

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

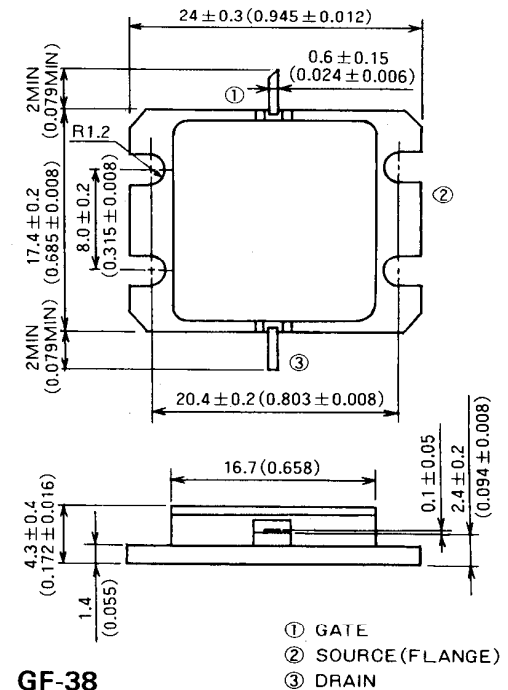
- Class A operation
- Internally matched to 50Ω system
- High output power
 $P_{1dB} = 24W(TYP) @ 6.4 \sim 7.2 GHz$
- High power gain
 $G_{LP} = 8 dB(TYP) @ 6.4 \sim 7.2 GHz$
- High power added efficiency
 $\eta_{add} = 31\%(TYP) @ 6.4 \sim 7.2 GHz$
- Hermetically sealed metal-ceramic package
- Low distortion [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

OUTLINE DRAWING Unit: millimeters (inches)**ABSOLUTE MAXIMUM RATINGS** ($T_a = 25^\circ C$)

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	$^\circ C$
T_{stg}	Storage temperature	-65 ~ +175	$^\circ C$

*1: $T_c = 25^\circ C$

RECOMMENDED BIAS CONDITIONS

- $V_{DS} = 10V$
- $I_D = 6.4A$
- $R_g = 25 \Omega$
- Refer to Bias Procedure.

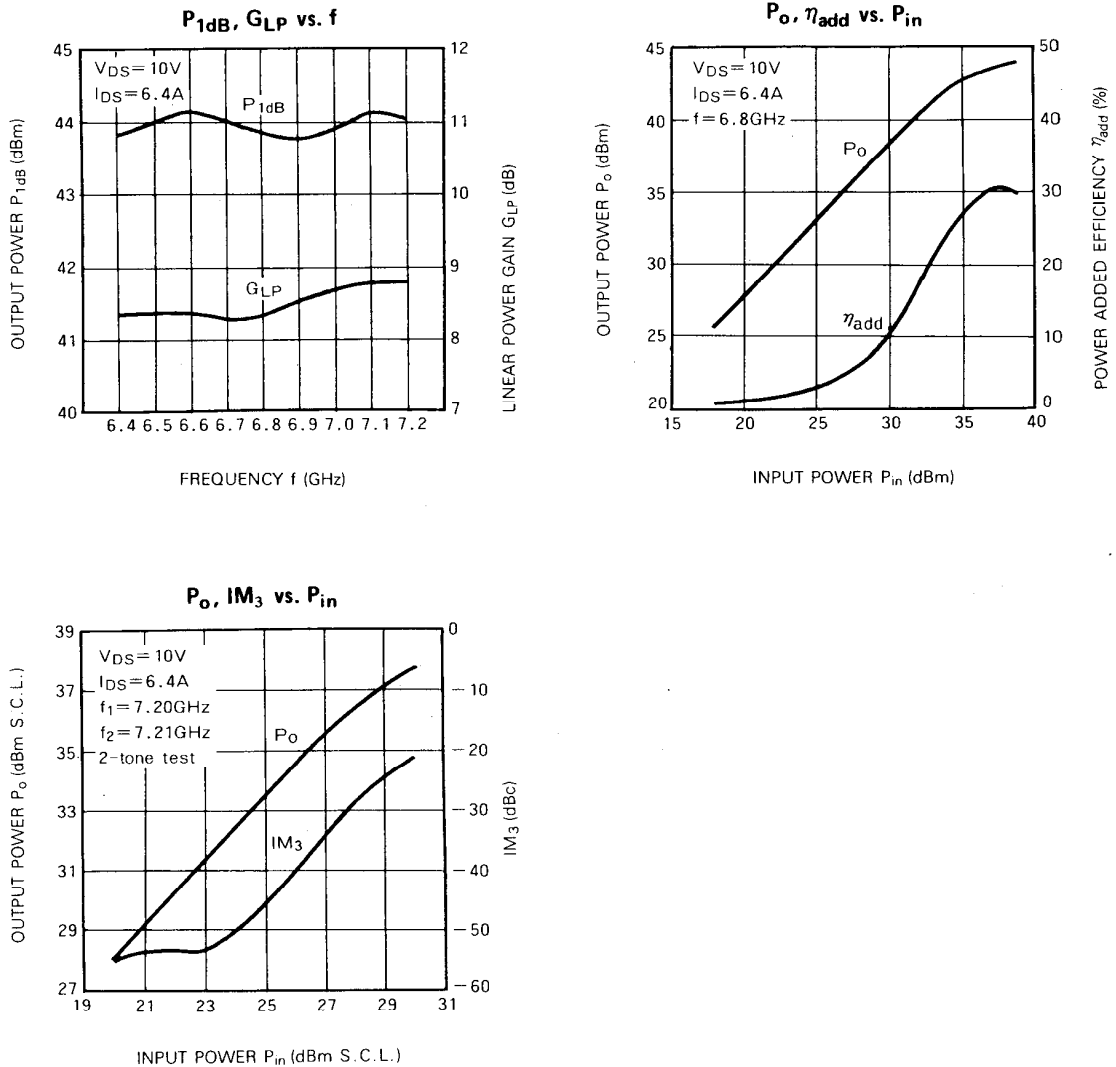
ELECTRICAL CHARACTERISTICS ($T_a = 25^\circ C$)

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 voltage	$V_{DS} = 3V, I_D = 120mA$	-2	—	-5	V
P_{1dB}	Output power at 1dB gain compression	$V_{DS} = 10V, I_D = 6.4A, f = 6.4 \sim 7.2GHz$	43	44	—	dBm
G_{LP}	Linear power gain		7	8	—	dB
η_{add}	Power added efficiency		—	31	—	%
IM_3	3rd order IM distortion *1		-42	—	—	dBc
$\bar{R}_{th(ch-c)}$	Thermal resistance *2	ΔV_f method	—	—	1.6	$^\circ C/W$

*1: Item-51, 2-tone test $P_o = 33.5dBm$ Single Carrier Level $f = 7.2GHz$ $\Delta f = 10MHz$. *2: Channel to case

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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