

# 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 <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	5.0	A
I <sub>GR</sub>	Reverse gate current	-15	mA
I <sub>GF</sub>	Forward gate current	31.5	mA
P <sub>T</sub>	Total power dissipation *1	30	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)

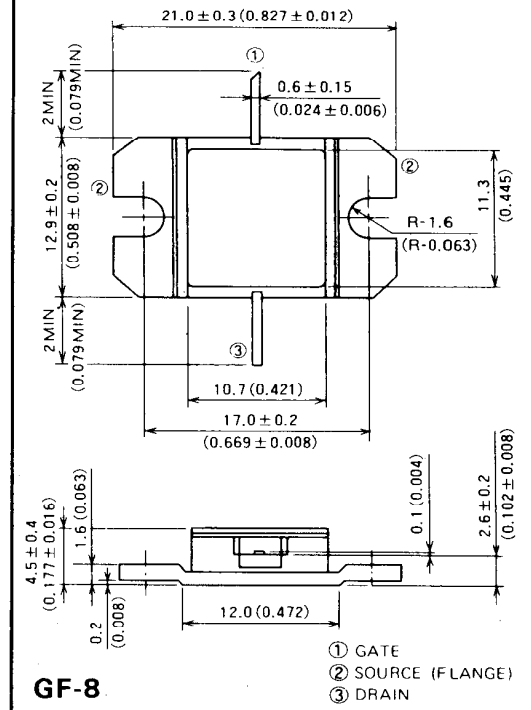
Symbol	Parameter	Test conditions	Limits			Unit
			Min	Typ	Max	
I <sub>DSS</sub>	Saturated drain current	V <sub>DS</sub> = 3V, V <sub>GS</sub> = 0V	—	—	5.0	A
g <sub>m</sub>	Transconductance	V <sub>DS</sub> = 3V, I <sub>D</sub> = 1.5A	—	2	—	S
V <sub>GS(off)</sub>	Gate to source cut-off voltage	V <sub>DS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

\*1: Item-51, 2-tone test P<sub>o</sub> = 27 dBm Single Carrier Level f = 7.2GHz Δf = 10 MHz.

\*2: Channel to case

### OUTLINE DRAWING

Unit: millimeters (inches)

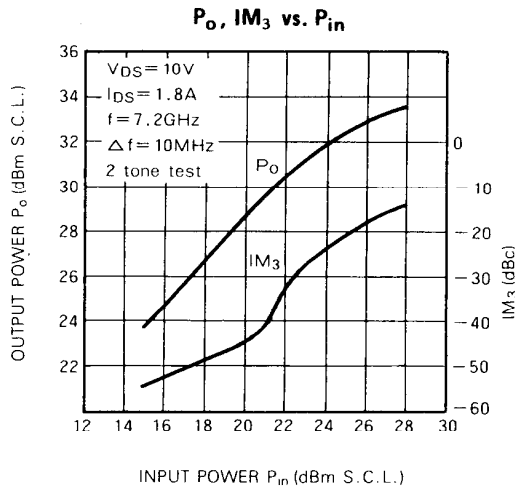
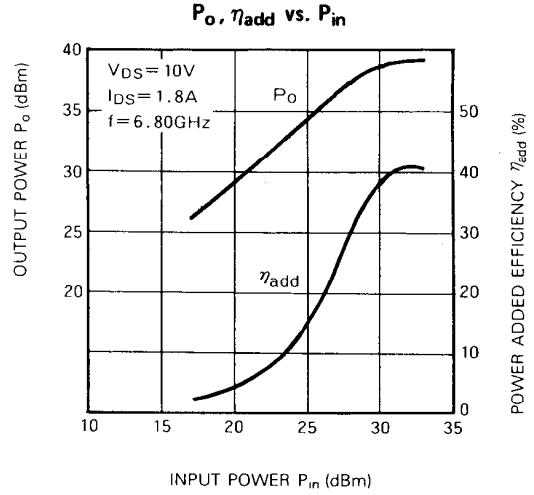
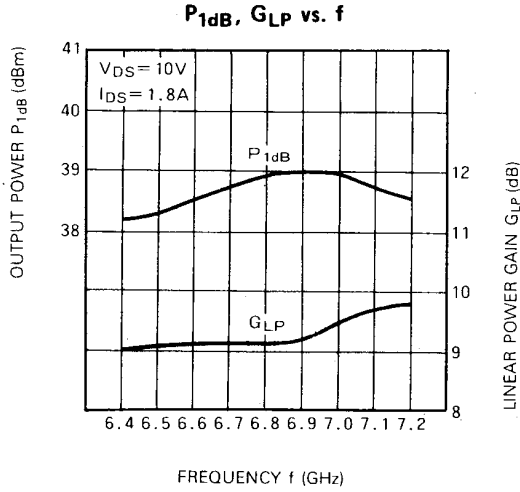


### RECOMMENDED BIAS CONDITIONS

- V<sub>DS</sub> = 10V
- I<sub>D</sub> = 1.8A
- R<sub>g</sub> = 100Ω
- Refer to Bias Procedure

**6.4~7.2GHz BAND 6W INTERNALLY MATCHED GaAs FET**

**TYPICAL CHARACTERISTICS** (Ta=25°C)



**S PARAMETERS** (Ta=25°C, V<sub>DS</sub>=10V, I<sub>DS</sub>=1.8A)

f (GHz)	S Parameters (TYP.)							
	S <sub>11</sub>		S <sub>21</sub>		S <sub>12</sub>		S <sub>22</sub>	
	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