Preliminary

MGF0915A

L & S BAND GaAs FET [SMD non - matched]

DESCRIPTION

The MGF0915A GaAs FET with an N-channel schtokky Gate, is designed for use UHF band amplifiers.

FEATURES

- High output power
  Po=36.5 dBm(TYP.) @f=1.9GHz,Pin=23dBm
- High power gain
  Gp=14.5 dB(TYP.) @f=1.9GHz
- High power added efficiency
  ηadd=50 %(TYP.) @f=1.9GHz,Pin=23dBm
- Hermetic Package

APPLICATION

- For UHF Band power amplifiers

QUALITY

- GG

RECOMMENDED BIAS CONDITIONS

- Vds=10V
- Ids=800 mA
- Rg=100Ω

Fig.1

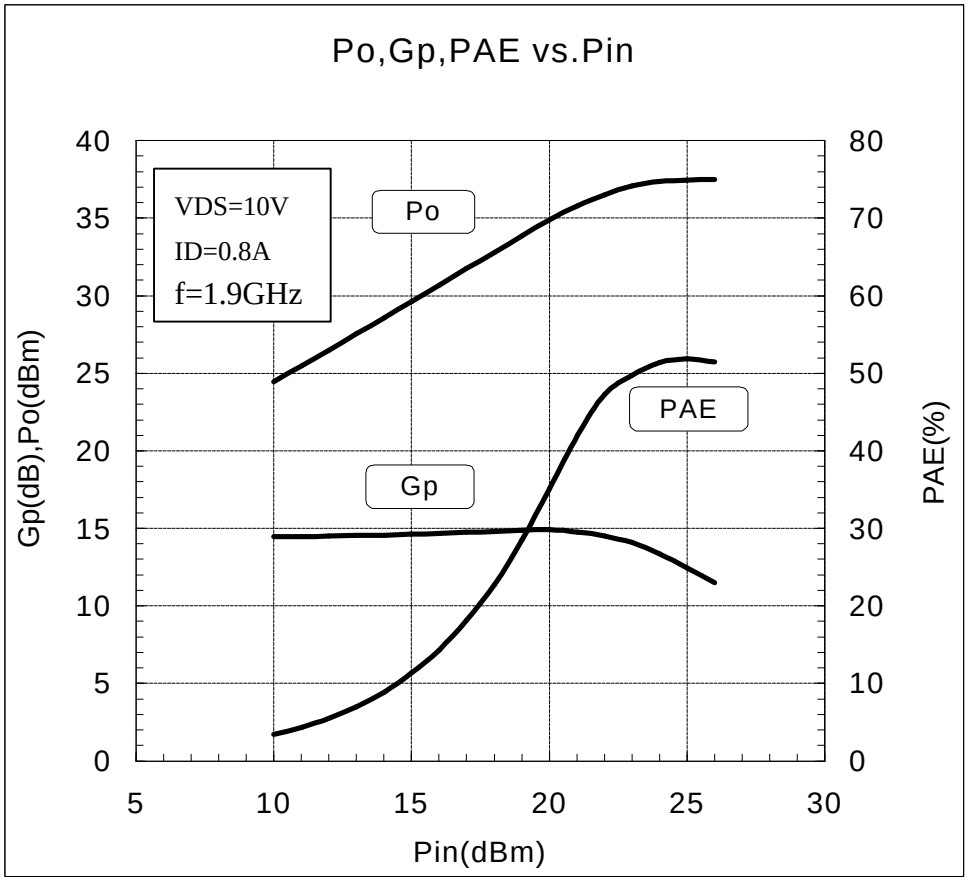
Absolute maximum ratings (Ta=25°C)

