

**L & S BAND GaAs FET [ SMD non – matched ]**

**DESCRIPTION**

The MGF0919A GaAs FET with an N-channel schottky Gate, is designed for use UHF band amplifiers.

**FEATURES**

- High output power  
Po=30dBm(TYP.) @f=1.9GHz,Pin=12dBm
- High power gain  
Gp=19dB(TYP.) @f=1.9GHz
- High power added efficiency  
ηadd=37%(TYP.) @f=1.9GHz,Pin=12dBm
- Hermetic Package

**APPLICATION**

- For UHF Band power amplifiers

**QUALITY**

- GG

**RECOMMENDED BIAS CONDITIONS**

- Vds=10V • Ids=300mA • Rg=500Ω

**Delivery**    -01:Tape & Reel(1K), -03:Trai(50pcs)

**Absolute maximum ratings** (Ta=25°C)

| Symbol | Parameter                       | Ratings     | Unit |
|--------|---------------------------------|-------------|------|
| VGSO   | Gate to sourcebreakdown voltage | -15         | V    |
| VGDO   | Gate to drain breakdown voltage | -15         | V    |
| ID     | Drain current                   | 800         | mA   |
| IGR    | Reverse gate current            | -2.4        | mA   |
| IGF    | Forward gate current            | 10          | mA   |
| PT     | Total power dissipation         | 6           | W    |
| Tch    | Cannel temperature              | 175         | °C   |
| Tstg   | Storage temperature             | -65 to +175 | °C   |

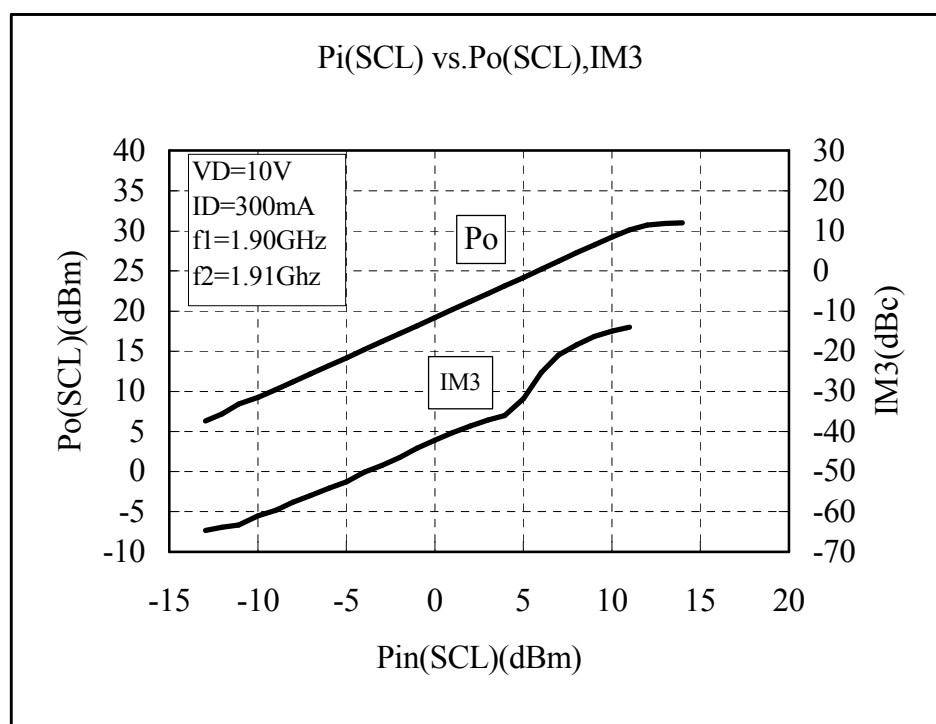
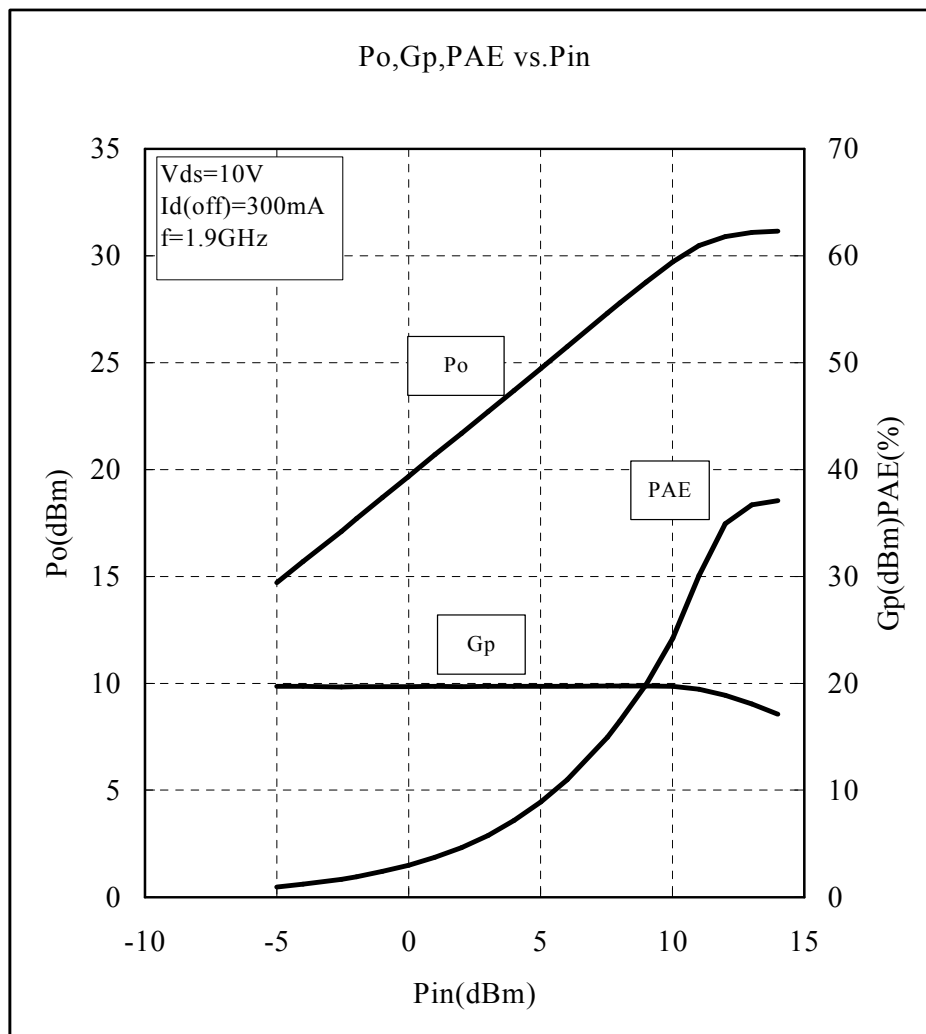
**Fig.1**

