

MGFC42V5964A

5.9 - 6.4GHz BAND 16W INTERNALLY MATCHED GaAs FET

DESCRIPTION

The MGFC42V5964A is an internally impedance matched GaAs power FET especially designed for use in 5.9 - 6.4 GHz band amplifiers. The hermetically sealed metal-ceramic package guarantees high reliability.

FEATURES

- Internally matched to 50 ohm system
- High output power
P1dB = 16W (TYP.) @ f=5.9 - 6.4 GHz
- High power gain
GLP = 9.0 dB (TYP.) @ f=5.9 - 6.4 GHz
- High power added efficiency
P.A.E. = 33 % (TYP.) @ f=5.9 - 6.4 GHz
- Low Distortion[Item-51]
IM3=-45 dBc(MIN.)@Po=31.0dBm S.C.L.

APPLICATION

- item 01 : 5.9 - 6.4 GHz band power amplifier
- item 51 : 5.9 - 6.4 GHz band digital radio communication

QUALITY GRADE

IG

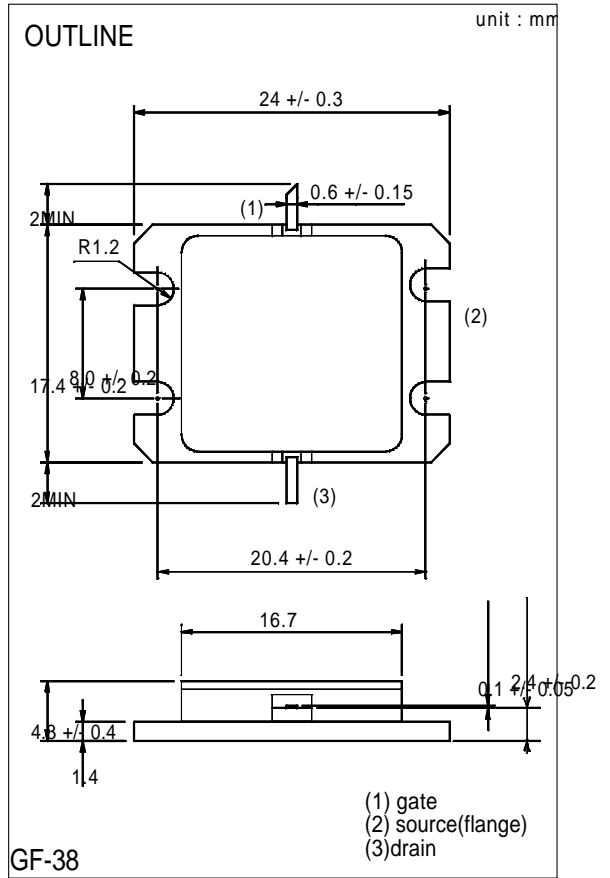
RECOMMENDED BIAS CONDITIONS

- V_{DS} = 10 (V)
- ID = 4.5 (A)
- Rg=25 (ohm) Refer to Bias Procedure

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Ratings	Unit
VGDO	Gate to drain voltage	-15	V
VGSO	Gate to source voltage	-15	V
ID	Drain current	15	A
IGR	Reverse gate current	-40	mA
IGF	Forward gate current	84	mA
PT	Total power dissipation	93.7	W
Tch	Channel temperature	175	deg.C
Tstg	Storage temperature	-65 / +175	deg.C

*1 : Tc=25 Deg.C



< Keep safety first in your circuit designs! >

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.

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Test conditions	Limits			Unit
			Min	Typ	Max	
IDSS	Saturated drain current	VDS = 3V , VGS = 0V	-	9	12	A
Gm	Transconductance	VDS = 3V , ID = 4.4A	-	4	-	S
VGS(off)	Gate to source cut-off voltage	VDS = 3V , ID = 80mA	-2	-3	-4	V
P1dB	Output power at 1dB gain compression	VDS=10V, ID(RF off)=4.5A, f=5.9-6.4GHz	41.5	42.5	-	dBm
GLP	Linear power gain		8	9	-	dB
ID	Drain current		-	4.5	-	A
PAE	Power added efficiency		-	33	-	%
IM3	3rd order IM distortion *1		-42	-45	-	dBc
Rth(ch-c)	Thermal resistance *2		Delta Vf method	-	-	1.6

