

**PRELIMINARY**

Notice: This is not a final specification.  
Some parametric limits are subject to change.

MITSUBISHI SEMICONDUCTOR <GaAs FET>

# MGFC36V6472A

6.4~7.2GHz BAND 4W INTERNALLY MATCHED GaAs FET

## DESCRIPTION

The MGFC36V6472A is an internally impedance-matched GaAs power FET especially designed for use in 6.4~7.2GHz band amplifiers. The hermetically sealed metal-ceramic package guarantees high reliability.

## FEATURES

- Class A operation
- Internally matched to 50Ω system
- High output power  
P<sub>1dB</sub> = 4W(TYP) @ 6.4~7.2GHz
- High power gain  
G<sub>LP</sub> = 9dB(TYP) @ 6.4~7.2GHz
- High power added efficiency  
η<sub>add</sub> = 30%(TYP) @ 6.4~7.2GHz
- Hermetically sealed metal-ceramic package
- Low distortion [Item : -51]  
IM<sub>3</sub> = -45dBc(TYP) @ P<sub>o</sub> = 25(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 (T<sub>a</sub> = 25°C)

Symbol	Parameter	Ratings	Unit
V <sub>GD0</sub>	Gate to drain voltage	- 15	V
V <sub>GS0</sub>	Gate to source voltage	- 15	V
I <sub>D</sub>	Drain current	3.75	A
I <sub>GR</sub>	Reverse gate current	- 10	mA
I <sub>GF</sub>	Forward gate current	21	mA
P <sub>T</sub>	Total power dissipation * 1	25	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 (T<sub>a</sub> = 25°C)

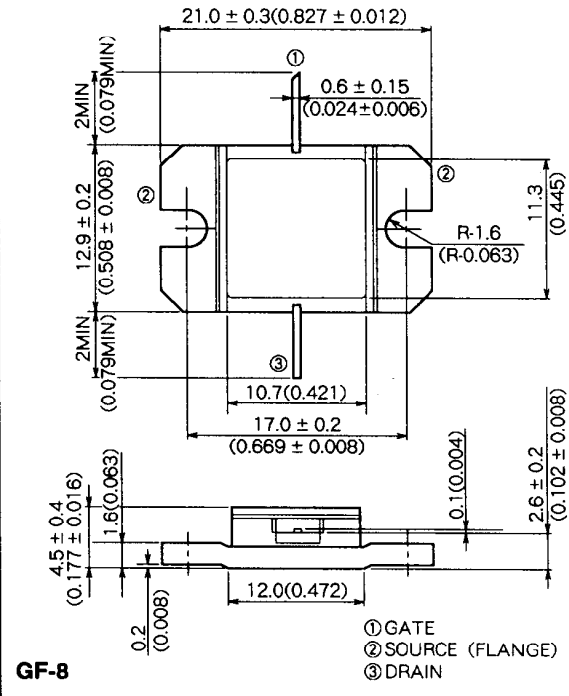
Symbol	Parameter	Test conditions	Limits			Unit
			Min	Typ	Max	
I <sub>DSS</sub>	Saturated drain current	V <sub>DS</sub> = 3V, V <sub>GS</sub> = 0V	-	-	3.75	A
g <sub>m</sub>	Transconductance	V <sub>DS</sub> = 3V, I <sub>D</sub> = 1.1A	-	1	-	S
V <sub>GS(off)</sub>	Gate to source cut-off voltage	V <sub>DS</sub> = 3V, I <sub>D</sub> = 10mA	-	-	- 4.5	V
P <sub>1dB</sub>	Output power at 1dB gain compression	V <sub>DS</sub> = 10V, I <sub>D</sub> = 1.2A, f = 6.4~7.2GHz	35	36	-	dBm
G <sub>LP</sub>	Linear power gain		8	9	-	dB
I <sub>D</sub>	Drain current		-	-	1.8	A
η <sub>add</sub>	Power added efficiency		-	30	-	%
IM <sub>3</sub>	3rd order IM distortion * 1		- 42	- 45	-	dBc
R <sub>th(ch-c)</sub>	Thermal resistance * 2		ΔV <sub>t</sub> method	-	5	6