**Electrical characteristics** (Ta=25°C)

| Symbol    | Parameter                      | Test conditions           | Limits |      |      | Unit |
|-----------|--------------------------------|---------------------------|--------|------|------|------|
|           |                                |                           | Min.   | Typ. | Max. |      |
| IDSS      | Saturated drain current        | VDS=3V,VGS=0V             | -      | 600  | 800  | mA   |
| VGS(off)  | Gate to source cut-off voltage | VDS=3V,ID=2.0mA           | -1.0   | -    | -5.0 | V    |
| gm        | Transconductance               | VDS=3V,ID=300mA           | -      | 260  | -    | mS   |
| Po        | Output power                   | VDS=10V,ID=300mA,f=1.9GHz | 28     | 30   | -    | dBm  |
| ηadd      | Power added Efficiency         | Pin=12dBm                 | -      | 37   | -    | %    |
| GLP       | Linear Power Gain              | VDS=10V,ID=300mA,f=1.9GHz | 17     | 19   | -    | dB   |
| NF        | Noise figure                   |                           | -      | 1.2  | -    | dB   |
| Rth(ch-c) | Thermal Resistance *1          | ΔVf Method                | -      | 17   | 25   | °C/W |

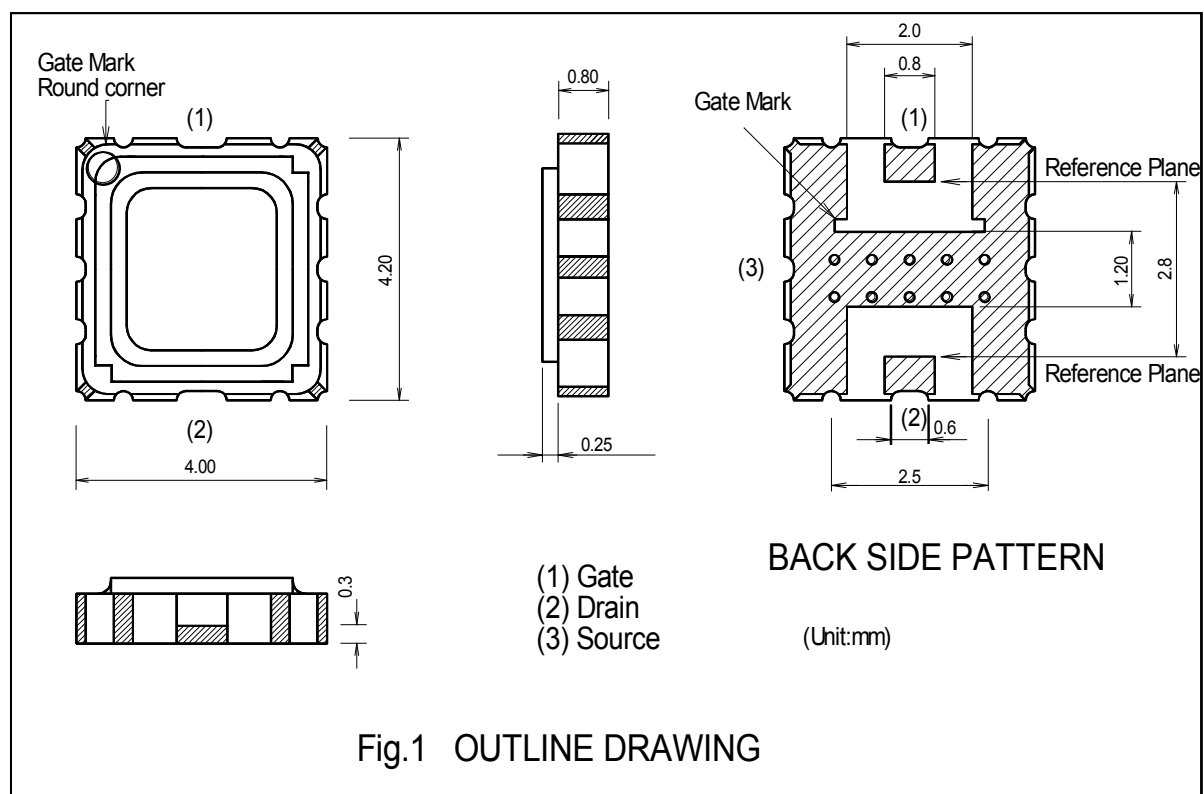
\*1:Channel to case /    Above parameters, ratings, limits are subject to change.

