

# MGFC42V3436

## 3.4 - 3.6GHz BAND 16W INTERNALLY MATCHED GaAs FET

### DESCRIPTION

The MGFC42V3436 is an internally impedance-matched GaAs power FET especially designed for use in 3.4 - 3.6 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 = 16W (TYP.) @ f=3.4 - 3.6 GHz
- High power gain  
GLP = 13 dB (TYP.) @ f=3.4 - 3.6GHz
- High power added efficiency  
P.A.E. = 37 % (TYP.) @ f=3.4 - 3.6GHz
- Low distortion [item -51]  
IM3=-45dBc(Min.) @Po=32dBm S.C.L.

### APPLICATION

- item 01 : 3.4 - 3.6 GHz band power amplifier
- item 51 : 3.4 - 3.6 GHz band digital ratio communication

### QUALITY GRADE

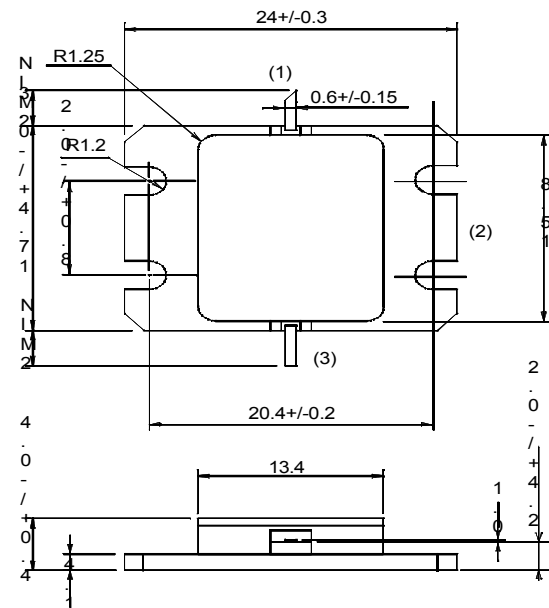
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### RECOMMENDED BIAS CONDITIONS

- VDS = 10 (V)
- ID = 4.5 (A)
- RG=25 (ohm)

### OUTLINE DRAWING

Unit: millimeters



- (1): GATE
- (2): SOURCE (FLANGE)
- (3): DRAIN

GF-18

### ABSOLUTE MAXIMUM RATINGS

(Ta=25deg.C)

Symbol	Parameter	Ratings	Unit
VGDO	Gate to drain voltage	-15	V
VGSO	Gate to source voltage	-15	V
ID	Drain current	12	A
IGR	Reverse gate current	-40	mA
IGF	Forward gate current	84	mA
PT	Total power dissipation *1	78.9	W
Tch	Channel temperature	175	deg.C
Tstg	Storage temperature	-65 / +175	deg.C

\*1 : Tc=25deg.C

< Keep safety first in your circuit design! >

Mitsubishi Electric Corporation puts the maximum effort into making semiconductor products better and more reliable, but there is always the possibility that trouble may occur with them. Trouble with semiconductors may lead to personal injury, fire or property damage. Remember to give due consideration to safety when making your circuit designs, with appropriate measures such as (1)placement of substitutive, auxiliary circuits, (2)use of non-flammable material or (3)prevention against any malfunction or mishap.

### ELECTRICAL CHARACTERISTICS

(Ta=25deg.C)

Symbol	Parameter	Test conditions	Limits			Unit
			Min.	Typ.	Max.	
IDSS	Saturated drain current	VDS = 3V , VGS = 0V	-	11	-	A
gm	Transconductance	VDS = 3V , ID = 4.4A	-	4	-	S
VGS(off)	Gate to source cut-off voltage	VDS = 3V , ID = 80mA	-	-	-4.5	V
P1dB	Output power at 1dB gain compression	VDS=10V, ID(RF off)=4.5A, f=3.4 - 3.6GHz	41.5	42.5	-	dBm
GLP	Linear power gain		12	13	-	dB
ID	Drain current		-	4.5	-	A
P.A.E.	Power added efficiency		-	37	-	%
IM3	3rd order IM distortion *1		-42	-45	-	dBc
Rth(ch-c)	Thermal resistance *2		delta Vf method	-	-	1.9

