# MGFC45B3436B

## 3.4 - 3.6GHz BAND 30W INTERNALLY MATCHED GaAs FET

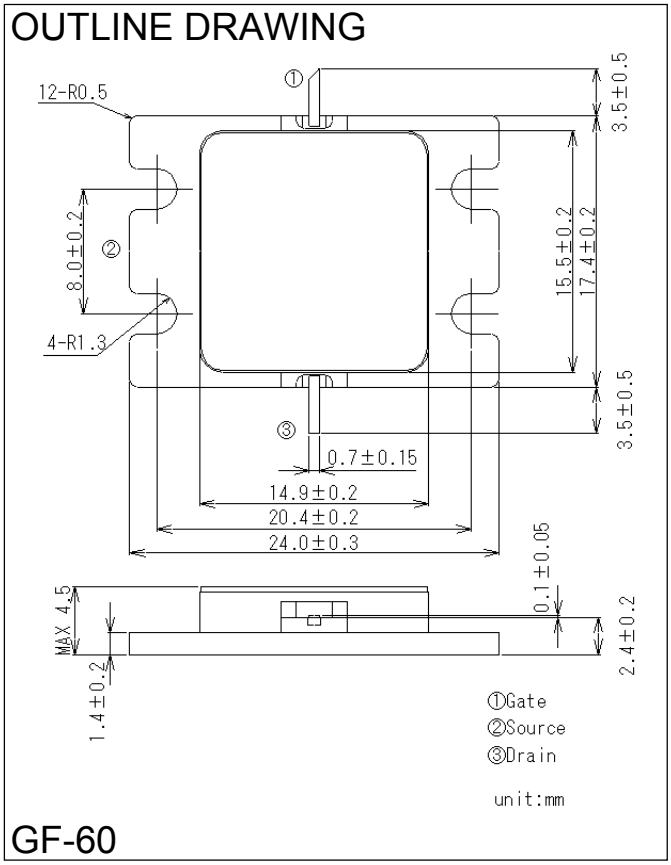
## DESCRIPTION

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 - 3.6 GHz
High power gain
GLP = 11 dB (TYP.) @ f=3.4 - 3.6 GHz
Distortion
ACP = -45dBc (TYP.) @ f=3.4 - 3.6 GHz

## OUTLINE DRAWING




GF-60

## RECOMMENDED BIAS CONDITIONS

VDS = 12 (V)
ID = 0.8 (A)
RG=12 (ohm)

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

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

*1 : Tc=25deg.C

< Keep safety first in your circuit designs! >
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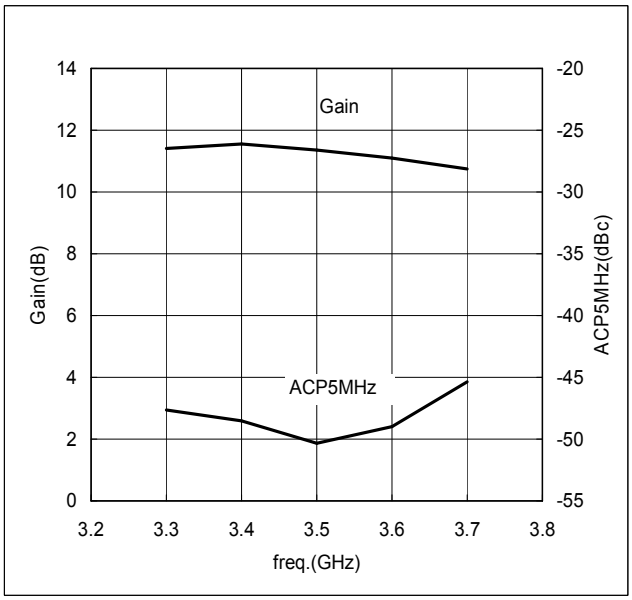
## ELECTRICAL CARACTERISTICS (Ta=25deg.C)

| 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, f=3.4-3.6GHz Pout=34dBm | 10 | 11 | - | dB |
| ID | Drain current | | - | 1.2 | 1.5 | A |
| ACP *2 | Adjacent Channel leakage Power | | - | -45 | - | dBc |
| Rth(ch-c) *3 | Thermal resistance | delta Vf method | - | - | 1.9 | deg.C/W |