## MGF0919A TYPICAL CHARACTERISTICS



**MGF0919A S PARAMETERS** (Ta=25°C,VD=10V,ID=300mA, Reference Plane see Fig.1)

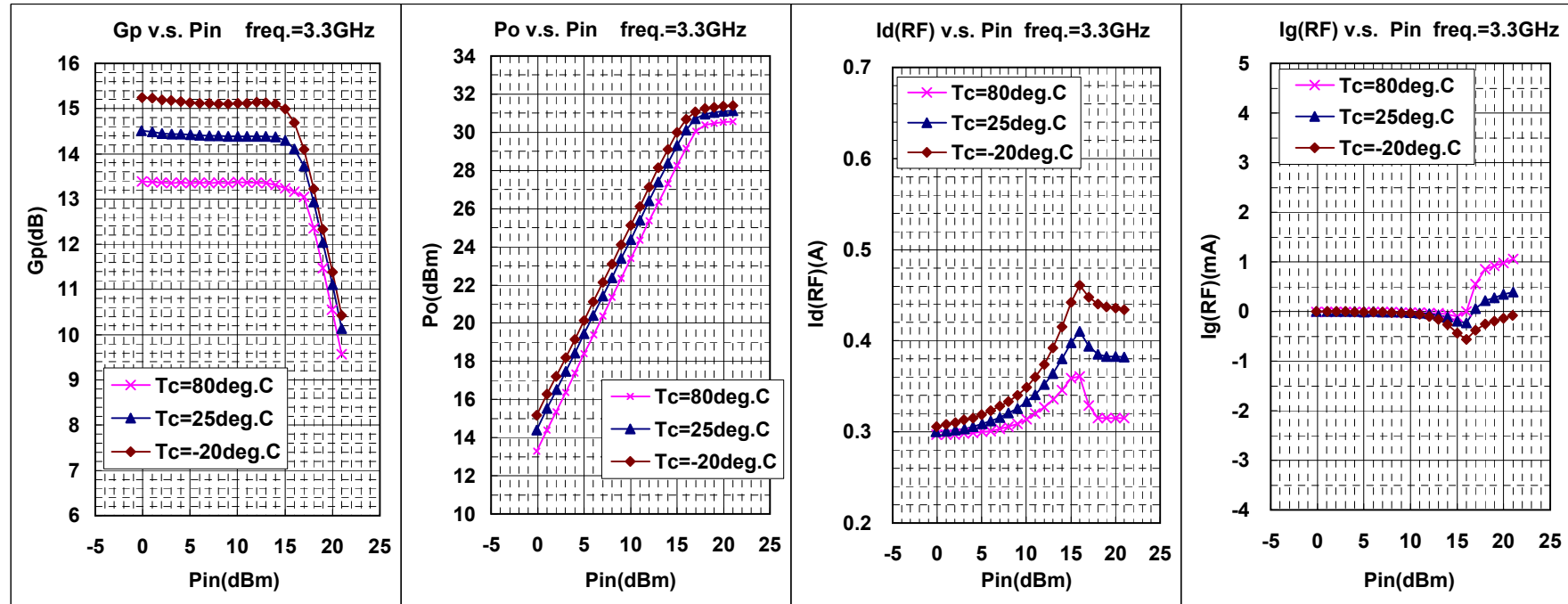
| freq. | S11   |         | S21   |         | S12   |         | S22   |         | K    | MAG/MSG |
|-------|-------|---------|-------|---------|-------|---------|-------|---------|------|---------|
| (MHz) | (mag) | (ang)   | (mag) | (ang)   | (mag) | (ang)   | (mag) | (ang)   |      | (dB)    |
| 600   | 0.933 | -74.30  | 7.339 | 130.03  | 0.021 | 47.28   | 0.269 | -137.41 | 0.25 | 25.43   |
| 1000  | 0.904 | -103.32 | 5.703 | 108.92  | 0.029 | 31.40   | 0.341 | -141.53 | 0.29 | 22.94   |
| 1400  | 0.888 | -122.18 | 4.487 | 92.96   | 0.032 | 19.66   | 0.405 | -144.12 | 0.35 | 21.47   |
| 1800  | 0.879 | -134.53 | 3.597 | 80.59   | 0.032 | 10.98   | 0.460 | -145.74 | 0.44 | 20.51   |
| 2200  | 0.876 | -142.94 | 2.956 | 70.65   | 0.031 | 4.55    | 0.507 | -146.82 | 0.55 | 19.79   |
| 2600  | 0.876 | -149.11 | 2.499 | 62.27   | 0.029 | -0.27   | 0.546 | -147.71 | 0.68 | 19.35   |
| 3000  | 0.876 | -154.07 | 2.175 | 54.80   | 0.028 | -3.93   | 0.579 | -148.61 | 0.80 | 18.90   |
| 3400  | 0.877 | -158.32 | 1.946 | 47.84   | 0.027 | -6.75   | 0.605 | -149.68 | 0.90 | 18.58   |
| 3800  | 0.876 | -162.04 | 1.780 | 41.10   | 0.027 | -8.96   | 0.627 | -151.00 | 0.96 | 18.19   |
| 4200  | 0.873 | -165.28 | 1.655 | 34.44   | 0.028 | -10.73  | 0.645 | -152.57 | 0.99 | 17.72   |
| 4600  | 0.868 | -168.13 | 1.557 | 27.78   | 0.029 | -12.16  | 0.660 | -154.36 | 1.03 | 16.20   |
| 5000  | 0.861 | -170.89 | 1.475 | 21.10   | 0.030 | -13.32  | 0.672 | -156.31 | 1.10 | 14.98   |
| 5400  | 0.853 | -174.26 | 1.405 | 14.42   | 0.032 | -14.29  | 0.683 | -158.32 | 1.12 | 14.31   |
| 5800  | 0.842 | -179.57 | 1.345 | 7.74    | 0.034 | -15.15  | 0.693 | -160.29 | 1.16 | 13.55   |
| 6200  | 0.830 | 176.81  | 1.295 | 1.06    | 0.036 | -15.98  | 0.701 | -162.12 | 1.21 | 12.76   |
| 6600  | 0.818 | 170.87  | 1.257 | -5.66   | 0.038 | -16.89  | 0.708 | -163.74 | 1.25 | 12.20   |
| 7000  | 0.803 | 163.91  | 1.235 | -12.47  | 0.041 | -18.03  | 0.712 | -165.09 | 1.26 | 11.74   |
| 7400  | 0.788 | 157.93  | 1.229 | -19.50  | 0.044 | -19.57  | 0.713 | -166.15 | 1.27 | 11.35   |
| 7800  | 0.772 | 153.18  | 1.244 | -26.89  | 0.049 | -21.70  | 0.711 | -166.96 | 1.22 | 11.23   |
| 8200  | 0.753 | 148.85  | 1.279 | -34.84  | 0.055 | -24.65  | 0.703 | -167.62 | 1.19 | 11.02   |
| 8600  | 0.732 | 143.64  | 1.334 | -43.57  | 0.062 | -28.65  | 0.690 | -168.31 | 1.17 | 10.83   |
| 9000  | 0.706 | 136.22  | 1.405 | -53.33  | 0.072 | -33.94  | 0.670 | -169.31 | 1.14 | 10.63   |
| 9400  | 0.667 | 125.58  | 1.487 | -64.35  | 0.084 | -40.75  | 0.643 | -170.99 | 1.15 | 10.14   |
| 9800  | 0.623 | 111.25  | 1.574 | -76.85  | 0.099 | -49.26  | 0.608 | -173.83 | 1.15 | 9.69    |
| 10200 | 0.590 | 93.44   | 1.653 | -91.04  | 0.115 | -59.62  | 0.566 | -178.45 | 1.12 | 9.45    |
| 10600 | 0.584 | 73.04   | 1.713 | -106.99 | 0.134 | -71.91  | 0.517 | 177.11  | 1.06 | 9.59    |
| 11000 | 0.619 | 51.50   | 1.739 | -124.73 | 0.152 | -86.08  | 0.462 | 175.48  | 0.99 | 10.58   |
| 11400 | 0.696 | 30.59   | 1.712 | -144.10 | 0.170 | -101.97 | 0.391 | -179.26 | 0.93 | 10.03   |
| 11800 | 0.800 | 12.12   | 1.612 | -164.77 | 0.185 | -119.23 | 0.384 | -163.79 | 0.87 | 9.40    |
| 12200 | 0.899 | -2.56   | 1.419 | 175.59  | 0.193 | -137.32 | 0.463 | -150.25 | 0.82 | 8.66    |



