MITSUBISHI ELECTRIC

< C band internally matched power GaAs FET >

MGFC45B3436B

3.4 – 3.6 GHz BAND / 30W

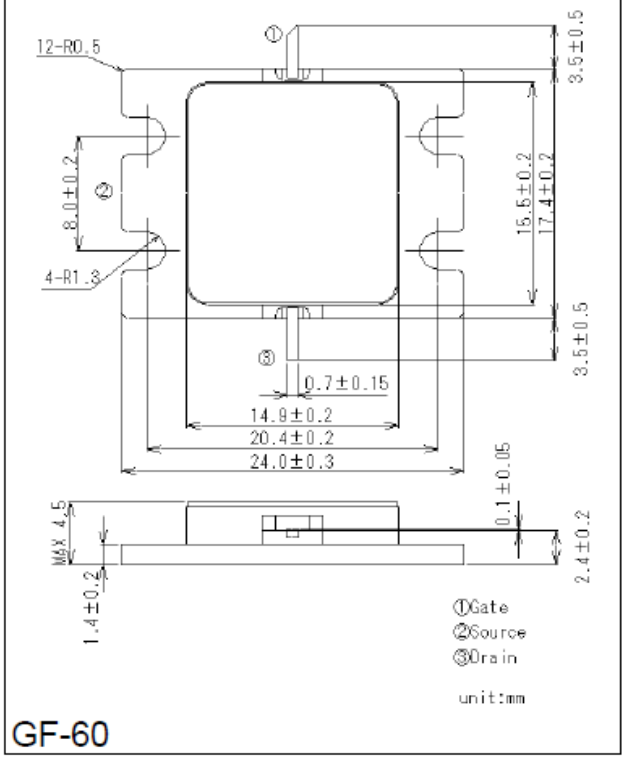
DESCRIPTION

The MGFC45B3436B 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 AB operation
Internally matched to 50(ohm) system
- High output power
  Po(SAT)=30W (TYP.) @f=3.4 – 3.6GHz
- High power gain
  GLP=11.0dB (TYP.) @f=3.4 – 3.6GHz
- Distortion
  ACP=-45dBc (TYP.) @f=3.4 – 3.6GHz

OUTLINE DRAWING



GF-60

RECOMMENDED BIAS CONDITIONS

• VDS=12V • ID=0.8A • RG=12ohm

Absolute maximum ratings (Ta=25°C)

Symbol	Parameter	Ratings	Unit
VGDO	Gate to drain breakdown voltage	-15	V
VGSO	Gate to source breakdown voltage	-10	V
MAXID	Maximum drain current	10	A
PT *1	Total power dissipation	78	W
Tch	Cannel temperature	175	°C
Tstg	Storage temperature	-65 to +175	°C

*1 : Tc=25°C

Keep Safety first in your circuit designs!

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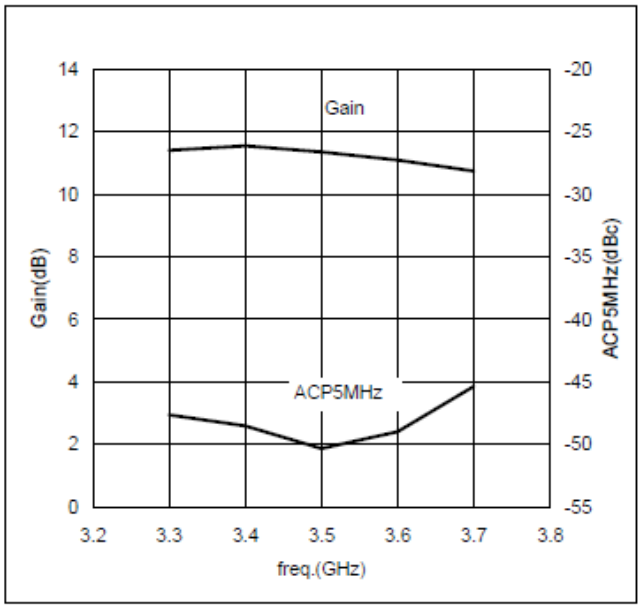
Electrical characteristics (Ta=25°C)

