

< High-power GaAs FET (small signal gain stage) >

MGF0805A

L & S BAND / 4.5W
SMD non - matched

DESCRIPTION

The MGF0805A, GaAs FET with an N-channel schottky gate, is designed for MMDS/UMTS/WiMAX applications.

FEATURES

- High output power
Po=36.5dBm(TYP.)
- High power added efficiency
P.A.E =50%(TYP.)
- Hermetic package
- Designed for use in Class AB linear amplifiers

APPLICATION

- L/S band power amplifiers

QUALITY

- GG

Packaging

- Tape & Reel (1000 pcs)

RECOMMENDED BIAS CONDITIONS

- Vds=10V • Ids=400mA • Rg=100Ω

Absolute maximum ratings (Ta=25°C)

Symbol	Parameter	Ratings	Unit
VDS	Drain to source voltage	15	V
VGS	Gate to source voltage	-5	V
ID	Drain current	2.5	A
IGR	Reverse gate current	-10	mA
IGF	Forward gate current	21	mA
PT*1	Total power dissipation	21	W
Tch	Channel temperature	175	°C
Tstg	Storage temperature	-55 to +150	°C

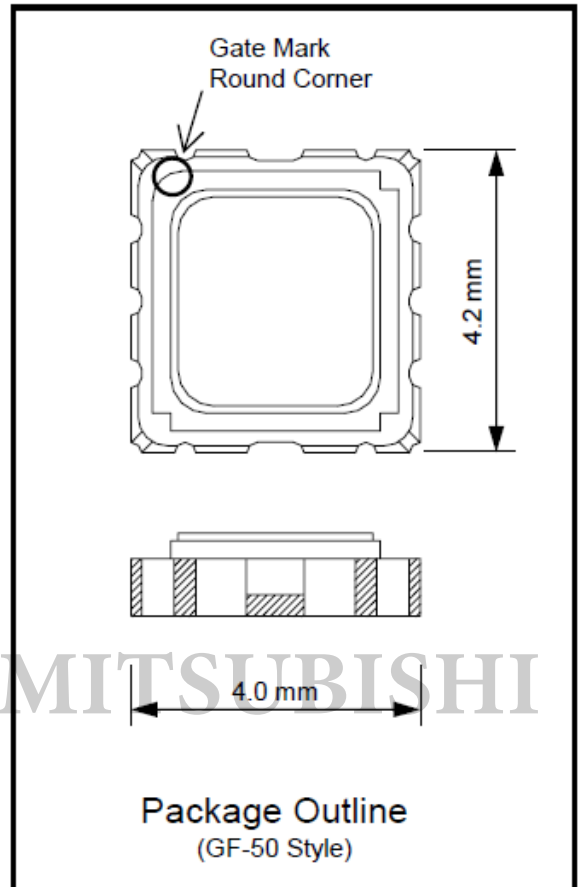
*1:Tc=25°C

Electrical characteristics (Ta=25°C)

Symbol	Parameter	Test conditions	Limits			Unit
			Min.	Typ.	Max.	
IDSS	Saturated drain current	VDS=3V,VGS=0V	-	1800	-	mA
gm	Transconductance	VDS=3V,ID=400mA	-	1000	-	mS
VGS(off)	Gate to source cut-off voltage	VDS=3V,ID=10mA	-0.5	-1.1	-2	V
Po	Output power	VDS=10V,ID(RF off)=400mA	35	36.5	-	dBm
P.A.E.	Power added efficiency	f=1.9GHz,Pin=22dBm	-	50	-	%
GLP	Linear power gain	VDS=10V,ID(RF off)=400mA,f=1.9GHz	13	14.5	-	dB
Rth(ch-c) *2	Thermal resistance	Δ Vf method	-	5	7	°C/W

*2 :Channel-case

Specifications are subject to change without notice.