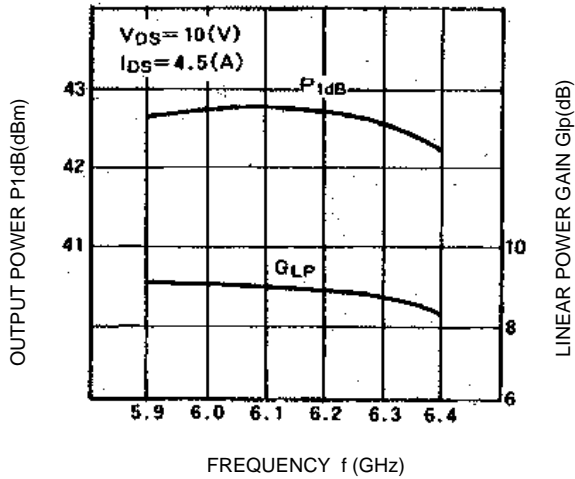
*1 : item -51,2 tone test,Po=31.0dBm Single Carrier Level,f=6.4GHz,Delta f=10MHz *2 : Channel-case

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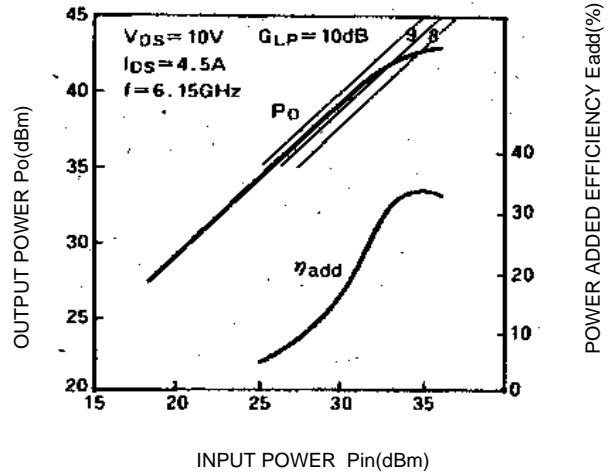
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TYPICAL CHARACTERISTICS (Ta=25 Deg.C)

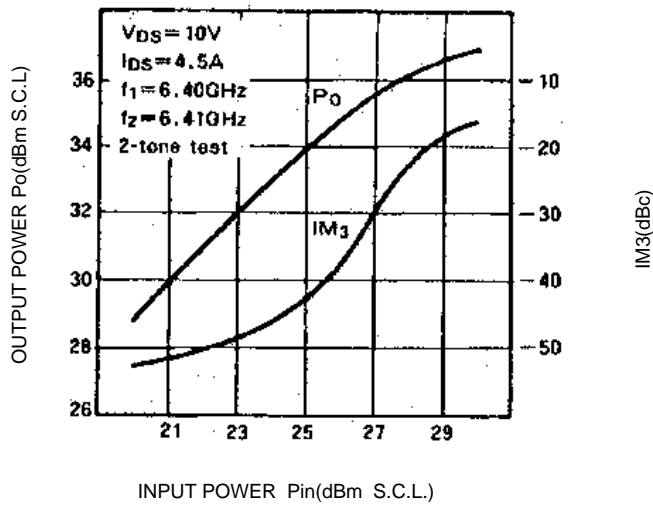
P1dB, G_{lp} VS. f



P_o, E_{add} VS. P_{in}



P_o, IM₃ VS. P_{in}



S PARAMETERS (Ta=25 Deg.C, V_{DS}=10V, I_{DS}=4.5A)

f (GHz)	S Parameters (TYP.)							
	S ₁₁		S ₂₁		S ₁₂		S ₂₂	
	Magn.	Angle(deg.)	Magn.	Angle(deg.)	Magn.	Angle(deg.)	Magn.	Angle(deg.)
5.90	0.36	82	2.99	-74	0.071	-133	0.26	80
6.00	0.35	56	2.95	-91	0.071	-151	0.32	72
6.10	0.35	34	2.91	-108	0.072	-167	0.35	65
6.20	0.35	14	2.88	-124	0.078	177	0.37	58
6.30	0.34	-4	2.81	-140	0.079	161	0.41	53
6.40	0.33	-23	2.72	-157	0.079	146	0.43	48

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