

# MGFC44V6472

## 6.4~7.2GHz BAND 24W INTERNALLY MATCHED GaAs FET

### DESCRIPTION

The MGFC44V6472 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

- Class A operation
- Internally matched to 50Ω system
- High output power  
 $P_{1dB} = 24W(TYP) @ 6.4 \sim 7.2 GHz$
- High power gain  
 $G_{LP} = 8 dB(TYP) @ 6.4 \sim 7.2 GHz$
- High power added efficiency  
 $\eta_{add} = 31\%(TYP) @ 6.4 \sim 7.2 GHz$
- Hermetically sealed metal-ceramic package
- Low distortion [Item: -51]  
 $IM_3 = -42dBc(MIN) @ P_o = 33.5(dBm) S.C.L.$

### APPLICATION

Item -01: 6.4 ~ 7.2GHz band power amplifier  
 Item -51: Digital radio communication

### QUALITY GRADE

- IG

### ABSOLUTE MAXIMUM RATINGS (Ta = 25°C)

Symbol	Parameter	Ratings	Unit
V <sub>GD0</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

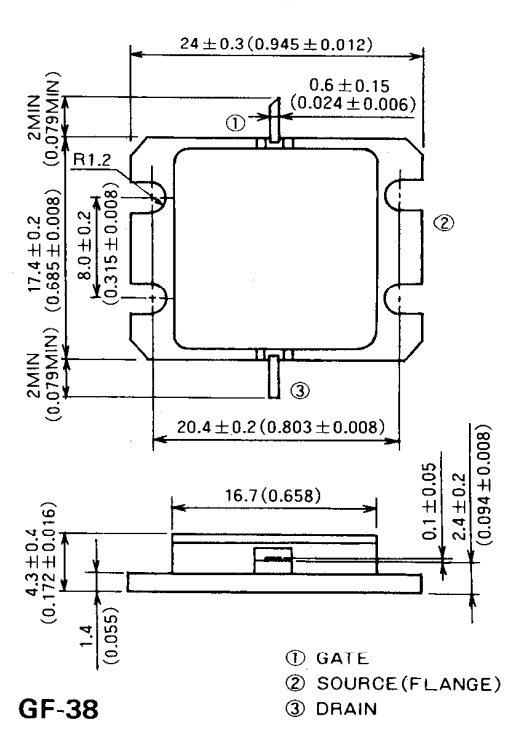
\*1: T<sub>c</sub> = 25°C

### ELECTRICAL CHARACTERISTICS (Ta = 25°C)

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 voltage	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 = 6.4 ~ 7.2GHz	43	44	—	dBm
G <sub>LP</sub>	Linear power gain		7	8	—	dB
η <sub>add</sub>	Power added efficiency		—	31	—	%
IM <sub>3</sub>	3rd order IM distortion *1		-42	—	—	dBc
R <sub>th(ch-c)</sub>	Thermal resistance *2	ΔV <sub>f</sub> method	—	—	1.6	°C/W

\*1: Item-51, 2-tone test P<sub>o</sub> = 33.5dBm Single Carrier Level f = 7.2 GHz Δf = 10 MHz. \*2: Channel to case

### OUTLINE DRAWING Unit: millimeters (inches)

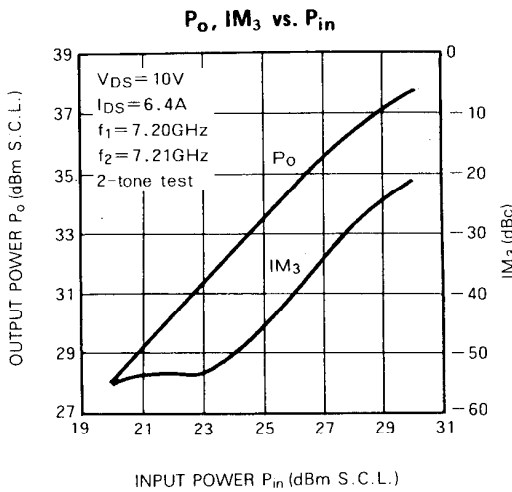
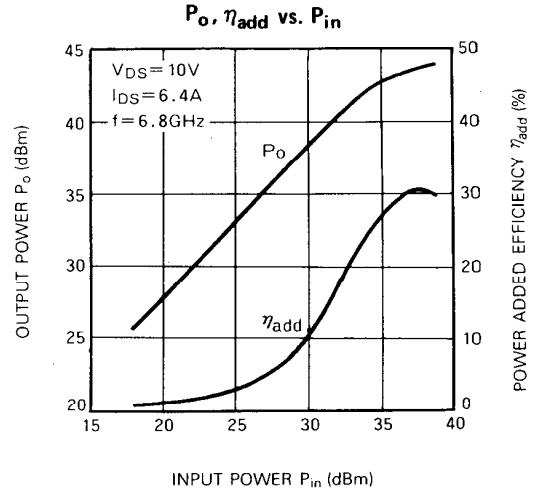
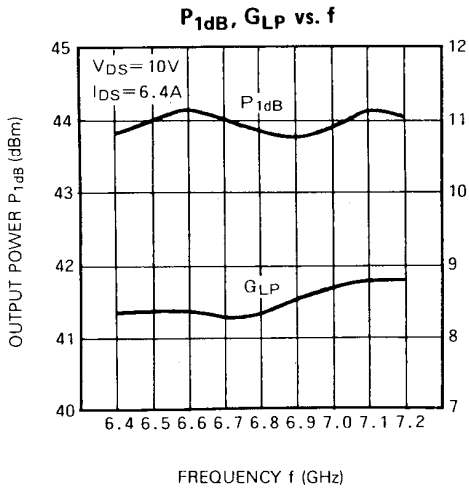


### RECOMMENDED BIAS CONDITIONS

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

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**TYPICAL CHARACTERISTICS** ( $T_a=25^\circ\text{C}$ )



**S PARAMETERS** ( $T_a=25^\circ\text{C}$ ,  $V_{DS}=10\text{V}$ ,  $I_{DS}=6.4\text{A}$ )

f (GHz)	S Parameter (TYP.)							
	$S_{11}$		$S_{21}$		$S_{12}$		$S_{22}$	
	Magn.	Angle (deg.)	Magn.	Angle (deg.)	Magn.	Angle (deg.)	Magn.	Angle (deg.)
6.4	0.55	81	2.46	-124	0.039	-168	0.33	67
6.5	0.51	62	2.52	-141	0.042	173	0.35	71
6.6	0.46	43	2.49	-157	0.051	157	0.32	63
6.7	0.41	25	2.58	-174	0.054	138	0.32	51
6.8	0.37	3	2.60	169	0.062	126	0.31	29
6.9	0.33	-16	2.62	152	0.065	105	0.26	30
7.0	0.28	-37	2.64	136	0.071	91	0.22	16
7.1	0.26	-55	2.68	125	0.071	84	0.19	8
7.2	0.19	-91	2.65	107	0.076	65	0.13	0

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