\* 1 : Item-51, 2-tone test P<sub>o</sub> = 25dBm Single Carrier Level f = 7.2GHz Δf = 10MHz

\* 2 : Channel to case

## OUTLINE DRAWING

Unit : millimeters (inches)



GF-8

## RECOMMENDED BIAS CONDITIONS

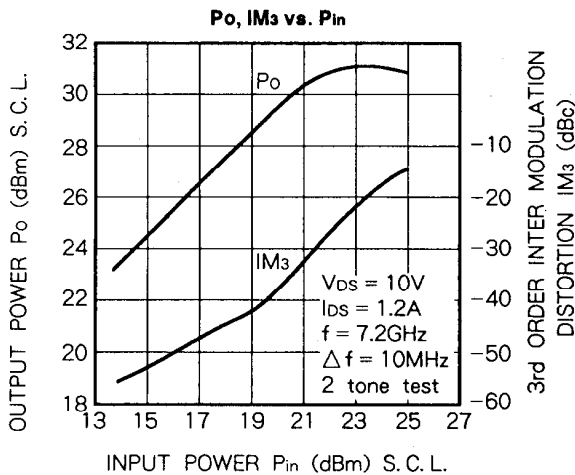
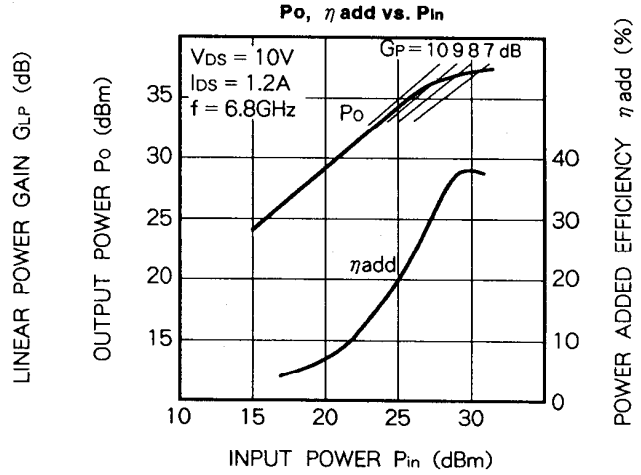
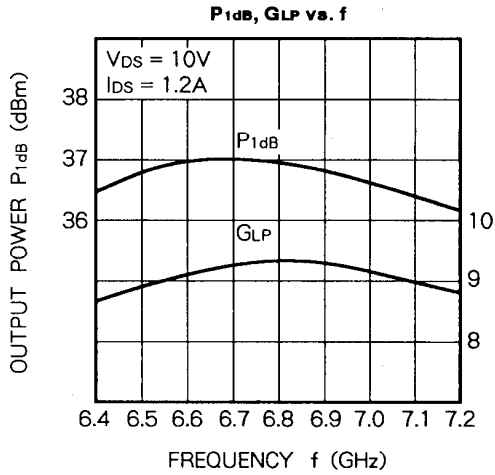
- V<sub>DS</sub> = 10V
- I<sub>D</sub> = 1.2A
- R<sub>G</sub> = 100(Ω)
- Refer to Bias Procedure

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TYPICAL CHARACTERISTICS



S PARAMETERS (T<sub>a</sub> = 25°C, V<sub>DS</sub> = 10V, I<sub>DS</sub> = 1.2A)

f (GHz)	S parameters							
	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	0.50	178	2.68	-61	0.078	-110	0.15	48
6.5	0.43	162	2.76	-75	0.084	-124	0.18	32
6.6	0.36	143	2.83	-90	0.088	-138	0.21	15
6.7	0.30	122	2.88	-104	0.090	-152	0.24	-1
6.8	0.25	99	2.93	-119	0.092	-165	0.27	-17
6.9	0.21	77	2.92	-133	0.095	-179	0.29	-31
7.0	0.18	53	2.87	-148	0.098	167	0.30	-47
7.1	0.15	31	2.80	-162	0.101	153	0.31	-62
7.2	0.12	1	2.71	-177	0.102	137	0.32	-79