Symbol	Parameter	Test conditions	Limits			Unit
			Min.	Typ.	Max.	
VGS(off)	Gate to source cut-off voltage	VDS=3V,ID=100mA	-0.5	-	-3.0	V
Po(SAT)	Output Power	VDS=12V,ID(RF off)=0.8A f=3.4 - 3.6GHz	-	45	-	dBm
GLP	Linear Power Gain	VDS=12V,ID(RF off)=0.8A	10	11	-	dB
ID	Drain current	f=3.4 - 3.6GHz ,Pout=34dBm	-	1.2	1.5	A
ACP *2	Adjacent Channel leakage Power		-	-45	-	dBc
Rth(ch-c) *3	Thermal resistance	delta Vf method	-	-	1.9	°C/W

*2 :Mod.3GPP TEST MODEL 1 64code Signal
*3 :Channel-case

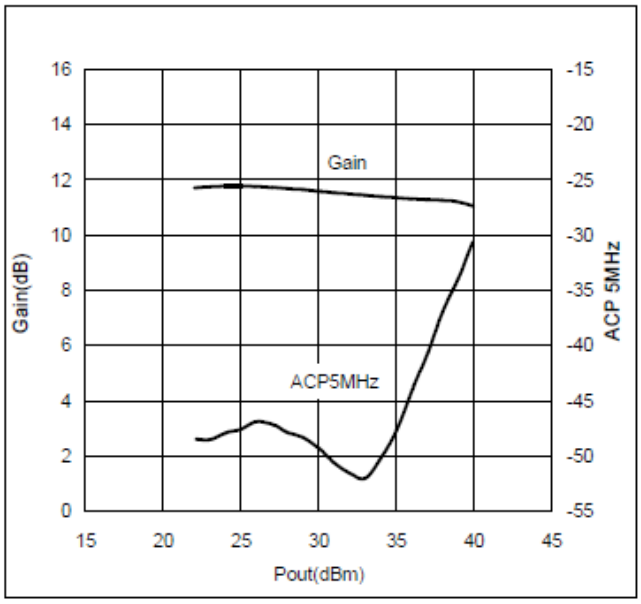
MGFC45B3436B TYPICAL CHARACTERISTICS

ACP , Gain vs. Freq. @Pout=34dBm



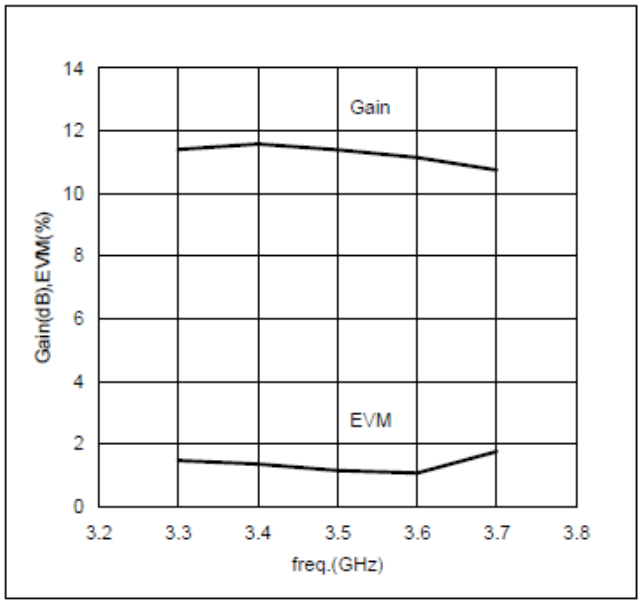
Test Condition:
Pout=34dBm,VD=12V,IDQ=0.8A.Ta=25deg.C
Mod.:3GPP TEST MODEL 1 64code Single Signal
Channel Bandwidth = 3.84MHz