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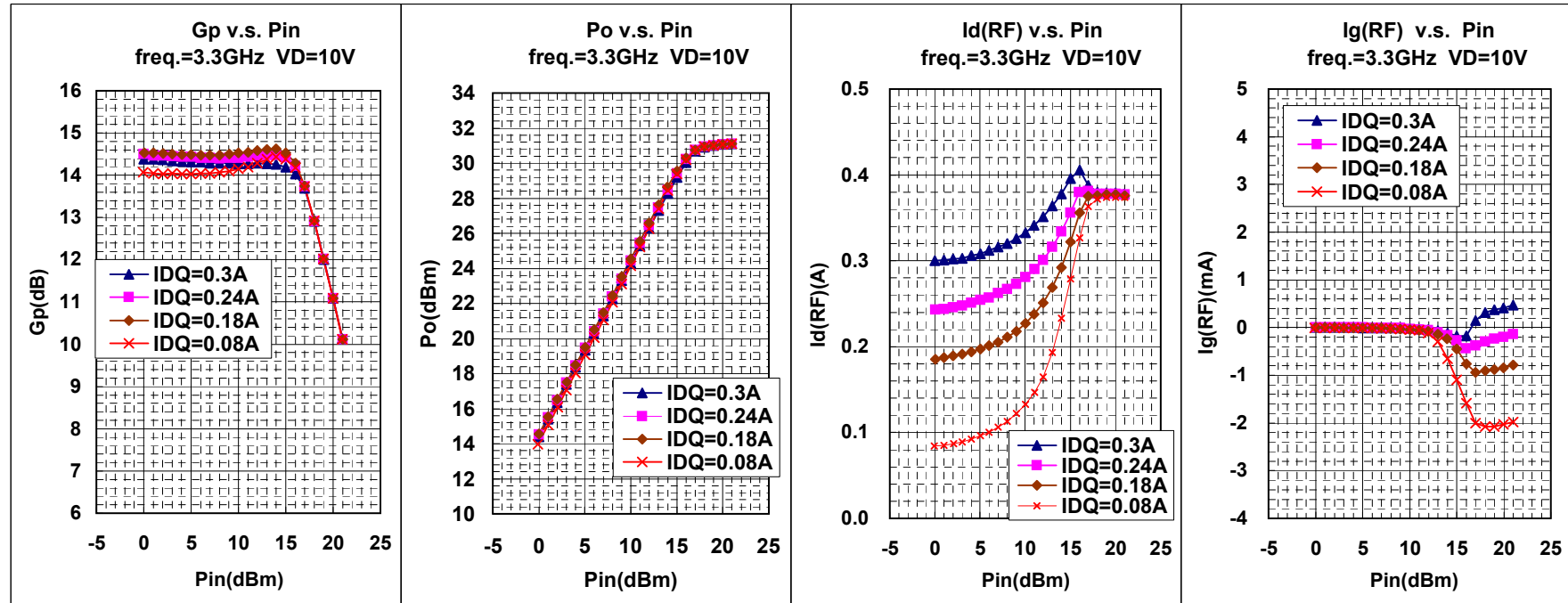
**MGF0919A RF TEST DATA(CW)      VD=10V, Idq=0.3A**  
**Gp, Po, Id(RF), Ig(RF) v.s. Pin**