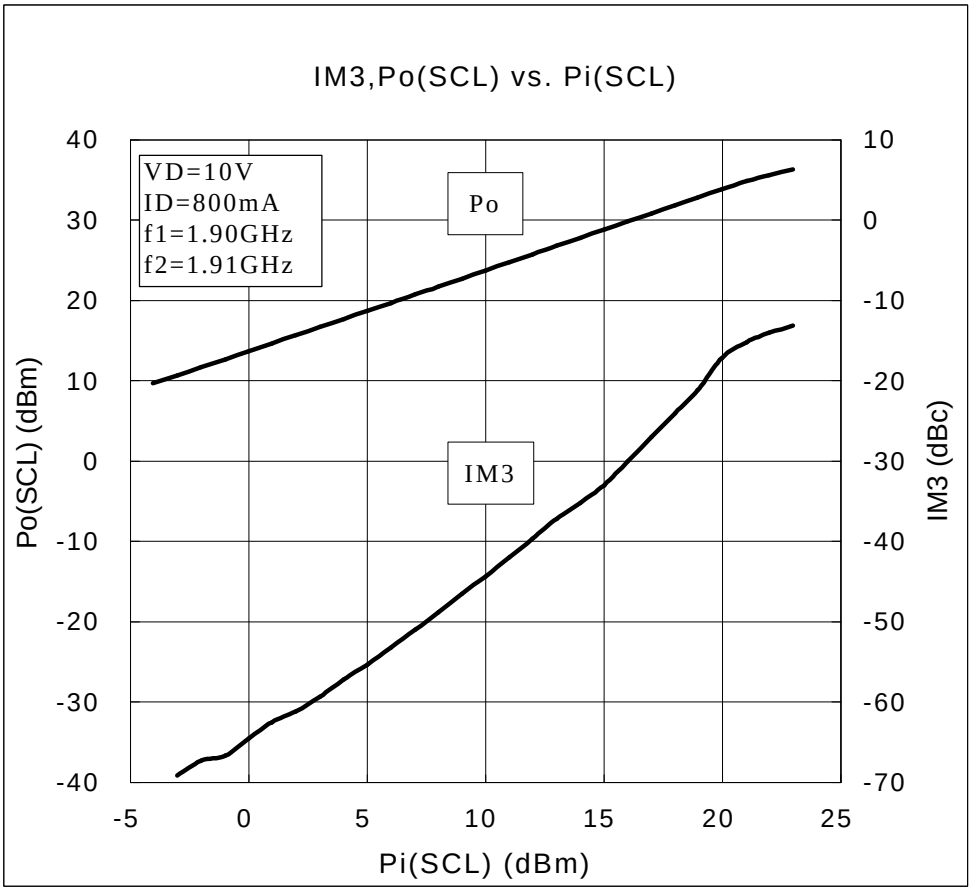
Symbol	Parameter	Ratings	Unit
V_{GSO}	Gate to source breakdown voltage	-15	V
V_{GDO}	Gate to drain breakdown voltage	-15	V
I_D	Drain current	3000	mA
I_{GR}	Reverse gate current	-10	mA
I_{GF}	Forward gate current	21	mA
P_T	Total power dissipation	18.7	W
Tch	Cannel temperature	175	°C
Tstg	Storage temperature	-65 to +175	°C

Electrical characteristics (Ta=25°C)