ACP , Gain vs. Pout @freq.=3.5GHz



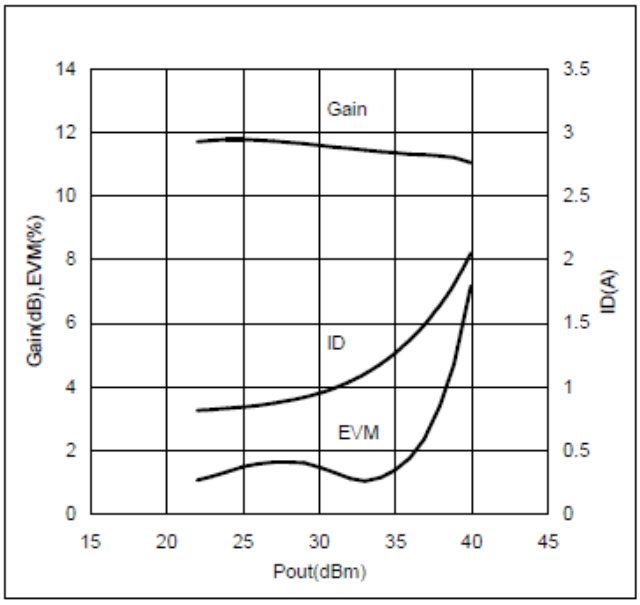
Test Condition:
f=3.5GHz,VD=12V,IDQ=0.8A,Ta=25deg.C
Mod.:3GPP TEST MODEL 1 64code Single Signal
Channel Bandwidth = 3.84MHz

EVM , Gain vs. Freq. @Pout=34dBm



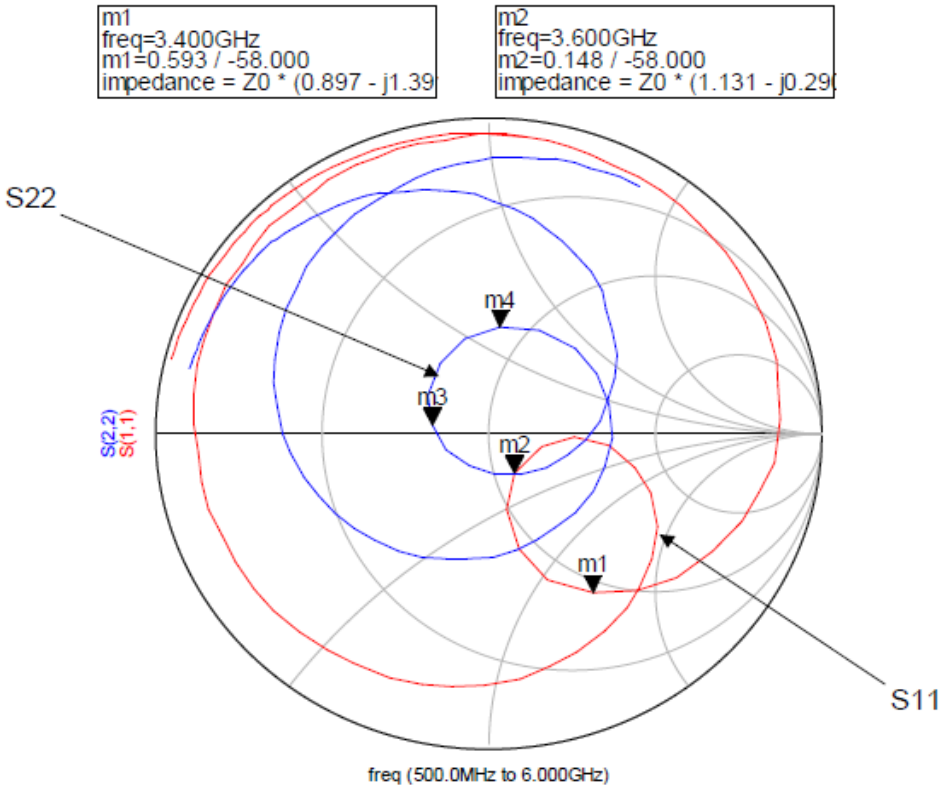
Test Condition:
Pout=34dBm,VD=12V,IDQ=0.8A,Ta=25deg.C
Mod: WiMAX Downlink,64QAM Channel Bandwidth: 3.5MHz