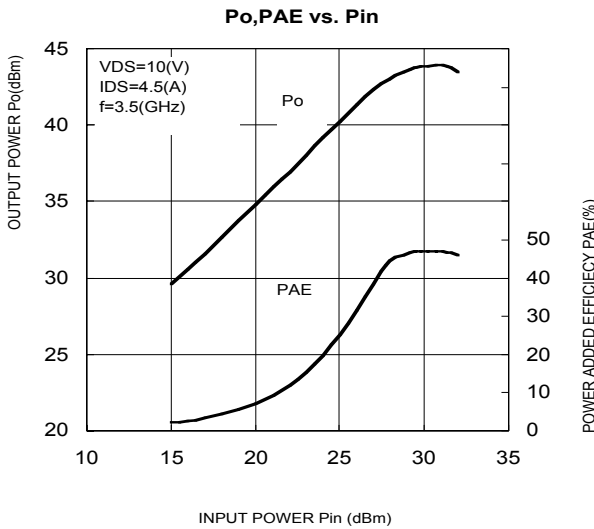
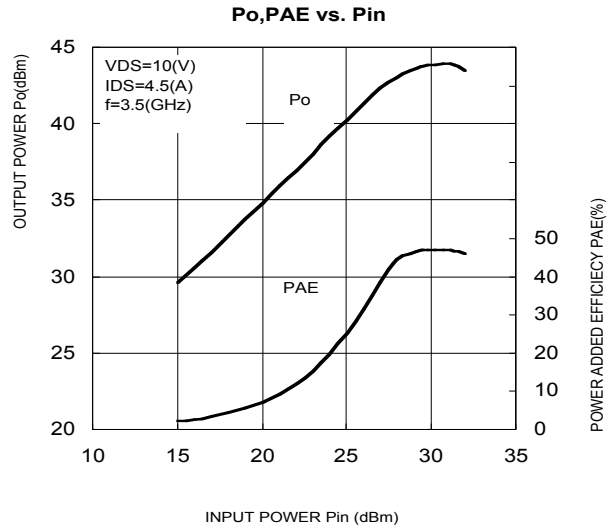
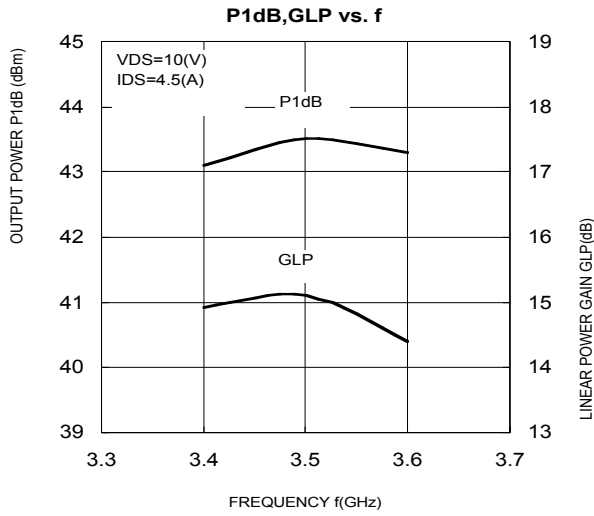
\*1 : item -51, 2 tone test, Po=32dBm Single Carrier Level, f=3.6GHz, delta f=5MHz

\*2 : Channel-case



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TYPICAL CHARACTERISTICS (Ta=25deg.C)



**S parameters** ( Ta=25deg.C , VDS=10(V),IDS=4.5(A) )

f (GHz)	S-Parameters (TYP.)							
	S11		S21		S12		S22	
	Magn.	Angle(deg)	Magn.	Angle(deg)	Magn.	Angle(deg)	Magn.	Angle(deg)
3.30	0.43	-19	4.592	133	0.04	74	0.40	10
3.35	0.30	-56	5.044	112	0.05	55	0.31	-14
3.40	0.25	-80	5.124	103	0.05	42	0.26	-26
3.45	0.23	-138	5.188	82	0.06	21	0.20	-59
3.50	0.30	-179	5.114	63	0.06	4	0.18	-96
3.55	0.36	154	4.895	45	0.06	-20	0.19	-129
3.60	0.39	143	4.758	37	0.06	-29	0.20	-139
3.65	0.42	126	4.546	21	0.06	-43	0.24	-157
3.70	0.43	118	4.433	14	0.06	-52	0.25	-163