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

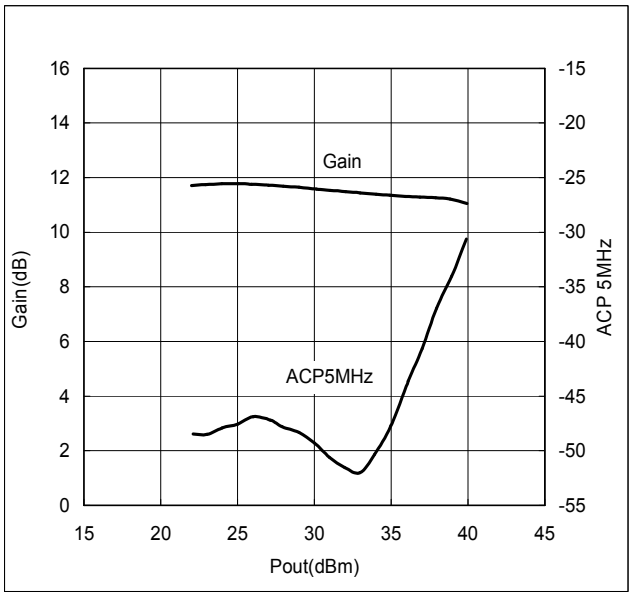
TYPICAL CHARACTERISTICS

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



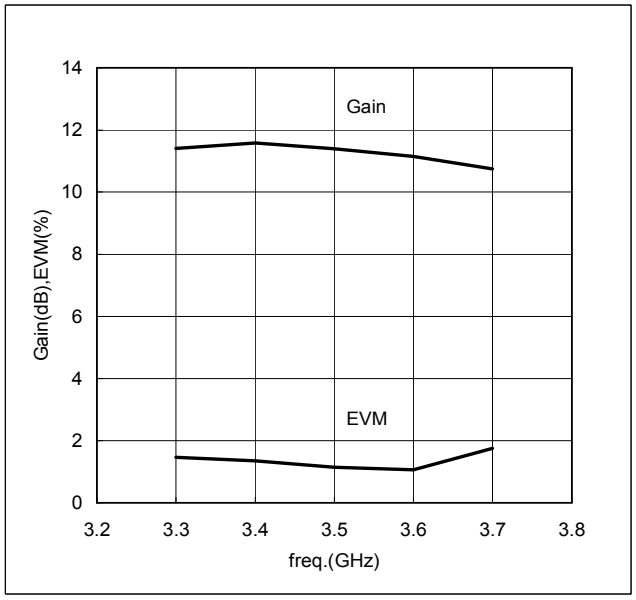

Test Condition:
Pout=34dBm,VD=12V,IDQ=0.8A.Ta=25deg.C
Mod.:3GPP TEST MODEL 1 64code Single Signal
Channel Bandwidth = 3.84MHz

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



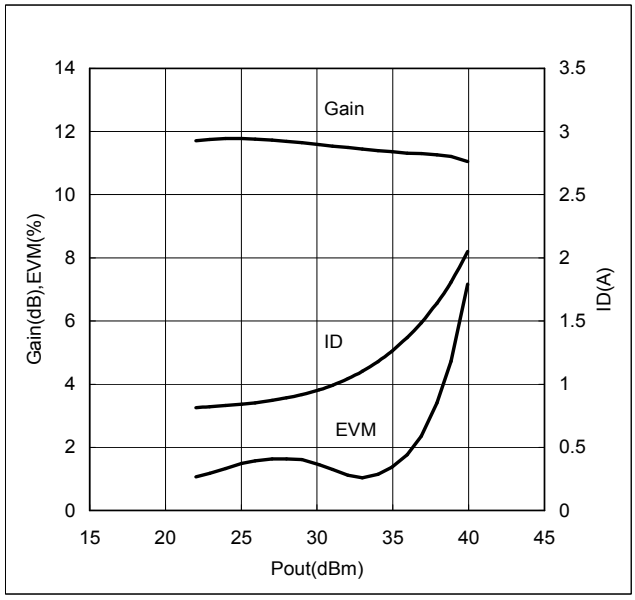

Test Condition:
f=3.5GHz,VD=12V,IDQ=0.8A,Ta=25deg.C
Mod.:3GPP TEST MODEL 1 64code Single Signal
Channel Bandwidth = 3.84MHz