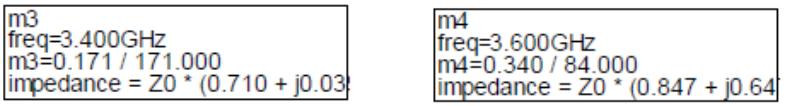
EVM , Gain vs. Pout @freq.=3.5GHz

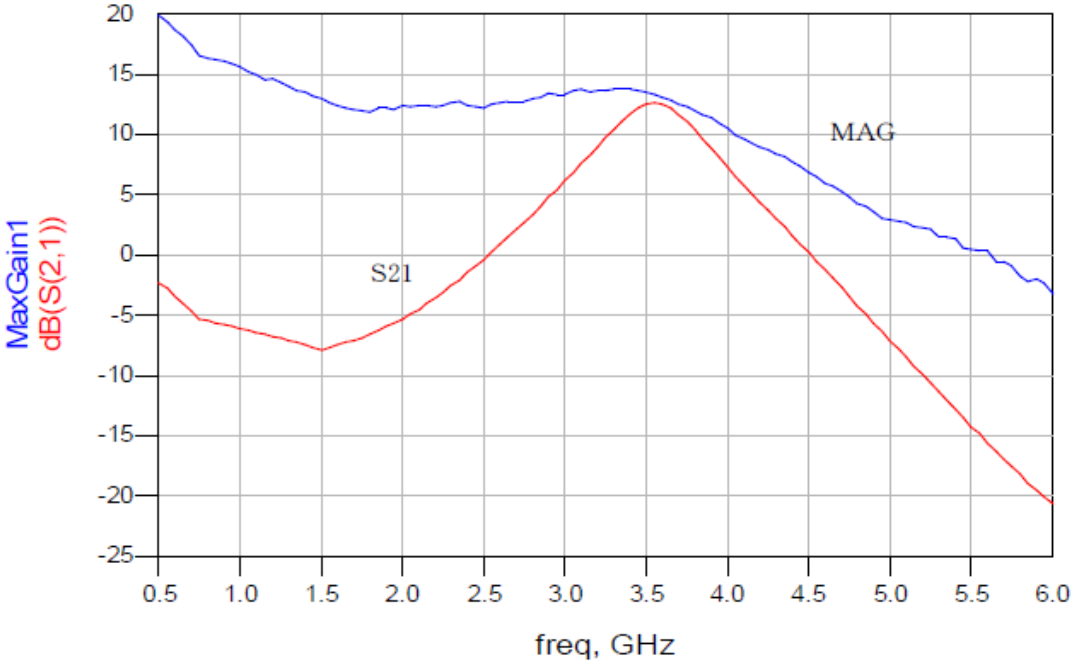


Test Condition:
f=3.5GHz,VD=12V,IDQ=0.8A,Ta=25deg.C
Mod: WiMAX Downlink,64QAM Channel Bandwidth: 3.5MHz

MGFC45B3436B S-parameters(Ta=25deg.C , VDS=12(V),IDS=0.8(A))



