

# 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 ~ 4.2 GHz band amplifiers. The hermetically sealed metal-ceramic package guarantees high reliability.

### FEATURES

- Class A operation
- Internally matched to 50(ohm) system
- High output power  
P1dB = 4W (TYP.) @ f=3.7~4.2GHz
- High power gain  
GLP = 12.5 dB (TYP.) @ f=3.7~4.2GHz
- High power added efficiency  
P.A.E. = 33 % (TYP.) @ f=3.7~4.2GHz
- Low distortion [ item -51 ]  
IM3= -45 dBc(TYP.) @Po=25dBm S.C.L.

### APPLICATION

- item 01 : 3.7~4.2 GHz band power amplifier
- item 51 : 3.7~4.2 GHz band digital radio communication

### QUALITY GRADE

IG

### RECOMMENDED BIAS CONDITIONS

- VDS = 10(V)
- ID = 1.2 (A)
- Rg = 100(ohm) Refer to Bias Procedure

### ABSOLUTE MAXIMUM RATINGS (Ta=25 deg.C)

Symbol	Parameter	Ratings	Unit
VGDO	Gate to drain voltage	-15	V
VGSO	Gate to source voltage	-15	V
ID	Drain current	3.75	A
IGR	Reverse gate current	-10	mA
IGF	Forward gate current	21	mA
PT	Total power dissipation *1	25	W
Tch	Channel temperature	175	deg.C
Tstg	Storage temperature	-65 / +175	deg.C

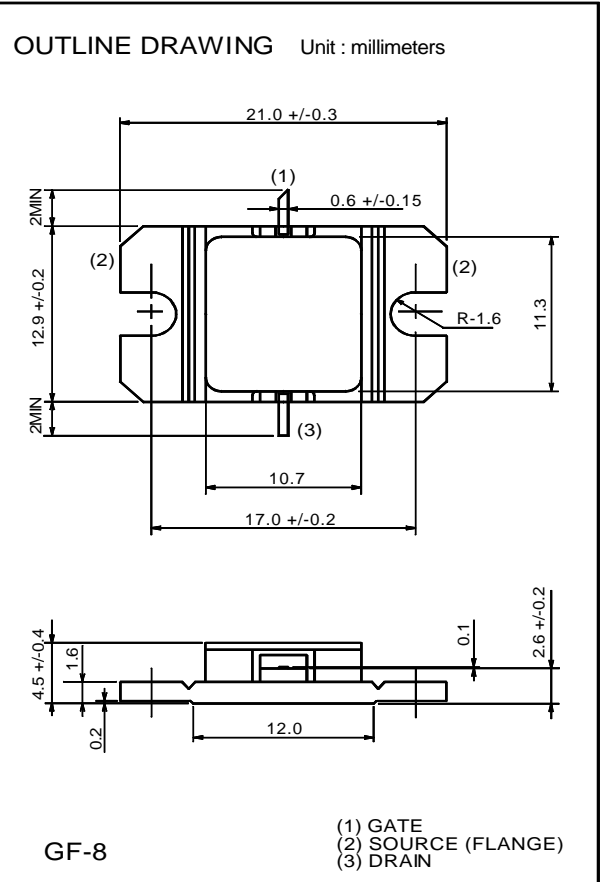
\*1 : Tc=25 deg.C

### ELECTRICAL CHARACTERISTICS (Ta=25 deg.C)

Symbol	Parameter	Test conditions	Limits			Unit
			Min.	Typ.	Max.	
IDSS	Saturated drain current	VDS=3V, VGS=0V	-	-	3.75	A
gm	Transconductance	VDS=3V, ID=1.1A	-	1	-	S
VGS(off)	Gate to source cut-off voltage	VDS=3V, ID=10mA	-	-	-4.5	V
P1dB	Output power at 1dB gain compression	VDS=10V, ID(RF off)=1.2A, f=3.7~4.2GHz	35	37	-	dBm
GLP	Linear power gain		10	12.5	-	dB
ID	Drain current		-	-	1.8	A
P.A.E.	Power added efficiency		-	33	-	%
IM3	3rd order IM distortion *1		-42	-45	-	dBc
Rth(ch-c)	Thermal resistance *2		Delta Vf method	-	5	6

\*1 : item -51, 2 tone test, Po=25dBm Single Carrier Level, f=4.2GHz, Delta f=10MHz

\*2 : Channel to case

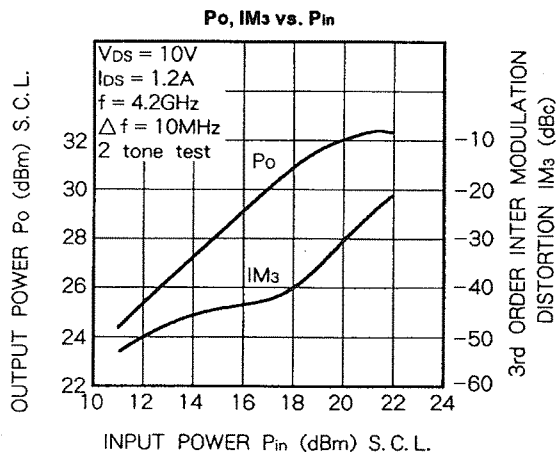
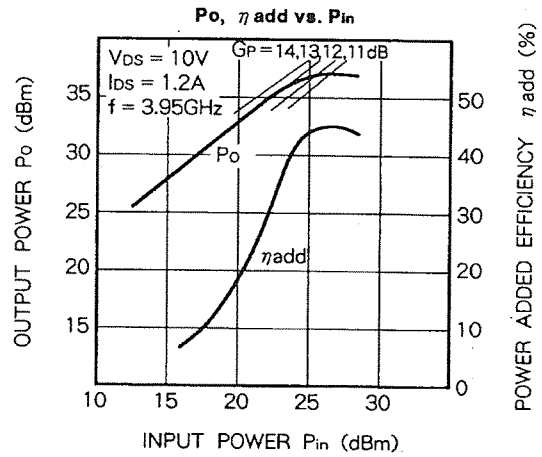
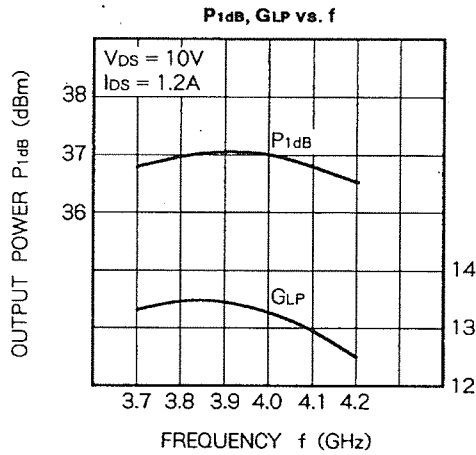


< Keep safety first in your circuit designs! >  
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**TYPICAL CHARACTERISTICS**



**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

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