

<C band Internally Matched Power GaAs FET>

MGFC47B3538B

3.5 – 3.8GHz BAND / 50W

DESCRIPTION

The MGFC47B3538B is an internally impedance-matched GaAs power FET especially designed for use in 3.5 – 3.8 GHz band amplifiers. The hermetically sealed metal-ceramic package guarantees high reliability.

FEATURES

Crass AB operation

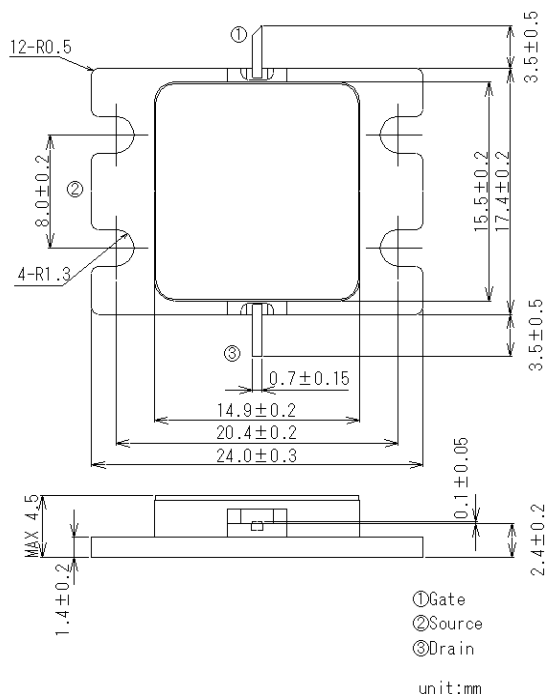
Internally matched to 50(ohm)

- High output power: $P_o(\text{SAT}) = 50 \text{ W (typ.)}$
- High power gain: $GP = 10 \text{ dB (TPE.) @ } P_o = 37\text{dBm}$
- Distortion: $\text{EVM} = 2.0\% \text{ (TPE.) @ } P_o = 37\text{dBm}$

Recommended Bias Condition

- $V_d = 12(\text{V})$
- $I_D = 1.5 (\text{A})$
- $R_g = 10 \text{ ohm}$

OUTLINE DRAWING



GF-60

ABSOLUTE MAXIMUM RATINGS

($T_a = 25\text{deg.C}$)

Symbol	Parameter	Ratings	Unit
VGDO	Gate to drain voltage	-15	V
VGSO	Gate to source voltage	-10	V
MAXID	Maximum drain current	12	A
PT *1	Total power dissipation	115	W
Tch	Channel temperature	175	deg.C
Tstg	Storage temperature	-55 / +150	deg.C

*1 : $T_c = 25\text{deg.C}$

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 measure such as (i) placement of substitutive, auxiliary circuits, (ii) use of non-flammable material or (iii) prevention against any malfunction or mishap.

