

**PRELIMINARY**

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

# MGFC36V3742A

3.7~4.2GHz BAND 4W INTERNALLY MATCHED GaAs FET

## DESCRIPTION

The MGFC36V3742A is an internally impedance-matched GaAs power FET especially designed for use in 3.7~4.2GHz band amplifiers. The hermetically sealed metal-ceramic package guarantees high reliability.

## FEATURES

- Class A operation
- Internally matched to 50Ω system
- High output power  
 $P_{1dB} = 4W(TYP) @ 3.7\sim 4.2GHz$
- High power gain  
 $GLP = 11dB(TYP) @ 3.7\sim 4.2GHz$
- High power added efficiency  
 $\eta_{add} = 33\%(TYP) @ 3.7\sim 4.2GHz$
- Hermetically sealed metal-ceramic package
- Low distortion (Item : - 51)  
 $IM_3 = -45dBc(TYP) @ P_o = 25(dBm) S.C.L.$

## APPLICATION

Item-01 : 3.7~4.2GHz band power amplifier  
 Item-51 : Digital radio communication

## QUALITY GRADE

- IG

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

Symbol	Parameter	Ratings	Unit
V <sub>GDO</sub>	Gate to drain voltage	- 15	V
V <sub>GSO</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 (Ta = 25°C)

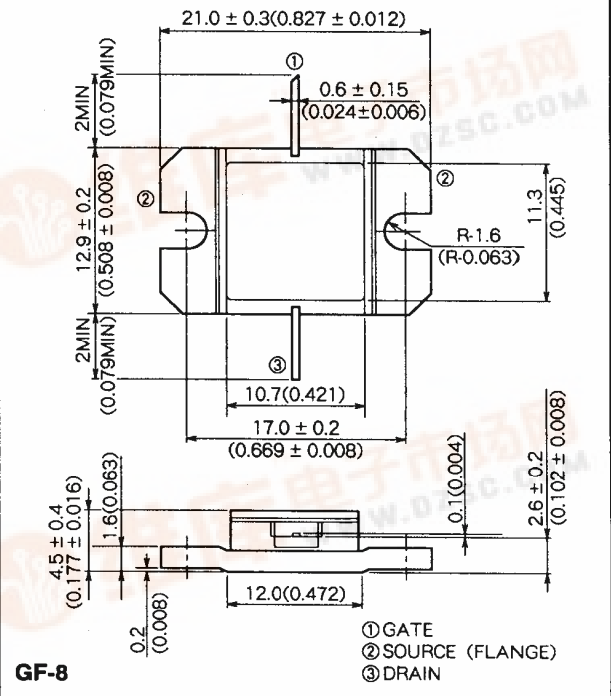
Symbol	Parameter	Test conditions	Limits			Unit
			Min	Typ	Max	
I <sub>DSS</sub>	Saturated drain current	V <sub>DS</sub> = 3V, V <sub>GS</sub> = 0V	-	-	3.75	A
g <sub>m</sub>	Transconductance	V <sub>DS</sub> = 3V, I <sub>D</sub> = 1.1A	-	1	-	S
V <sub>GS(off)</sub>	Gate to source cut-off voltage	V <sub>DS</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 = 3.7~4.2GHz	35	36	-	dBm
GLP	Linear power gain		10	11	-	dB
I <sub>D</sub>	Drain current		-	-	1.8	A
η <sub>add</sub>	Power added efficiency		-	33	-	%
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	6	°C/W

\* 1: P<sub>1dB</sub> 51, 2-tone test P<sub>o</sub> = 25dBm Single Carrier Level f = 4.2GHz Δf = 10MHz

\* 2: Channel to case

## OUTLINE DRAWING

Unit : millimeters (inches)



## RECOMMENDED BIAS CONDITIONS

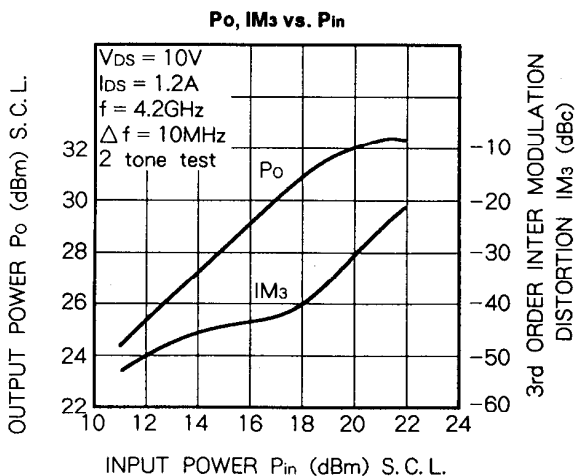
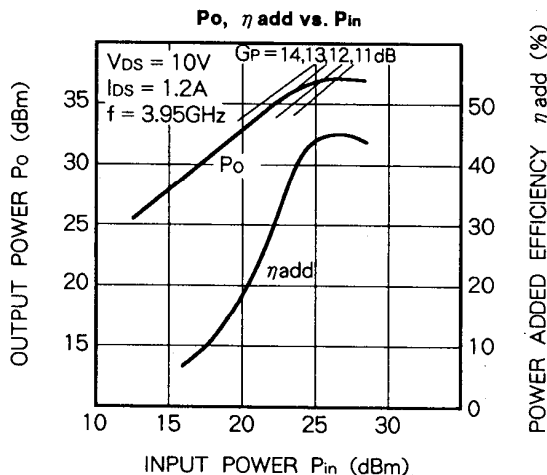
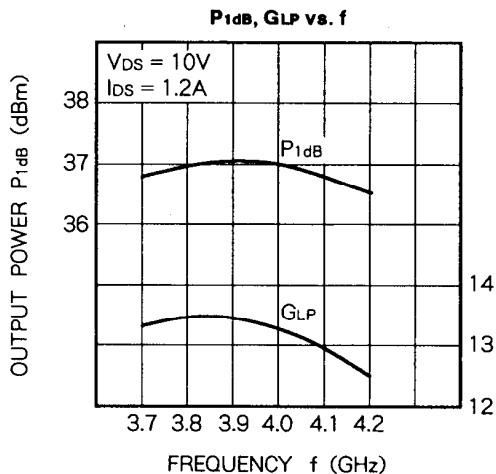
- V<sub>DS</sub> = 10V
- I<sub>D</sub> = 1.2A
- R<sub>G</sub> = 100(Ω)
- Refer to Bias Procedure



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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.)
3.7	0.43	-140	4.63	46	0.068	-14	0.16	-116
3.8	0.42	-172	4.69	25	0.067	-32	0.12	-147
3.9	0.40	162	4.69	5	0.071	-50	0.10	170
4.0	0.35	142	4.60	-12	0.071	-70	0.09	134
4.1	0.30	126	4.44	-28	0.071	-87	0.08	111
4.2	0.32	111	4.23	-45	0.070	-104	0.07	95