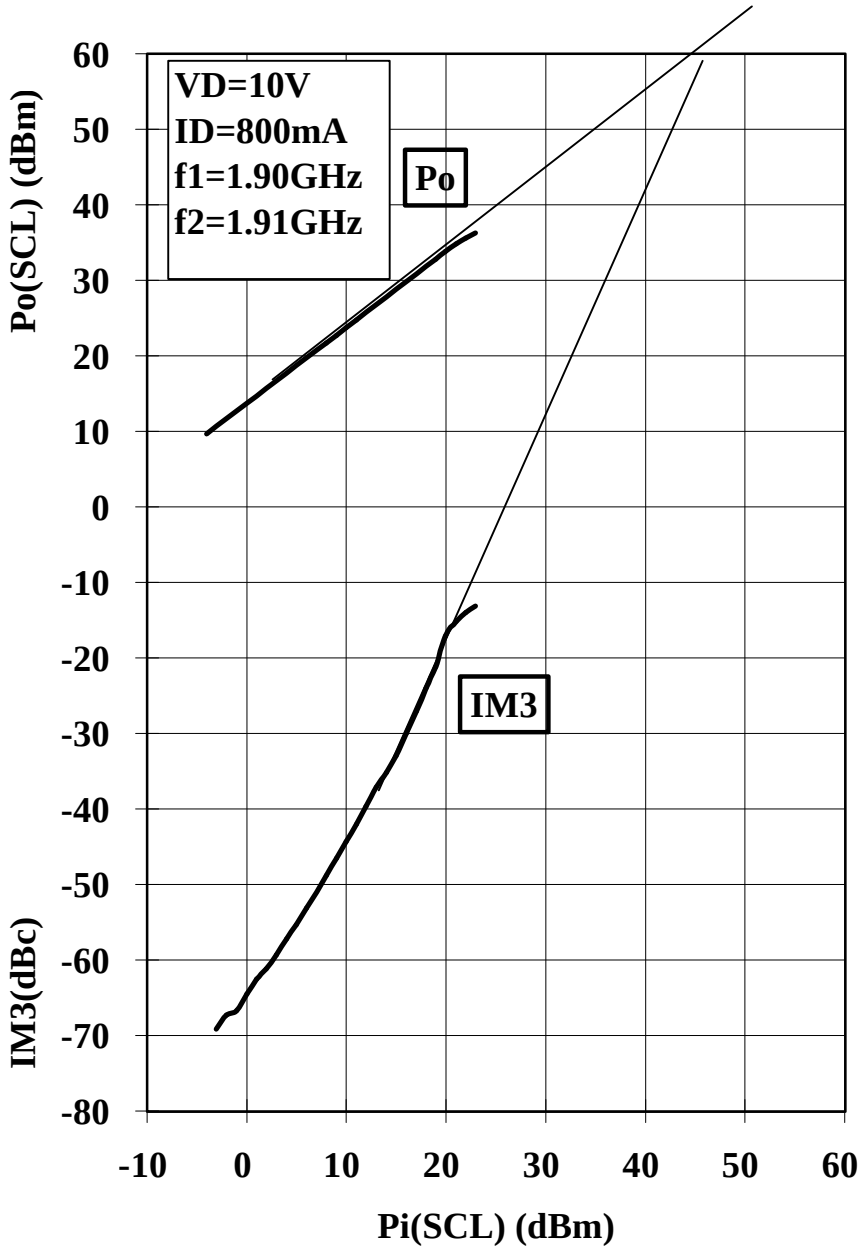
Symbol	Parameter	Test conditions	Limits			Unit
			Min.	Typ.	Max.	
I_{DSS}	Saturated drain current	V_{DS}=3V,V_{GS}=0V	-	2400	3000	mA
$V_{GS(off)}$	Gate to source cut-off voltage	V_{DS}=3V,I_D=10mA	-1	-3	-5	V
gm	Transconductance	V_{DS}=3V,I_D=800mA	-	1000	-	mS
Po	Output power	V_{DS}=10V,I_D=800mA,f=1.9GHz	-	36.5	-	dBm
ηadd	Power added Efficiency	Pin=23dBm	-	50	-	%
G_{LP}	Linear Power Gain	V_{DS}=10V,I_D=800mA,f=1.9GHz		14.5	-	dB
NF	Noise figure		-	2.6	-	dB
Rth(ch-c)	Thermal Resistance *1	ΔVf Method	-	5	8	°C/W

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


Po,Gp,PAE vs.Pin
VDS=10V
ID=0.8A
f=1.9GHz
Po
PAE
Gp
Gp(dB),Po(dBm)
PAE(%)
Pin(dBm)
40
35
30
25
20
15
10
5
0
80
70
60
50
40
30
20
10
0
5
10
15
20
25
30


IM3,Po(SCL) vs. Pi(SCL)
VD=10V
ID=800mA
f1=1.90GHz
f2=1.91GHz
Po
IM3
Po(SCL) (dBm)
IM3 (dBc)
Pi(SCL) (dBm)
40
30
20
10
0
-10
-20
-30
-40
10
0
-10
-20
-30
-40
-50
-60
-70
-5
0
5
10
15
20
25

MGF0915A
IM3,Po(SCL) vs. Pi(SCL)