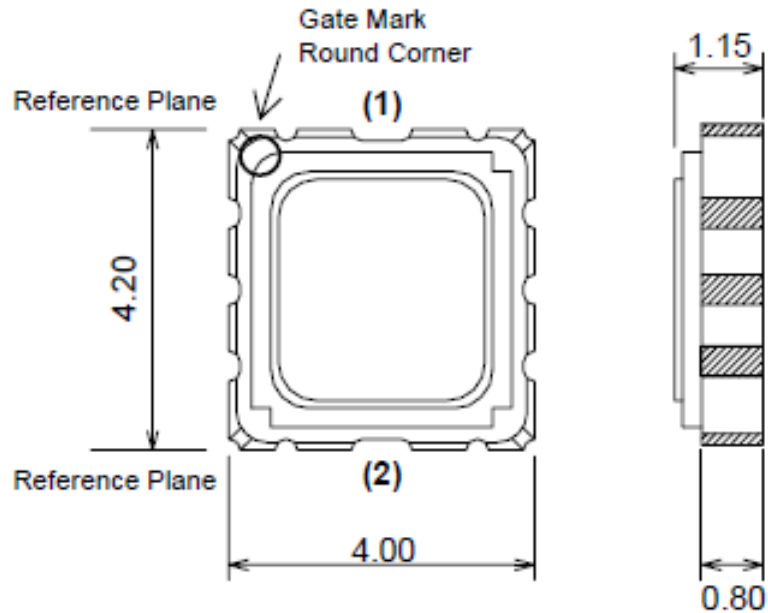
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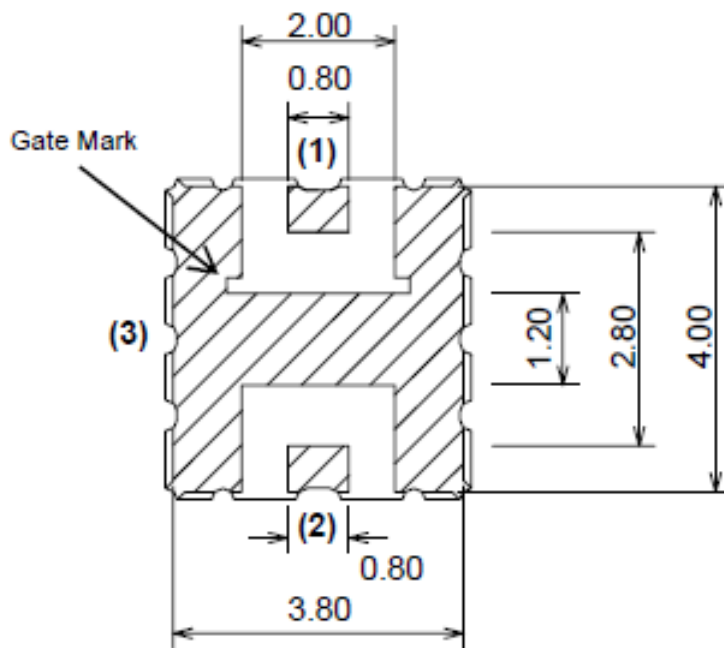
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MGF0805A OUTLINE DRAWING



- (1) Gate
- (2) Drain
- (3) Source unit: mm



BACK SIDE PATTERN

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MGF0805A S-parameters(Ta=25deg.C , VDS=10(V),IDS=400(mA))

