sub> = 10V
- I<sub>D</sub> = 6.4 A
- R<sub>g</sub>=25(Ω) Refer to Bias Procedure

**ABSOLUTE MAXIMUM RATINGS**

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

\*1 : T<sub>c</sub>=25°C

OUTLINE DRAWING Unit:millimeters



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< 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.

**ABSOLUTE MAXIMUM RATINGS**

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

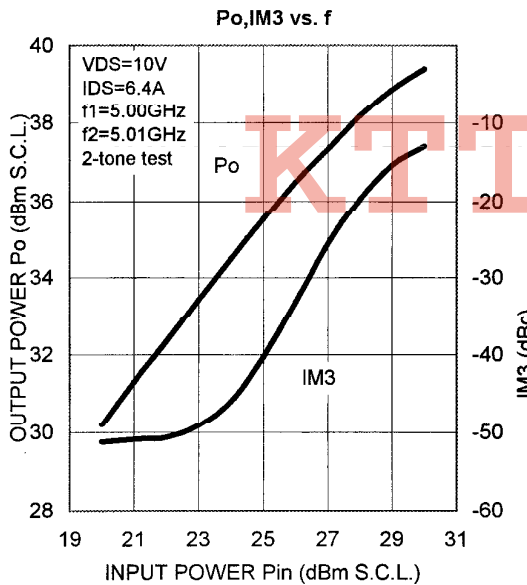
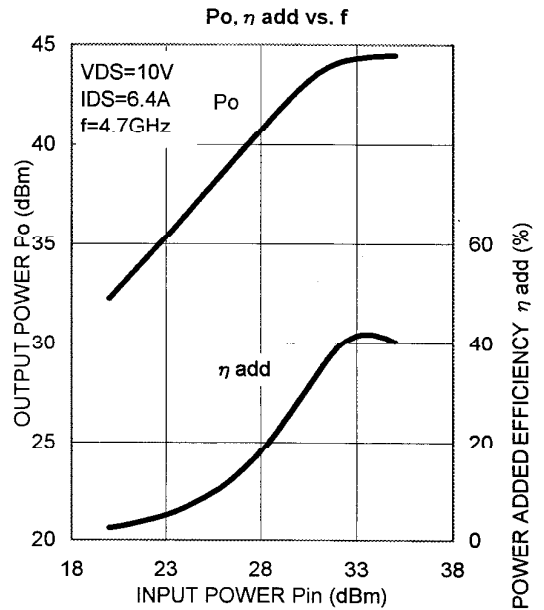
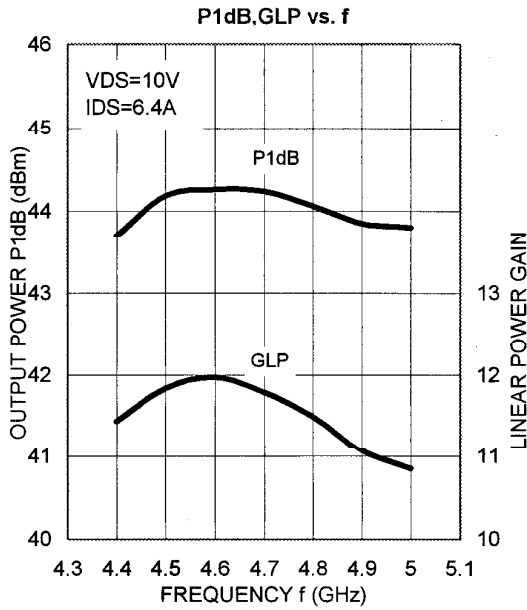
\*1 : Channel to case

\*2 : Item-51,2tone test,P<sub>o</sub>=33.5dBm Single Carrier Level,f=5.0GHz, Δ f=10MHz

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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

**MGFC44V4450****4.4 ~ 5.0GHz BAND 24W INTERNALLY MATCHED GaAs FET****Requests Regarding Safety Designs**

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