MGF0915A S PARAMETERS (Ta=25°C, VDS=10V, ID=800mA)

f	S11		S21		S12		S22		K	MSG/MAG
(GHz)	Mag.	Ang.(deg)	Mag.	Ang.(deg)	Mag.	Ang.(deg)	Mag.	Ang.(deg)		(dB)
0.4	0.906	-129.18	5.943	107.77	0.015	24.16	0.649	-174.10	0.97	25.84
0.6	0.915	-143.13	4.253	99.30	0.017	24.94	0.653	-173.57	0.84	24.04
0.8	0.922	-152.39	3.243	92.17	0.018	26.08	0.657	-172.97	0.74	22.64
1.0	0.926	-158.38	2.627	86.14	0.018	27.54	0.660	-172.34	0.68	21.58
1.2	0.929	-162.21	2.220	80.98	0.019	29.23	0.663	-171.69	0.66	20.76
1.4	0.930	-164.73	1.920	76.51	0.019	31.10	0.666	-171.04	0.67	20.06
1.6	0.931	-166.54	1.679	72.58	0.019	33.10	0.669	-170.40	0.71	19.43
1.8	0.931	-168.03	1.487	69.04	0.019	35.18	0.673	-169.80	0.77	18.84
2.0	0.930	-169.42	1.342	65.78	0.020	37.28	0.676	-169.24	0.84	18.33
2.2	0.930	-170.81	1.230	62.71	0.020	39.36	0.680	-168.73	0.89	17.86
2.4	0.930	-172.20	1.100	59.75	0.021	41.39	0.684	-168.30	0.98	17.26
2.6	0.929	-173.50	1.004	56.86	0.021	43.32	0.689	-167.93	1.05	15.33
2.8	0.929	-174.64	0.940	53.99	0.022	45.12	0.694	-167.65	1.08	14.59
3.0	0.929	-175.53	0.885	51.11	0.023	46.77	0.699	-167.46	1.09	14.00
3.2	0.928	-176.13	0.836	48.21	0.024	48.23	0.704	-167.37	1.09	13.53
3.4	0.928	-176.47	0.794	45.28	0.025	49.49	0.709	-167.37	1.09	13.15
3.6	0.928	-176.73	0.757	42.32	0.027	50.53	0.714	-167.46	1.08	12.84
3.8	0.927	-177.21	0.725	39.34	0.028	51.33	0.718	-167.66	1.06	12.56
4.0	0.926	-178.41	0.697	36.36	0.030	51.89	0.722	-167.95	1.06	12.24
4.2	0.925	-181.06	0.673	33.38	0.031	52.19	0.726	-168.34	1.07	11.76
4.4	0.923	179.19	0.652	30.42	0.033	52.24	0.729	-168.82	1.06	11.42
4.6	0.921	178.21	0.634	27.50	0.035	52.04	0.731	-169.39	1.08	10.93
4.8	0.918	177.12	0.620	24.61	0.037	51.59	0.732	-170.04	1.10	10.37
5.0	0.915	175.87	0.608	21.77	0.039	50.90	0.732	-170.75	1.13	9.78
5.2	0.911	174.44	0.598	18.97	0.041	49.98	0.732	-171.53	1.17	9.18
5.4	0.906	172.81	0.590	16.20	0.043	48.85	0.730	-172.36	1.21	8.60
5.6	0.901	170.97	0.585	13.42	0.046	47.53	0.728	-173.22	1.26	8.03
5.8	0.895	168.92	0.581	10.61	0.048	46.04	0.724	-174.11	1.30	7.51
6.0	0.889	166.67	0.580	7.71	0.051	44.42	0.720	-175.00	1.34	7.03
6.2	0.883	164.26	0.579	4.65	0.055	42.68	0.715	-175.89	1.38	6.60
6.4	0.877	161.72	0.581	1.34	0.058	40.88	0.710	-176.75	1.40	6.23
6.6	0.872	159.11	0.584	-2.32	0.063	39.04	0.705	-177.56	1.40	5.93
6.8	0.868	156.49	0.587	-6.47	0.068	37.21	0.700	-178.30	1.38	5.70
7.0	0.865	153.95	0.592	-11.26	0.074	35.43	0.696	-178.95	1.34	5.55