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# MGF0919A RF TEST DATA(CW)

Gp,Po,Id(RF),Ig(RF) v.s. Pin

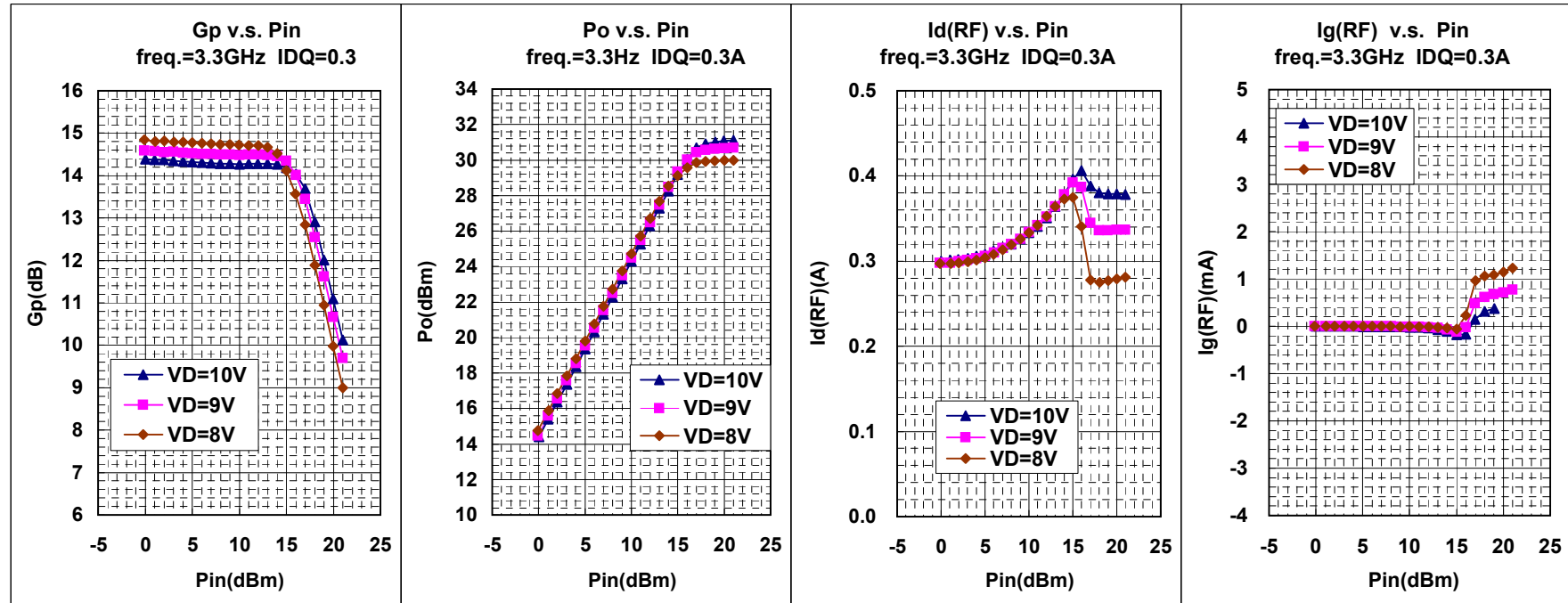


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**MGF0919A RF TEST DATA(CW)**  
**Gp,Po,Id(RF),Ig(RF) v.s. Pin**

