

MGFC38V6472

6.4~7.2GHz BAND 6W INTERNALLY MATCHED GaAs FET

DESCRIPTION

The MGFC38V6472 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
 $P_{1dB} = 6W$ (TYP) @ 6.4~7.2GHz
- High power gain
 $G_{LP} = 9$ dB (TYP) @ 6.4~7.2GHz
- High power added efficiency
 $\eta_{add} = 31\%$ (TYP) @ 6.4~7.2GHz, P_{1dB}
- Hermetically sealed metal-ceramic package
- Low distortion [Item: -51]
 $IM_3 = -45$ dBc (TYP) @ $P_o = 27$ (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 _{GD0}	Gate to drain voltage	-15	V
V _{GSO}	Gate to source voltage	-15	V
I _D	Drain current	5.0	A
I _{GR}	Reverse gate current	-15	mA
I _{GF}	Forward gate current	31.5	mA
P _T	Total power dissipation *1	30	W
T _{ch}	Channel temperature	175	°C
T _{stg}	Storage temperature	-65 ~ +175	°C

*1: T_c = 25°C

ELECTRICAL CHARACTERISTICS (Ta = 25°C)

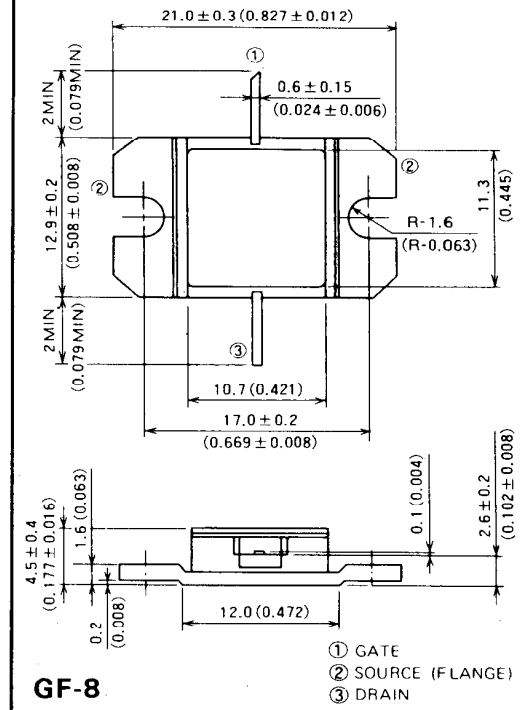
Symbol	Parameter	Test conditions	Limits			Unit
			Min	Typ	Max	
I _{DSS}	Saturated drain current	V _{DS} = 3V, V _{GS} = 0V	—	—	5.0	A
g _m	Transconductance	V _{DS} = 3V, I _D = 1.5A	—	2	—	S
V _{GS(off)}	Gate to source cut-off voltage	V _{DS} = 3V, I _D = 15mA	—	-3.5	-5.0	V
P _{1dB}	Output power at 1dB gain compression	V _{DS} = 10V, I _D = 1.8A, f = 6.4~7.2GHz	37	38	—	dBm
G _{LP}	Linear power gain		8	9	—	dB
I _D	Drain current		—	1.7	—	A
η _{add}	Power added efficiency		—	31	—	%
* IM ₃	3rd order IM distortion *1		-42	-45	—	dBc
R _{th(ch-c)}	Thermal resistance *2		ΔV _f method	—	—	5.0

*1: Item-51, 2-tone test P_o = 27 dBm Single Carrier Level f = 7.2GHz Δf = 10 MHz.

*2: Channel to case

OUTLINE DRAWING

Unit: millimeters (inches)

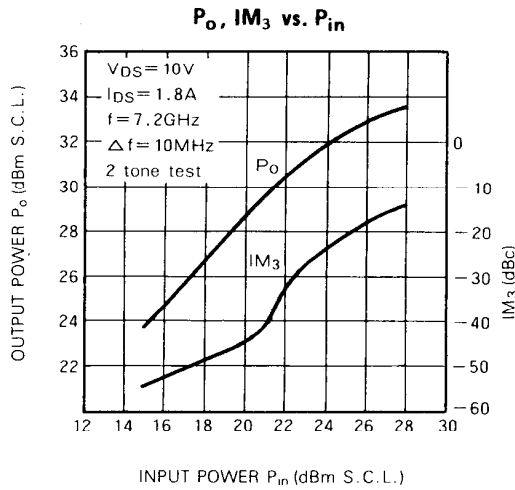
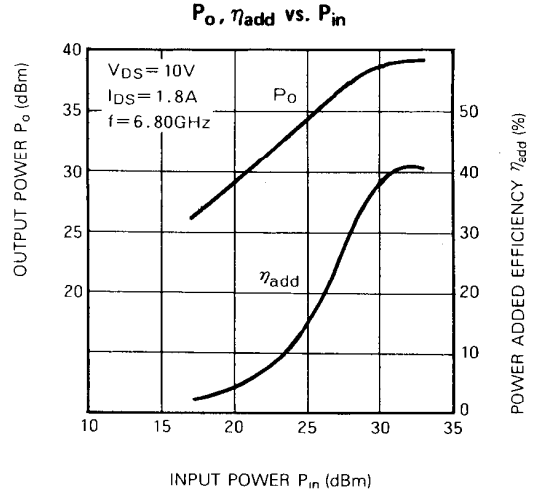
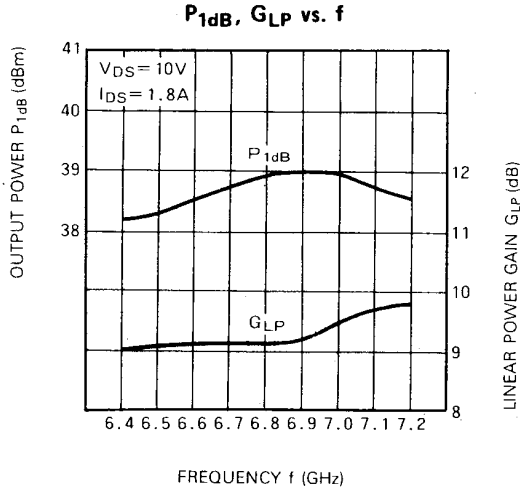


RECOMMENDED BIAS CONDITIONS

- V_{DS} = 10V
- I_D = 1.8A
- R_g = 100Ω
- Refer to Bias Procedure

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



S PARAMETERS ($T_a=25^\circ\text{C}$, $V_{DS}=10\text{V}$, $I_{DS}=1.8\text{A}$)

f (GHz)	S Parameters (TYP.)							
	S_{11}		S_{21}		S_{12}		S_{22}	
	Magn.	Angle (deg.)	Magn.	Angle (deg.)	Magn.	Angle (deg.)	Magn.	Angle (deg.)
6.4	0.56	154	2.86	- 47	0.049	- 91	0.15	- 172
6.5	0.52	142	2.96	- 64	0.051	- 105	0.17	148
6.6	0.45	131	2.94	- 80	0.053	- 123	0.21	128
6.7	0.39	123	3.01	- 97	0.059	- 138	0.27	106
6.8	0.30	119	3.02	- 115	0.062	- 155	0.30	89
6.9	0.25	126	2.98	- 134	0.071	- 171	0.31	76
7.0	0.21	143	2.91	- 153	0.070	170	0.30	57
7.1	0.24	153	2.84	- 166	0.070	161	0.28	44
7.2	0.33	161	2.68	174	0.063	138	0.26	30