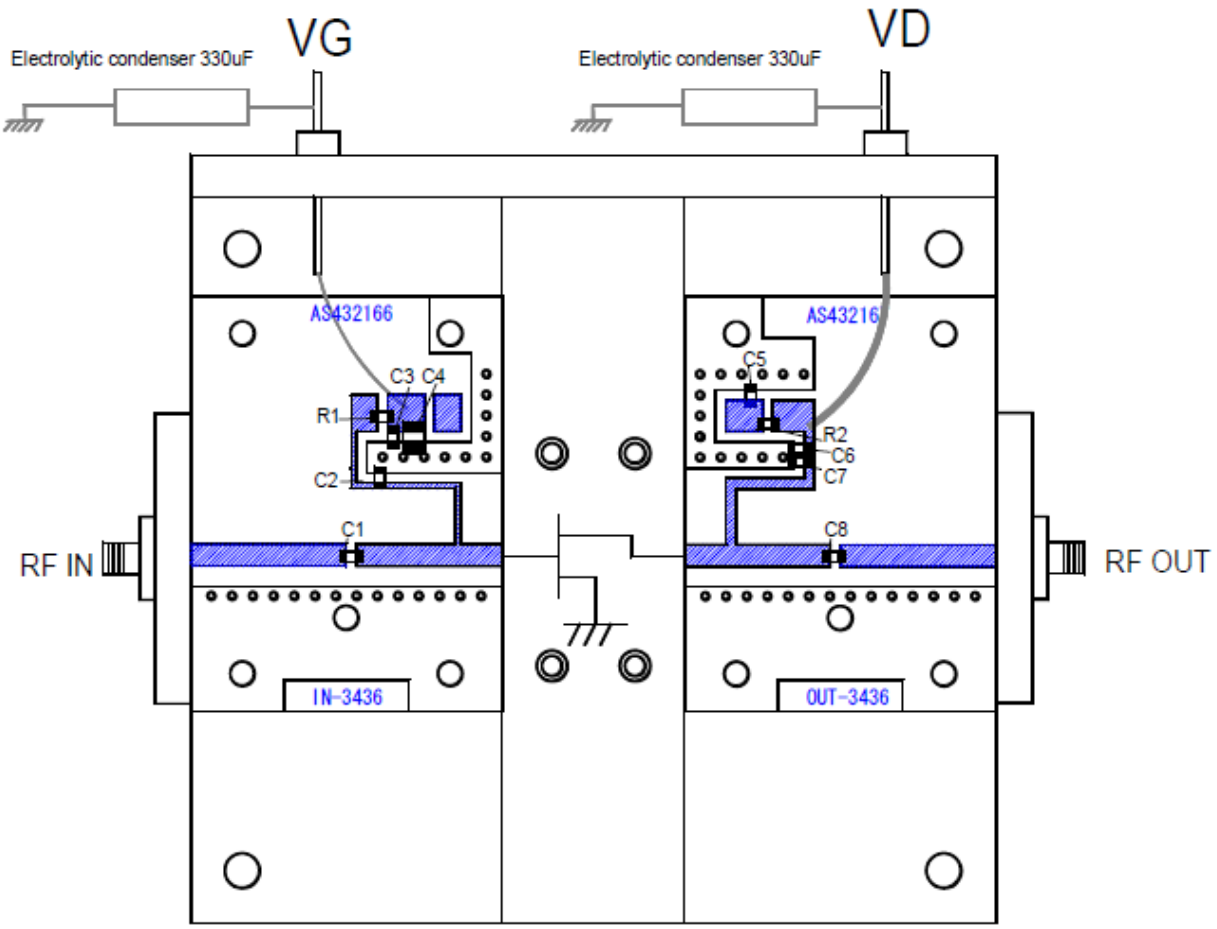




MGFC45B3436B S-parameters(Ta=25deg.C , VDS=12(V),IDS=0.8(A))