Freq. (GHz)	S11		S21		S12		S22	
	(mag)	(ang)	(mag)	(ang)	(mag)	(ang)	(mag)	(ang)
0.4	0.935	-149.9	7.946	99.7	0.0129	19.0	0.740	-176.7
0.6	0.942	-162.4	5.440	89.3	0.0132	14.1	0.740	-179.0
0.8	0.943	-169.6	4.092	82.2	0.0134	12.5	0.733	179.5
1.0	0.943	-174.7	3.279	76.7	0.0136	12.0	0.729	178.4
1.2	0.943	-178.5	2.743	71.7	0.0138	12.0	0.728	177.4
1.4	0.942	178.5	2.348	67.3	0.0140	12.7	0.732	176.8
1.6	0.939	175.8	2.050	63.0	0.0141	13.2	0.730	174.7
1.8	0.939	173.1	1.812	58.7	0.0142	14.3	0.741	173.8
2.0	0.937	170.5	1.639	53.8	0.0146	14.5	0.737	173.5
2.2	0.937	168.2	1.500	49.9	0.0151	14.9	0.739	172.7
2.4	0.935	166.2	1.379	46.0	0.0155	15.4	0.740	172.0
2.6	0.936	164.2	1.277	42.3	0.0159	15.4	0.745	171.2
2.8	0.935	162.3	1.192	38.5	0.0160	15.9	0.746	170.3
3.0	0.932	160.6	1.119	35.0	0.0163	17.6	0.750	169.3
3.2	0.934	158.6	1.059	31.4	0.0167	20.5	0.753	168.3
3.4	0.935	156.4	1.005	27.4	0.0182	21.4	0.755	167.0
3.6	0.933	154.4	0.955	23.6	0.0190	20.9	0.757	165.6
3.8	0.932	152.1	0.910	19.6	0.0199	20.5	0.758	164.2
4.0	0.931	149.8	0.870	15.7	0.0208	20.2	0.760	162.7
4.2	0.931	147.3	0.836	11.8	0.0215	20.1	0.761	161.0
4.4	0.929	144.6	0.808	7.9	0.0232	21.2	0.762	159.4
4.6	0.926	141.8	0.781	3.7	0.0249	19.2	0.764	157.8
4.8	0.924	138.9	0.757	-0.4	0.0263	17.3	0.763	156.0
5.0	0.920	137.5	0.742	-2.9	0.0281	17.4	0.767	156.5

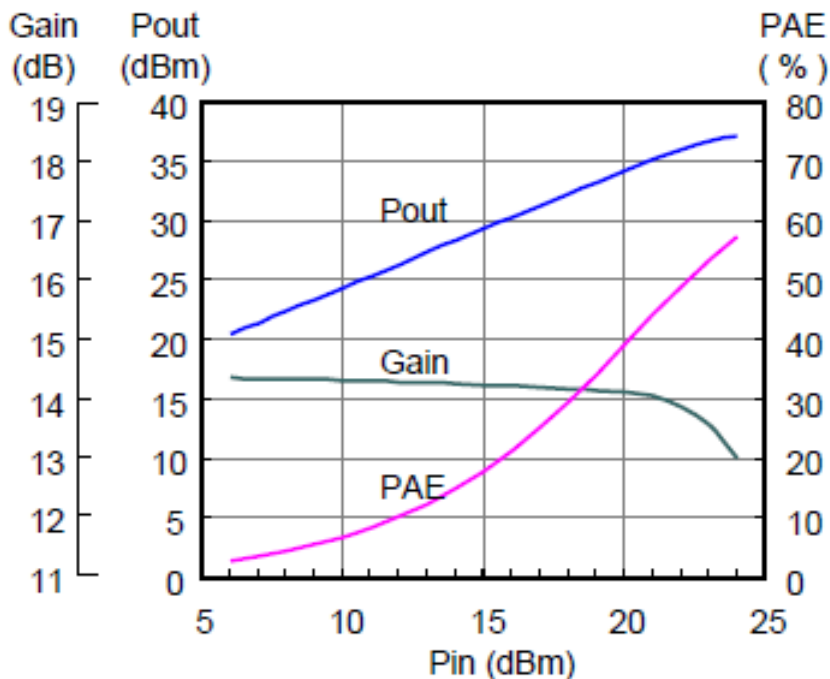
Note : Reference plane is shown in Outline Drawing