### 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

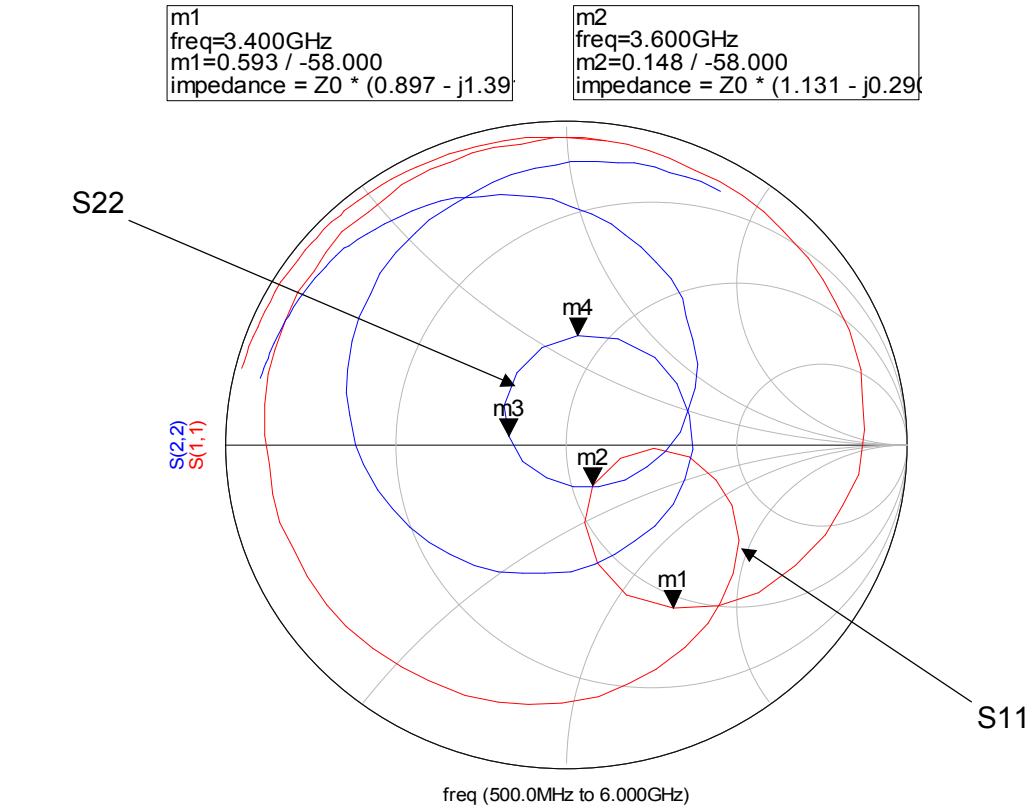
### EVM , Gain vs. Pout @freq.=3.5GHz

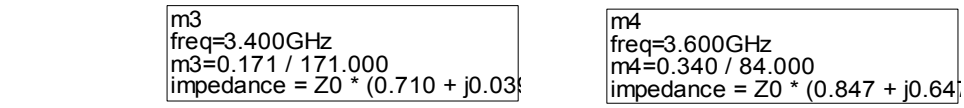


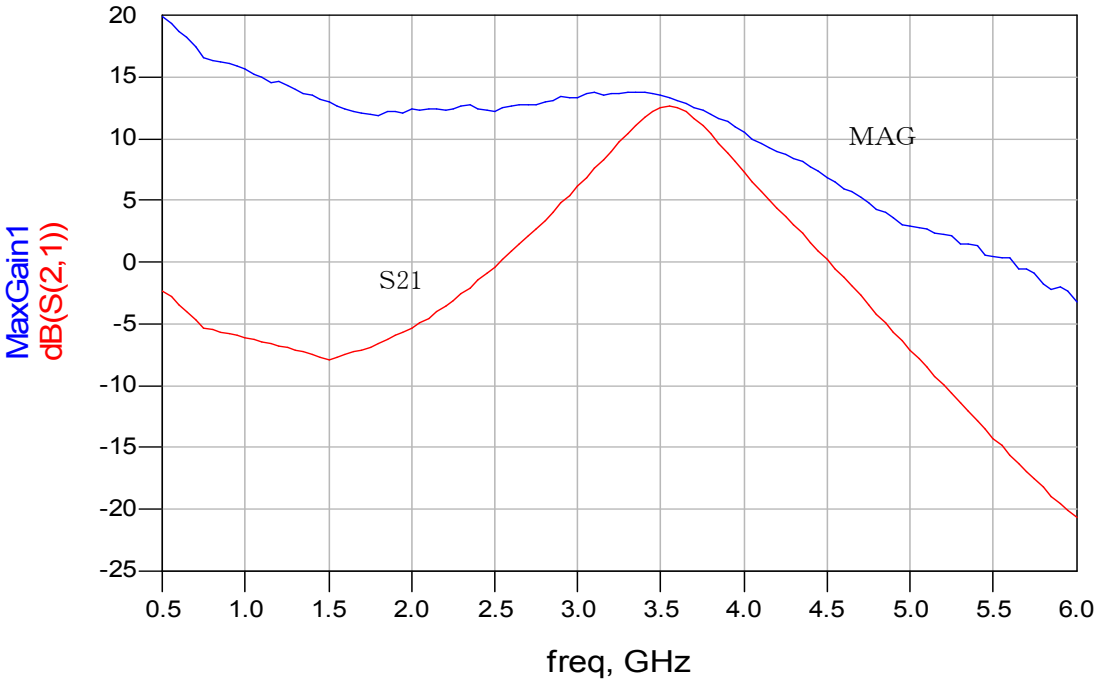

Test Condition:
f=3.5GHz,VD=12V,IDQ=0.8A,Ta=25deg.C