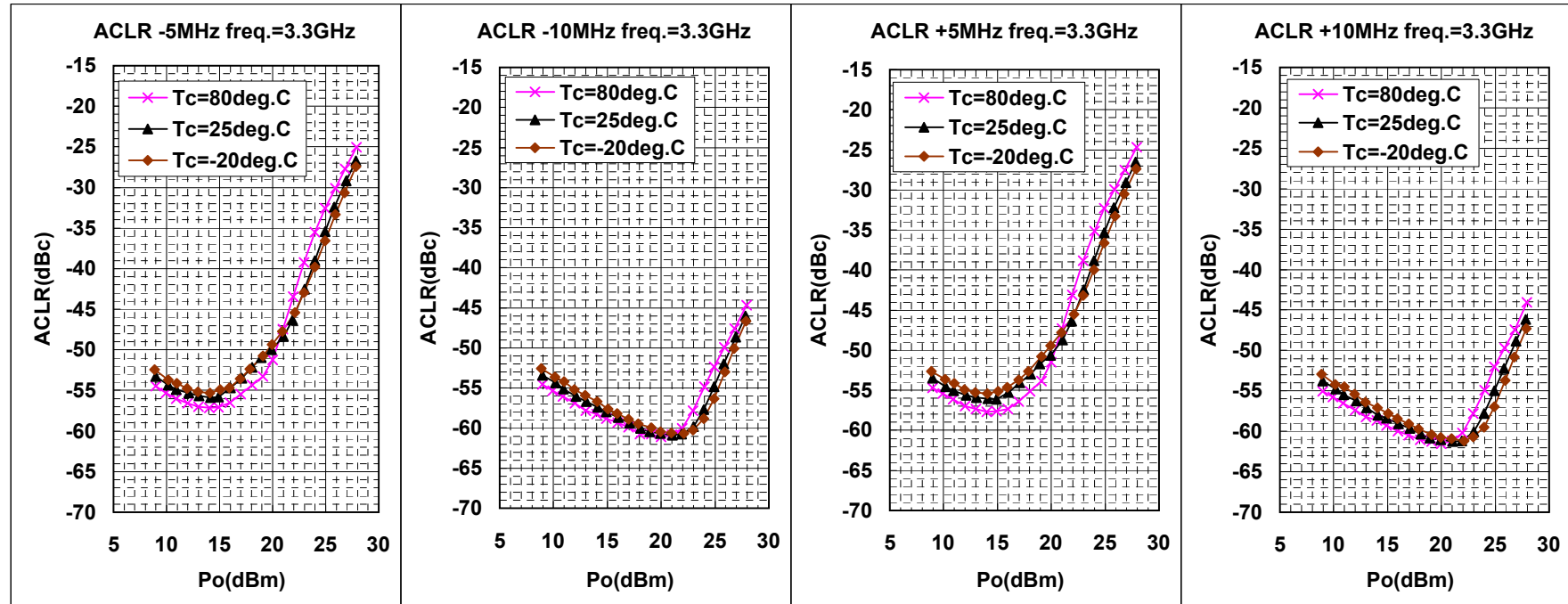
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MGF0919A RF TEST DATA(W-CDMA) VD=10V,Idq=0.3A  
ACLR v.s. Po 3GPP TEST MODEL1 64ch's Single Signal

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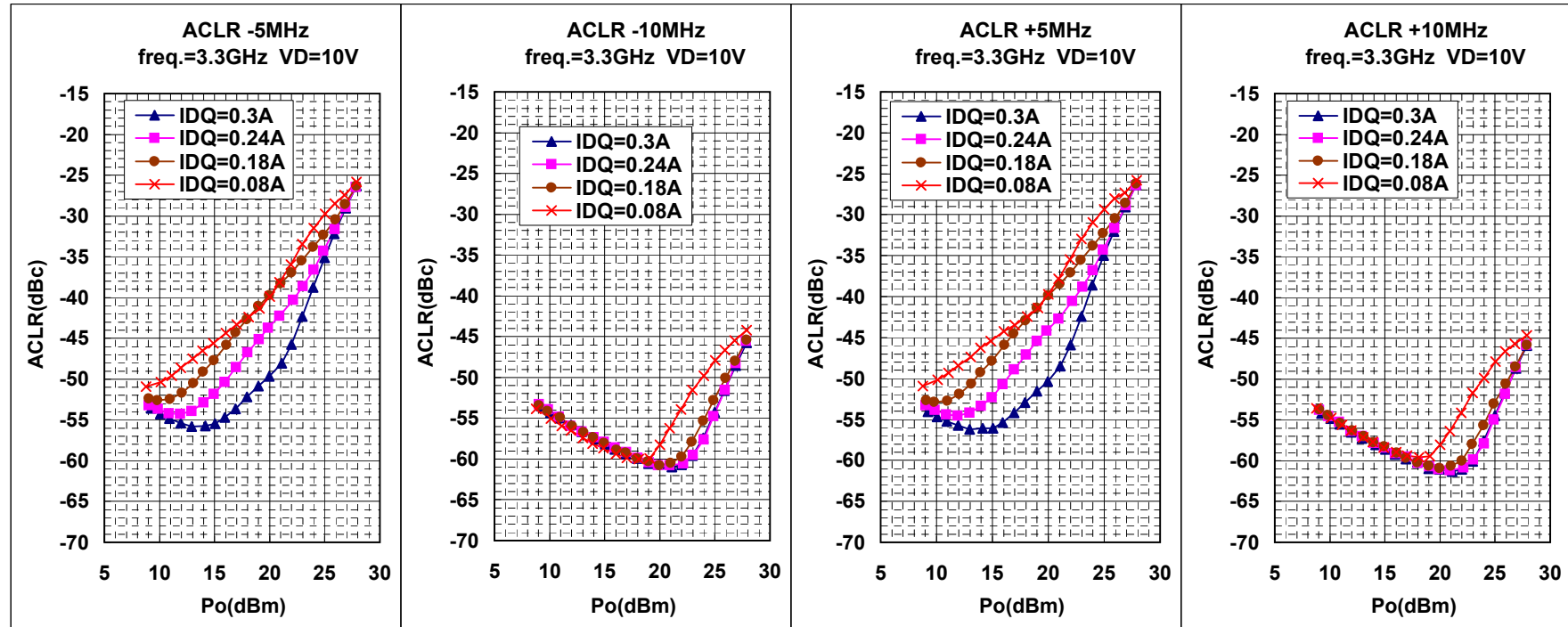
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**MGF0919A RF TEST DATA(W-CDMA)**  
**ACLR v.s. Po 3GPP TEST MODEL1 64ch's Single Signal**