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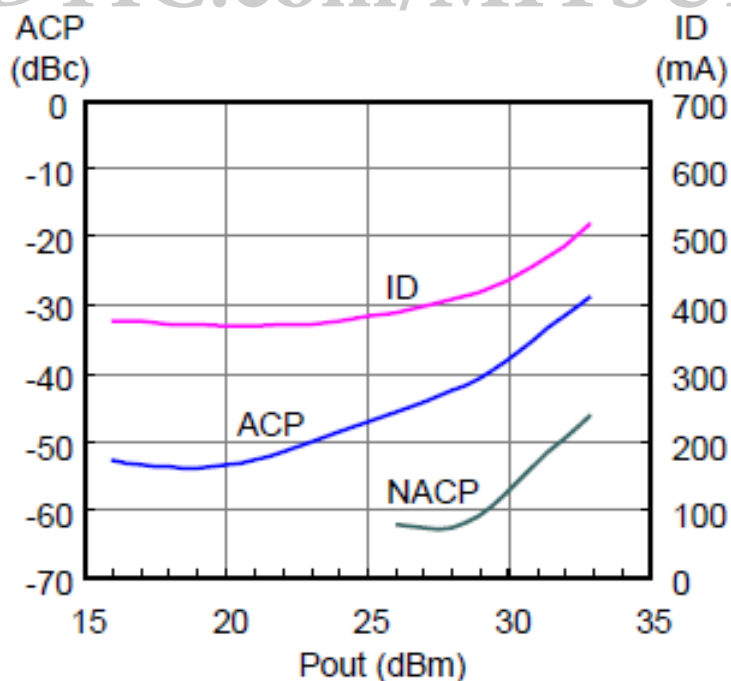
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MGF0805A Example of Circuit Schematic and Characteristics : f=2.6GHz



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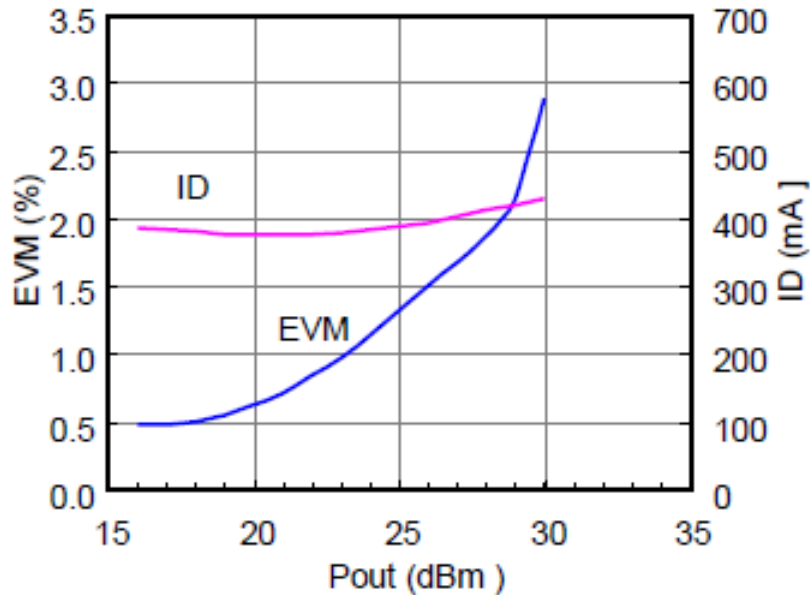
Bias condition: $V_D = 10$ V, $I_{DQ} = 400$ mA,
Modulation signal: 3GPP TEST MODEL 1 (W-CDMA)