ELECTRICAL CHARACTERISTICS

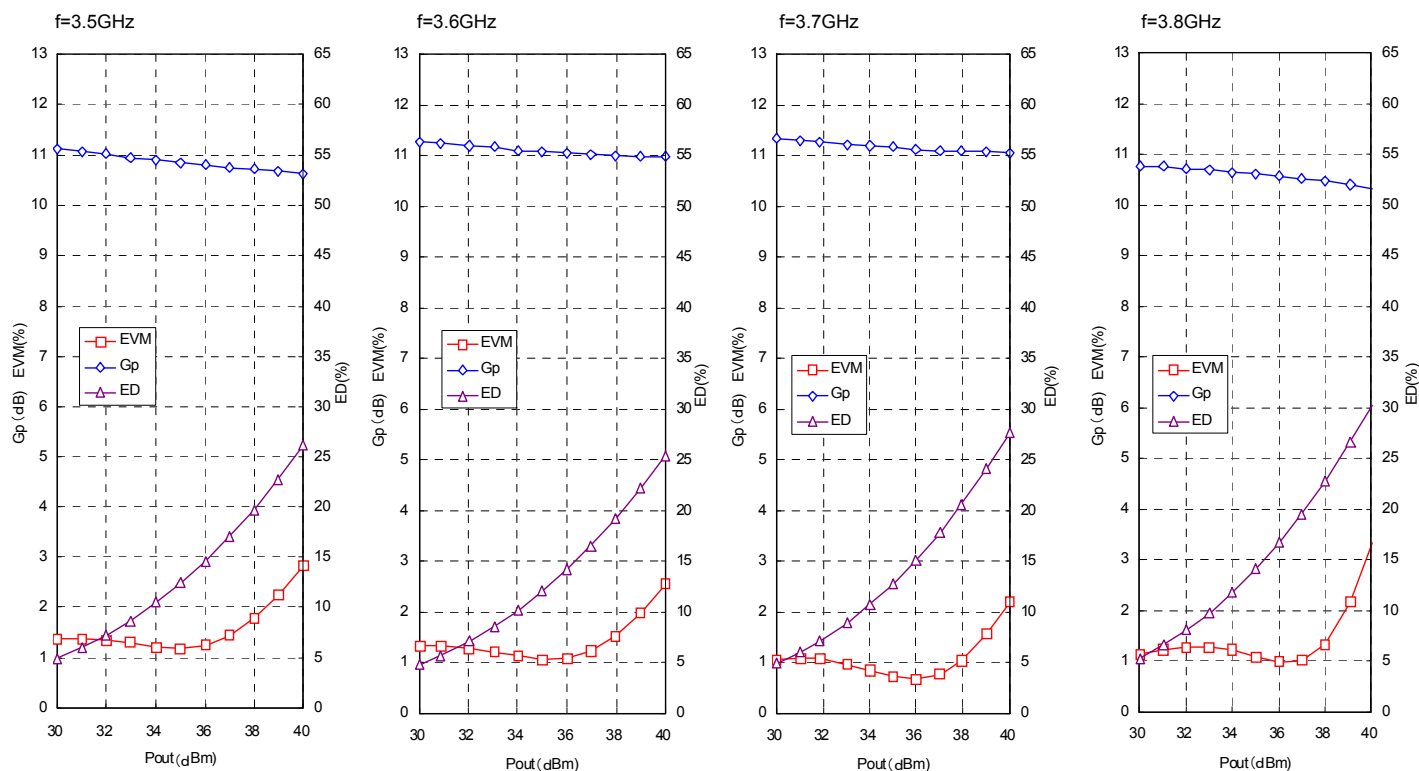
($T_a = 25\text{deg.C}$)

Symbol	Parameter	Test conditions	Limits			Unit
			Min.	Typ.	Max.	
VGS(off)	Gate to source cut-off voltage	$V_{DS} = 3\text{V}, I_D = 100\text{mA}$	-0.5	-	-3.0	V
$P_o(\text{SAT})$	Output power	$V_{DS} = 12\text{V}, I_D(\text{RF off}) = 1.5\text{A}, f = 3.5\text{--}3.8\text{GHz}$	-	47	-	dBm
GP	Power gain	$V_{DS} = 12\text{V}, I_D(\text{RF off}) = 1.5\text{A}, f = 3.5\text{--}3.8\text{GHz}$ $P_{out} = 37\text{dBm}$	9.0	10.5	-	dB
I_D	Drain current		-	2.0	3	A
EVM *2	Error Vector Magnitude		-	1.5	2.5	%
$R_{th(ch-c)}$ *3	Thermal resistance	delta Vf method	-	0.65	1.2	deg.C/W

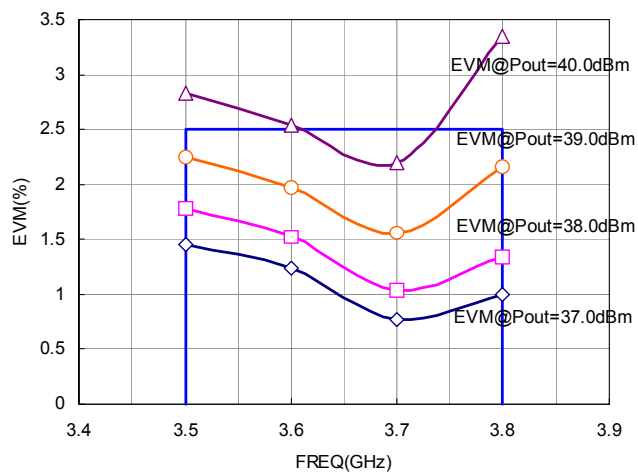
*2 : WiMAX Downlink, 64QAM-3/4, Channel Bandwidth: 7MHz