freq.	S11		S21		S12		S22	
GHz	(mag)	(ang)	(mag)	(ang)	(mag)	(ang)	(mag)	(ang)
0.5	0.981	166	0.767	49	0.004	34	0.921	167
0.6	0.979	163	0.676	41	0.004	28	0.919	165
0.7	0.978	160	0.586	33	0.004	21	0.916	163
0.8	0.977	157	0.531	26	0.004	16	0.913	160
0.9	0.977	155	0.522	22	0.004	15	0.912	158
1.0	0.976	153	0.513	18	0.005	14	0.910	157
1.1	0.976	149	0.495	10	0.005	12	0.907	154
1.2	0.975	146	0.476	2	0.005	10	0.904	150
1.3	0.974	142	0.458	-6	0.006	8	0.901	147
1.4	0.973	139	0.440	-14	0.006	6	0.898	144
1.5	0.973	135	0.422	-22	0.006	4	0.895	141
1.6	0.972	132	0.403	-29	0.007	2	0.892	137
1.7	0.969	127	0.422	-38	0.007	-2	0.881	134
1.8	0.966	122	0.440	-46	0.008	-6	0.870	130
1.9	0.963	117	0.468	-56	0.008	-12	0.857	125
2.0	0.961	111	0.504	-66	0.009	-20	0.844	119
2.1	0.958	106	0.540	-76	0.010	-28	0.831	113
2.2	0.957	97	0.592	-88	0.010	-36	0.806	108
2.3	0.950	90	0.663	-100	0.011	-41	0.785	101
2.4	0.946	83	0.741	-111	0.012	-52	0.760	93
2.5	0.940	75	0.844	-125	0.012	-64	0.717	84
2.6	0.929	66	0.954	-139	0.014	-74	0.673	75
2.7	0.927	56	1.104	-155	0.013	-87	0.624	65
2.8	0.918	46	1.273	-170	0.014	-108	0.566	53
2.9	0.912	34	1.476	172	0.011	-120	0.495	41
3.0	0.905	23	1.733	154	0.011	-148	0.418	25
3.1	0.882	10	2.016	135	0.008	-179	0.339	7
3.2	0.864	-6	2.400	113	0.006	110	0.246	-16
3.3	0.809	-20	2.807	90	0.011	54	0.161	-53
3.4	0.728	-39	3.326	64	0.020	6	0.118	-119
3.5	0.593	-58	3.853	36	0.033	-26	0.171	171
3.6	0.375	-76	4.244	2	0.046	-60	0.267	123
3.7	0.148	-58	4.228	-32	0.058	-93	0.340	84
3.8	0.259	-2	3.835	-65	0.061	-127	0.374	46
3.9	0.452	-14	3.294	-96	0.058	-156	0.374	14
4.0	0.587	-30	2.775	-122	0.054	178	0.366	-17
4.1	0.666	-47	2.317	-147	0.052	159	0.361	-44
4.2	0.716	-61	1.939	-168	0.049	136	0.367	-67
4.3	0.760	-76	1.648	171	0.044	113	0.393	-88
4.4	0.799	-91	1.415	151	0.037	93	0.418	-108
4.5	0.820	-104	1.204	130	0.031	69	0.460	-126
4.6	0.833	-119	1.023	111	0.026	53	0.502	-143
4.7	0.846	-132	0.867	92	0.021	36	0.545	-159
4.8	0.859	-145	0.734	74	0.017	20	0.596	-174
4.9	0.863	-158	0.617	57	0.014	5	0.641	172
5.0	0.875	-170	0.520	40	0.011	-6	0.684	160
5.1	0.886	178	0.440	25	0.010	-22	0.724	147
5.2	0.901	166	0.377	8	0.008	-30	0.761	136
5.3	0.910	155	0.319	-6	0.008	-59	0.791	124
5.4	0.915	144	0.268	-21	0.007	-69	0.815	114
5.5	0.929	135	0.228	-35	0.006	-73	0.838	105
5.6	0.930	124	0.193	-47	0.006	-75	0.859	96
5.7	0.941	115	0.166	-61	0.005	-91	0.874	89
5.8	0.944	107	0.141	-72	0.005	-118	0.885	80
5.9	0.938	98	0.122	-84	0.005	-117	0.897	73
6.0	0.951	92	0.106	-94	0.003	-133	0.899	67

MGFC45B3436B RF TEST FIXTURE



C1,C2,C7,C8=8pF
C4=100nF
C3,C5= 1000pF
C6=470nF
R1=12ohm
R2=51ohm
Board material :Teflon, t=0.8mm, Specific dielectric constant=2.6
UNIT:(mm)

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