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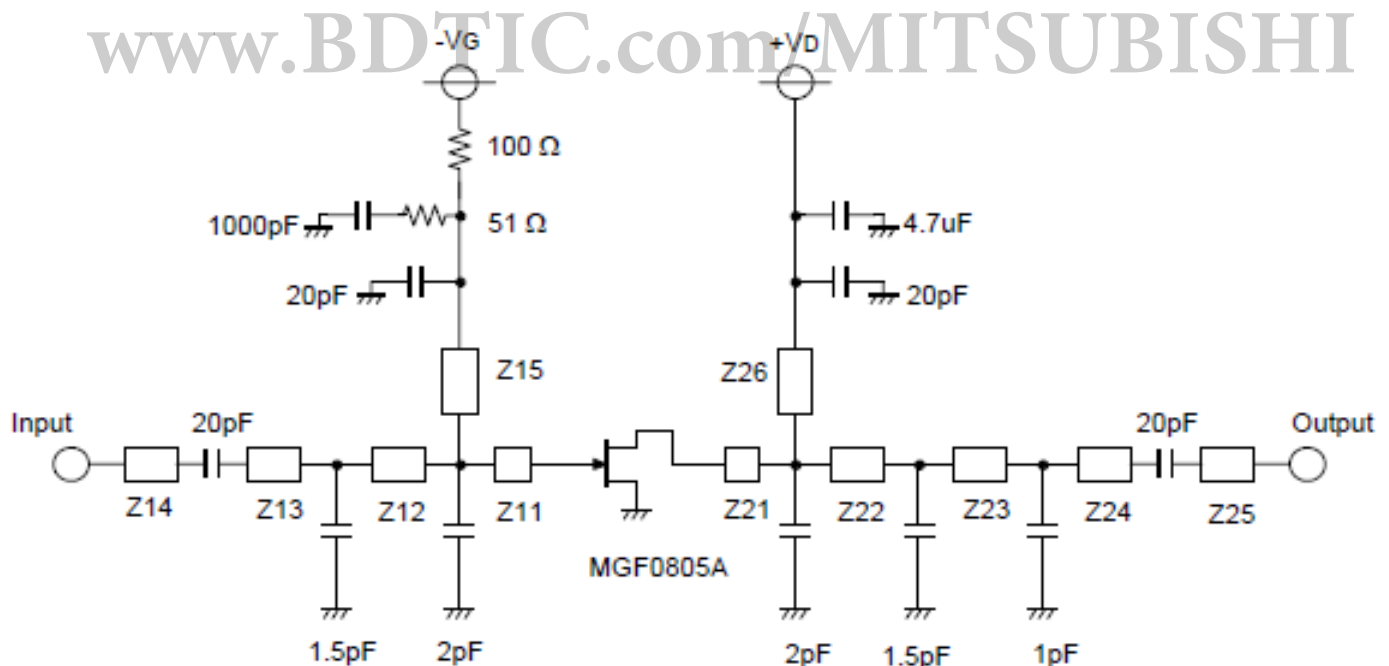
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MGF0805A Example of Circuit Schematic and Characteristics : f=2.6GHz



Bias condition:
 $V_D = 10\text{ V}$,
 $I_{DQ} = 400\text{ mA}$
 Modulation signal:
 IEEE.802.16 WiMAX A,
 Downlink, 64QAM3/4



Z11 to Z26 : Microstrip line (L × W, Unit: mm)

Z11 : 1.0 × 0.9	Z14 : 3.0 × 0.9	Z22 : 2.1 × 0.9	Z25 : 3.0 × 0.9
Z12 : 0.8 × 0.9	Z15 : 17.6 × 0.5	Z23 : 3.2 × 0.9	Z26 : 17.6 × 0.5
Z13 : 14.5 × 0.9	Z21 : 1.0 × 0.9	Z24 : 10.0 × 0.9	