Mod: WiMAX Downlink,64QAM Channel Bandwidth: 3.5MHz

TYPICAL CHARACTERISTICS

Sparameters



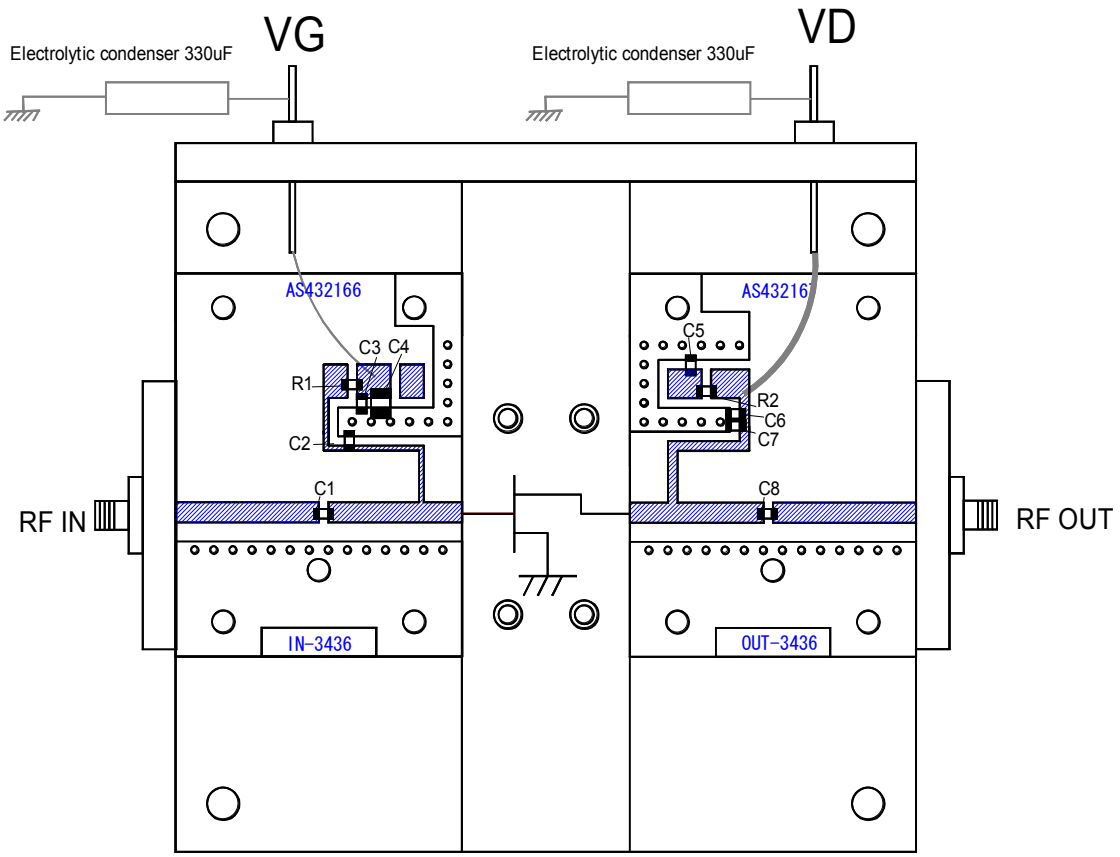



TYPICAL CHARACTERISTICS

Sparameters

| 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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