*3 : Channel-case

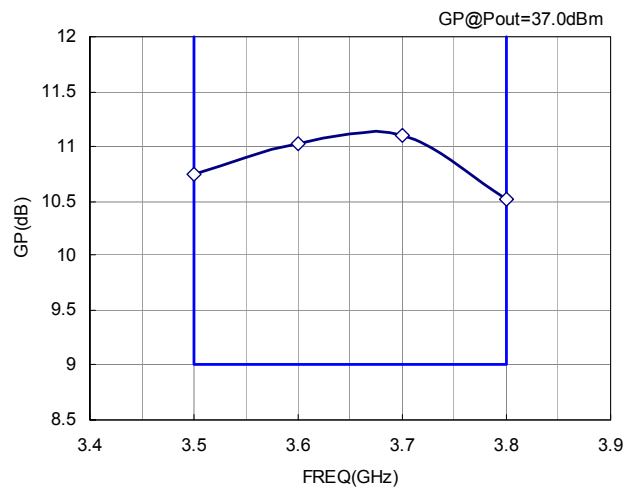
EVM(@WiMAX) vs . Pout characteristics of MGFC47B3538B-01



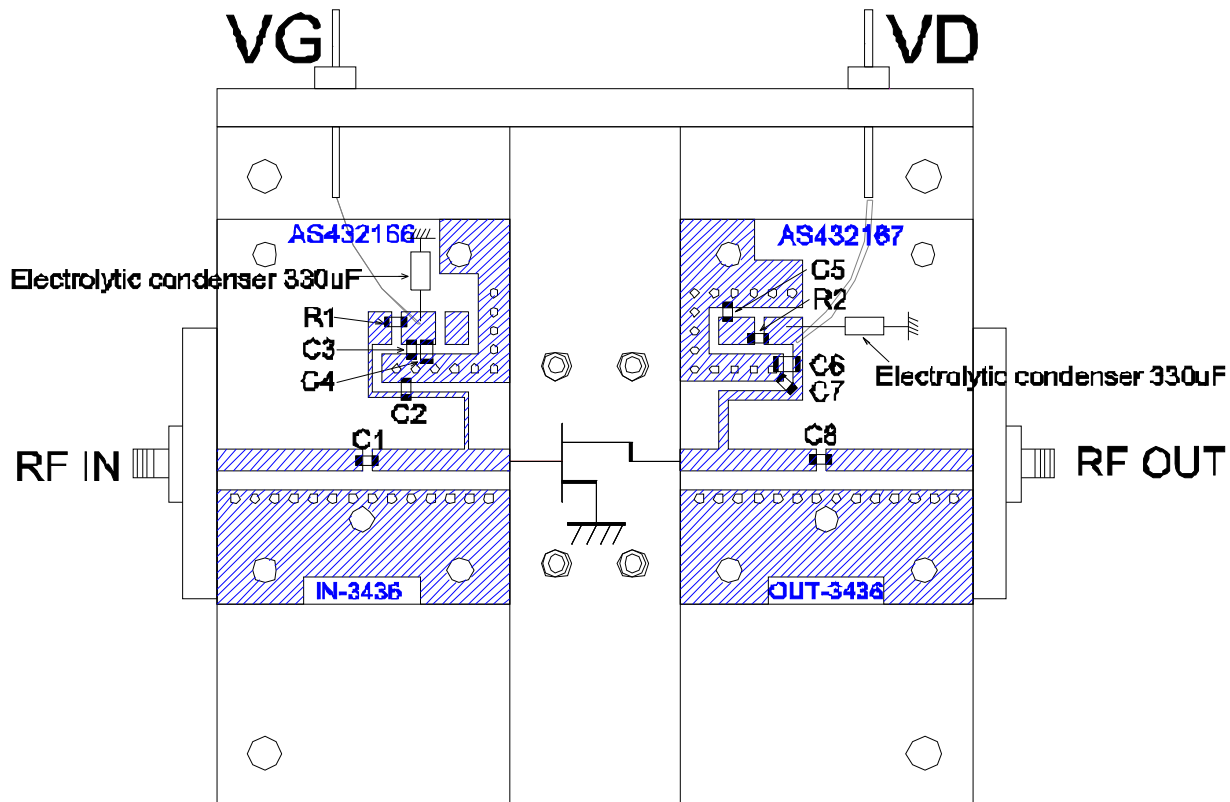
○EVM(@WiMax) vs. FREQ characteristics of MGFC47B3538B-01



○GP(@WiMax) vs. FREQ characteristics of MGFC47B3538B-01



MGFC47B3538B RF TEST FIXTURE



C1,C2,C7,C8=GR708 8pF

C3,C5=1000pF

C4=100nF

C6=470nF

R1= 10ohm

R2=CR10 51ohm

Board material:Teflon t=0.8mm

Specific dielectric constant=2.6

UNIT:(mm)

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