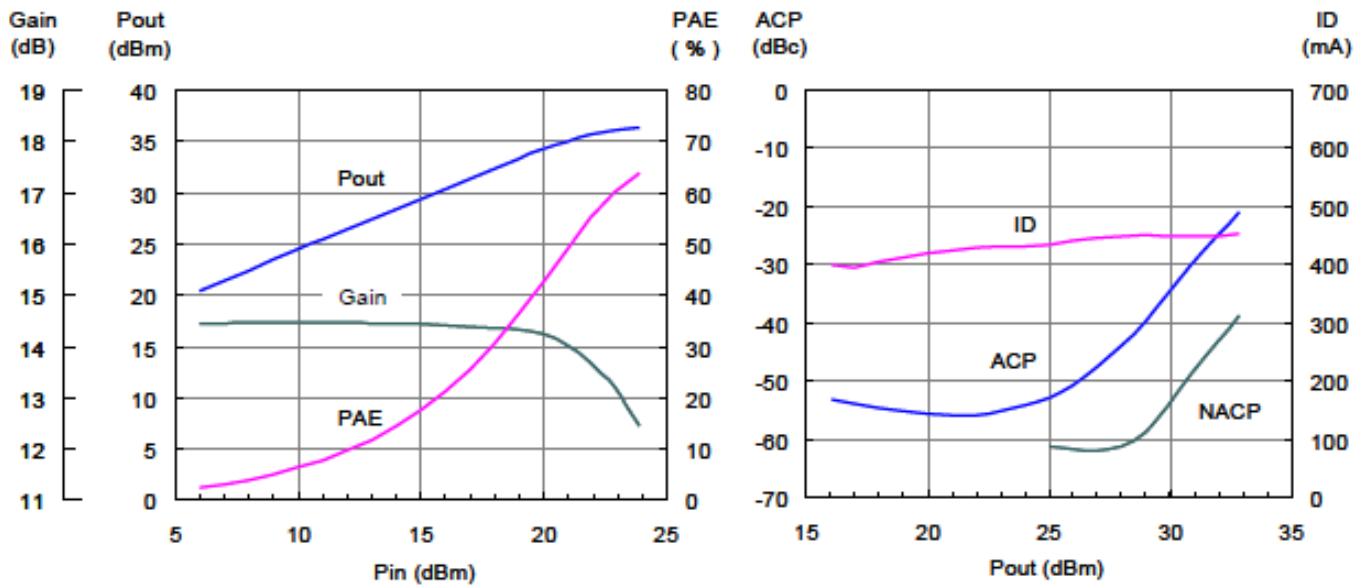
PCB : BT Resin, $\epsilon_r = 3.4$, Substrate thickness = 0.4 mm

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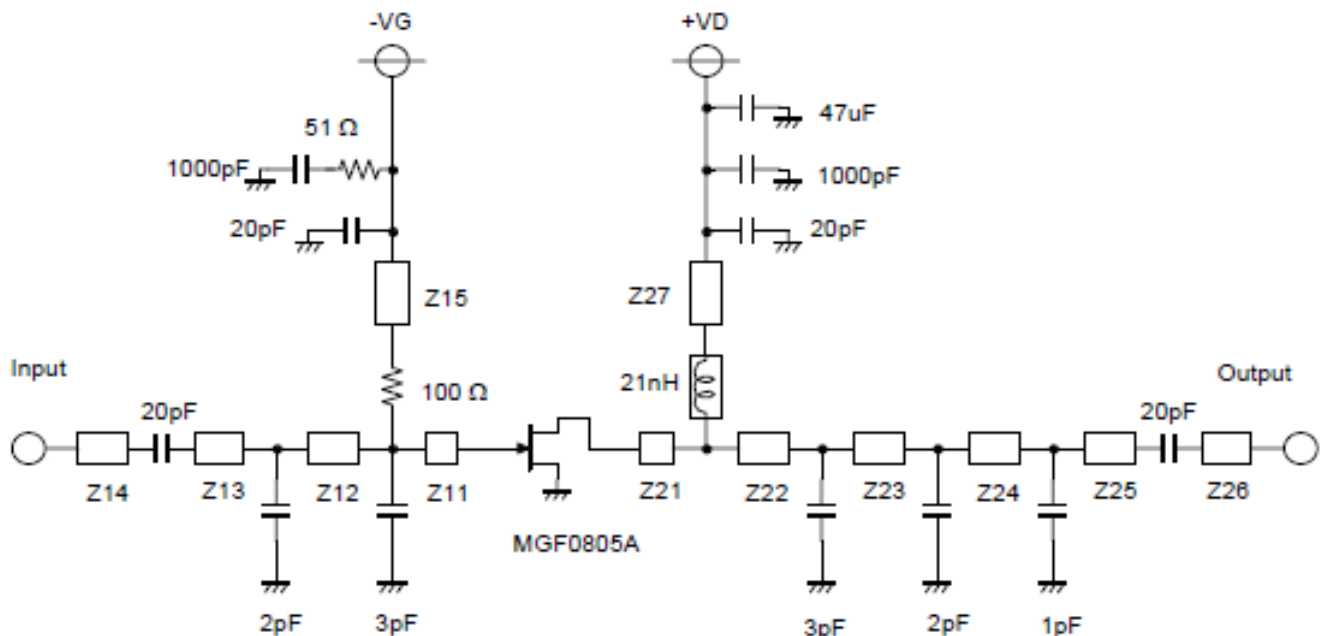
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MGF0805A Example of Circuit Schematic and Characteristics : f=1.9GHz