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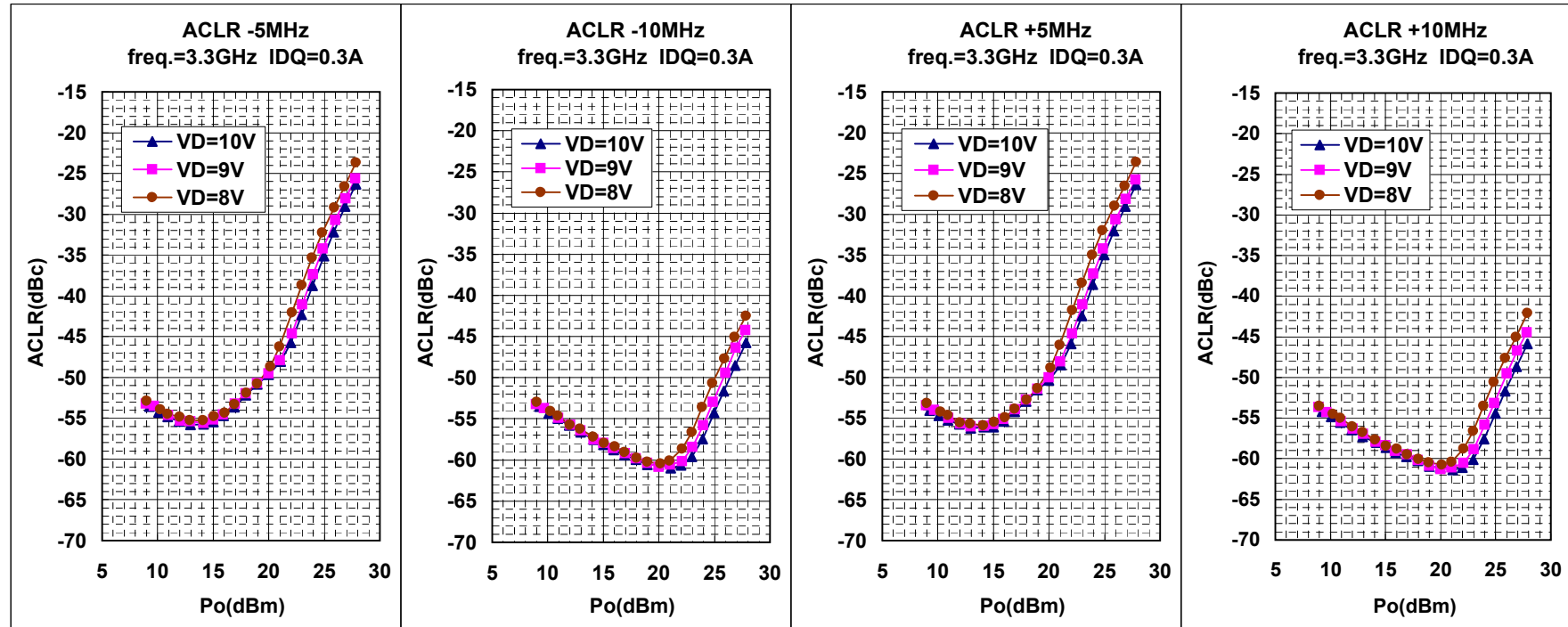
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**MGF0919A RF TEST DATA(W-CDMA)**  
**ACLR v.s. Po 3GPP TEST MODEL1 64ch's Single Signal**