Bias condition: $V_D = 10\text{ V}$, $I_{DQ} = 400\text{ mA}$,
Modulation signal: 3GPP TEST MODEL 1 (W-CDMA)

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Z11 to Z27 : Microstrip line (L × W, Unit: mm)

Z11 : 1.0 × 0.9	Z14 : 3.0 × 0.9	Z22 : 1.2 × 0.9	Z25 : 2.8 × 0.9
Z12 : 5.1 × 0.9	Z15 : 22.0 × 0.5	Z23 : 5.7 × 0.9	Z26 : 3.0 × 0.9
Z13 : 9.6 × 0.9	Z21 : 1.0 × 0.9	Z24 : 5.9 × 0.9	Z27 : 22 × 0.5

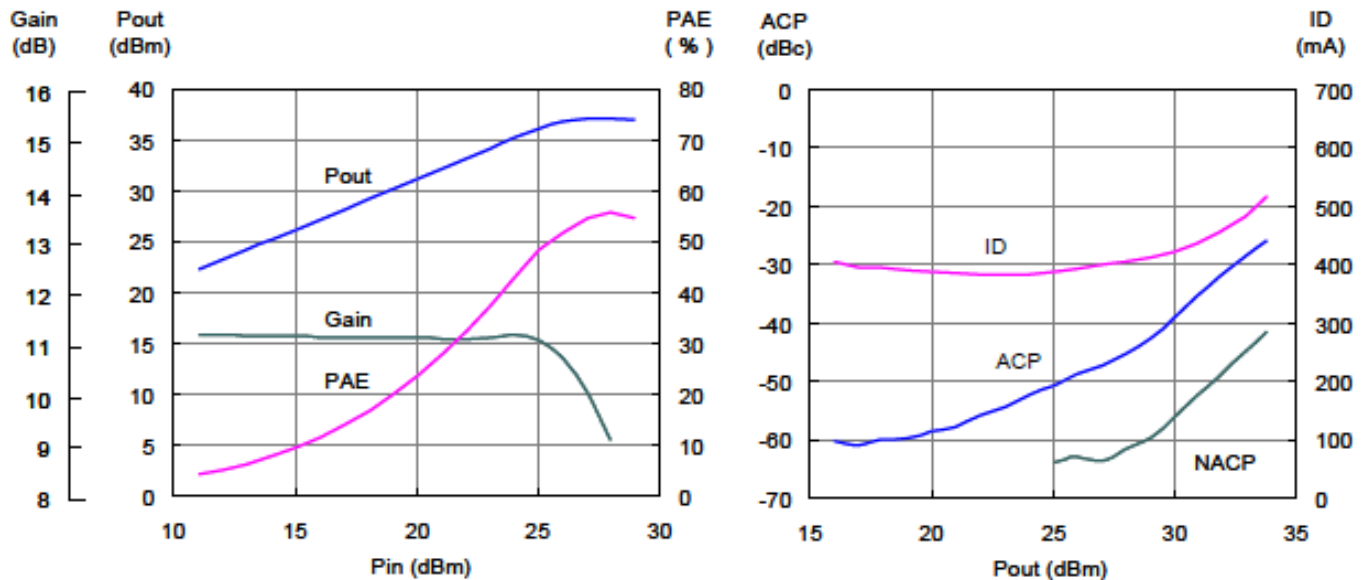
PCB : BT Resin, $\epsilon_r = 3.4$, Substrate thickness = 0.4 mm

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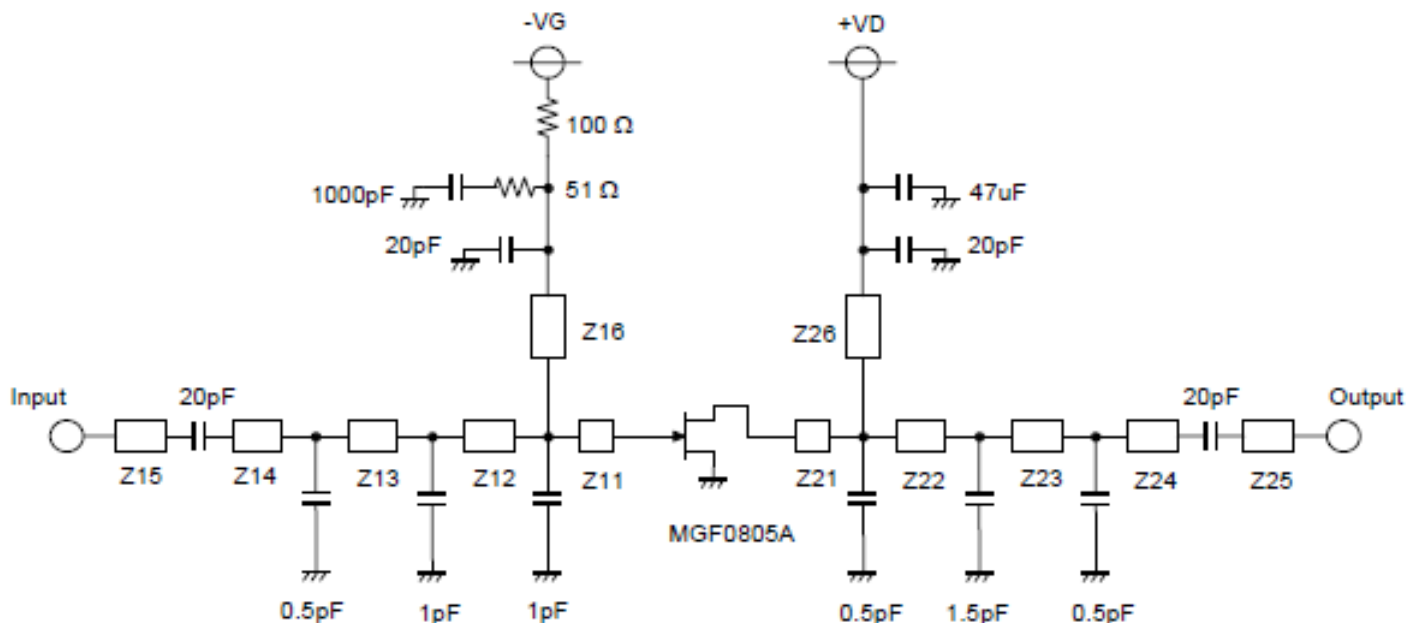
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MGF0805A Example of Circuit Schematic and Characteristics : f=3.5GHz



Bias condition: $V_D = 10\text{ V}$, $I_{DQ} = 400\text{ mA}$,
Modulation signal: 3GPP TEST MODEL 1 (W-CDMA)

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Z11 to Z26 : Microstrip line (L × W, Unit: mm)

Z11 : 1.0 × 0.9	Z14 : 3.7 × 0.9	Z21 : 1.0 × 0.9	Z24 : 4.7 × 0.9
Z12 : 0.8 × 0.9	Z15 : 3.0 × 0.9	Z22 : 0.8 × 0.9	Z25 : 3.0 × 0.9
Z13 : 10.8 × 0.9	Z16 : 13.3 × 0.5	Z23 : 9.8 × 0.9	Z26 : 13.3 × 0.5

PCB : BT Resin, $\epsilon_r = 3.4$, Substrate thickness = 0.4 mm

Keep safety first in your circuit designs!

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