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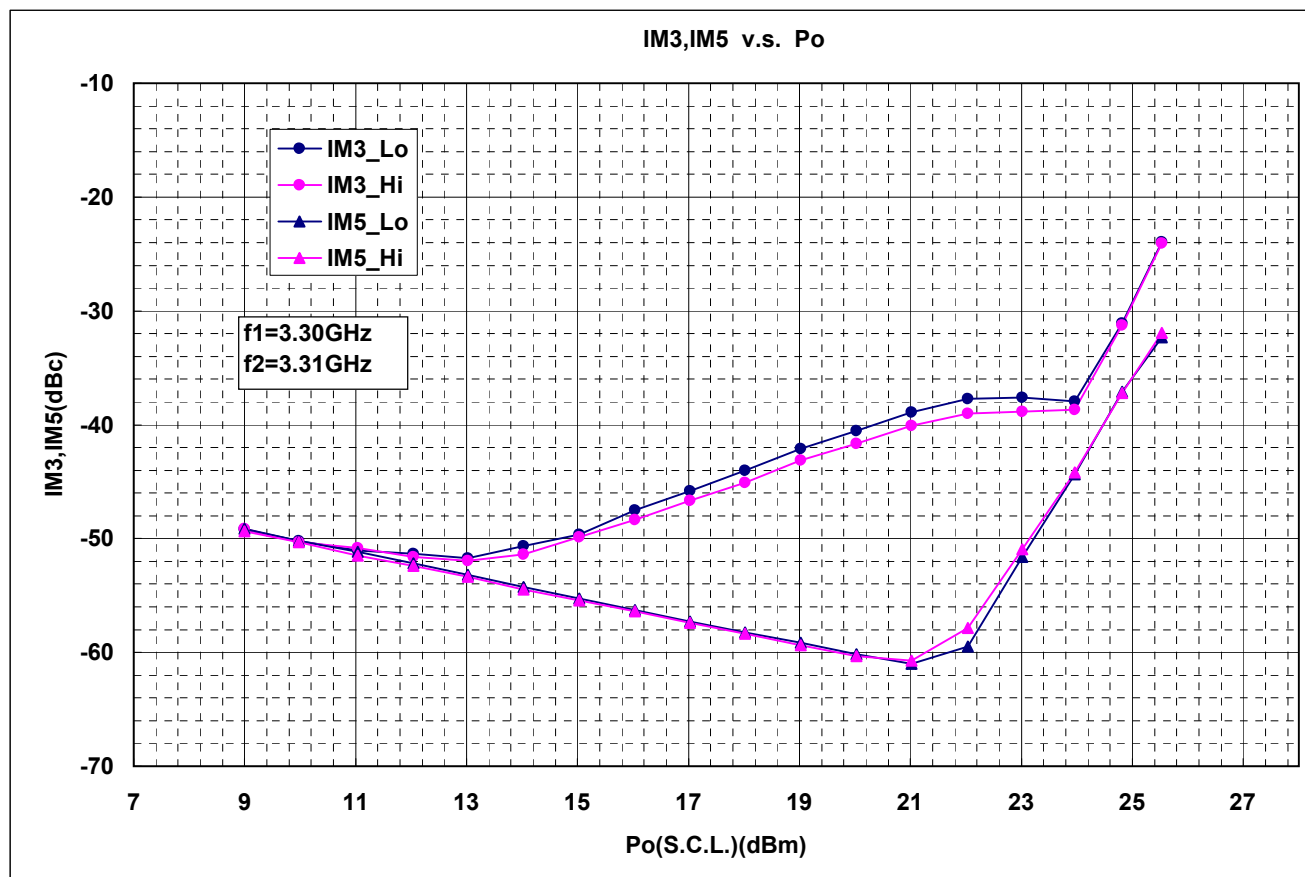
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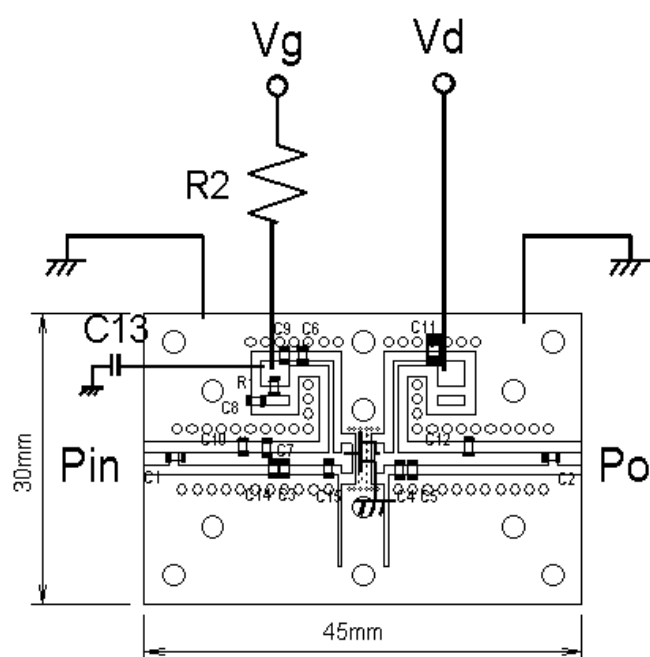
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MGF0919A RF TEST DATA     $V_D=10V, I_{dQ}=0.3A$   
IM3,IM5 v.s. Pin

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# MGF0919A TEST FIXTURE $f=3.3\text{GHz}$



$C_1, C_2 = 20\text{pF}$   
 $C_3, C_4, C_5 = 1\text{pF}$   
 $C_{15} = 2\text{pF}$   
 $C_6 = 22\text{pF}$   
 $C_7, C_{10}, C_{12}, C_{14} = 0.5\text{pF}$   
 $C_8, C_9 = 1000\text{pF}$   
 $C_{11} = 4.7\mu\text{F}$   
 $C_{13} = 330\mu\text{F}$   
 $R_1 = 51\Omega$   
 $R_2 = 500\Omega$

Board material: FR4 Thickness=0.8(mm)  
 Specific dielectric constant=4.4

**L & S BAND GaAs FET [ SMD non – matched ]****Requests Regarding Safety Designs**

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