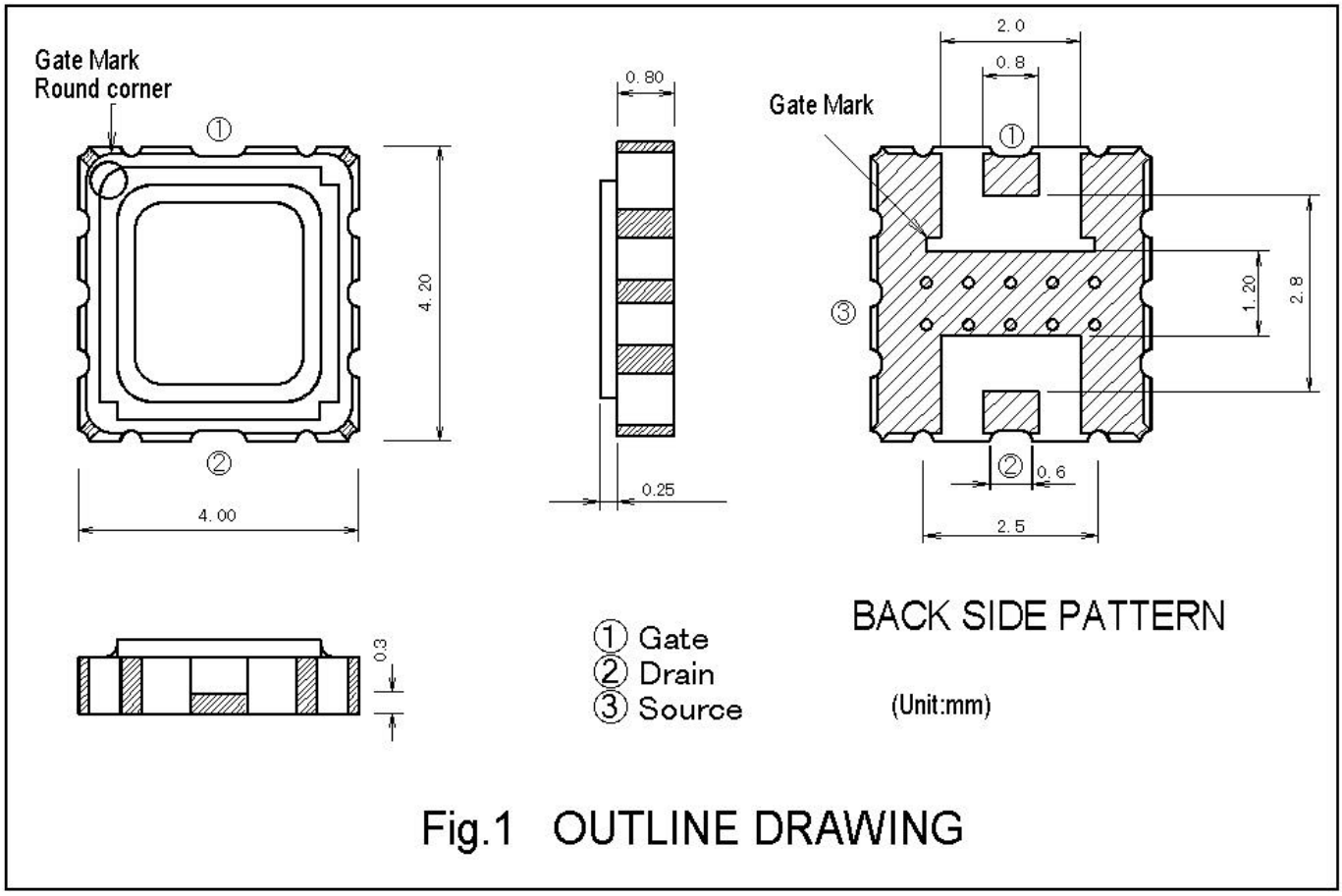
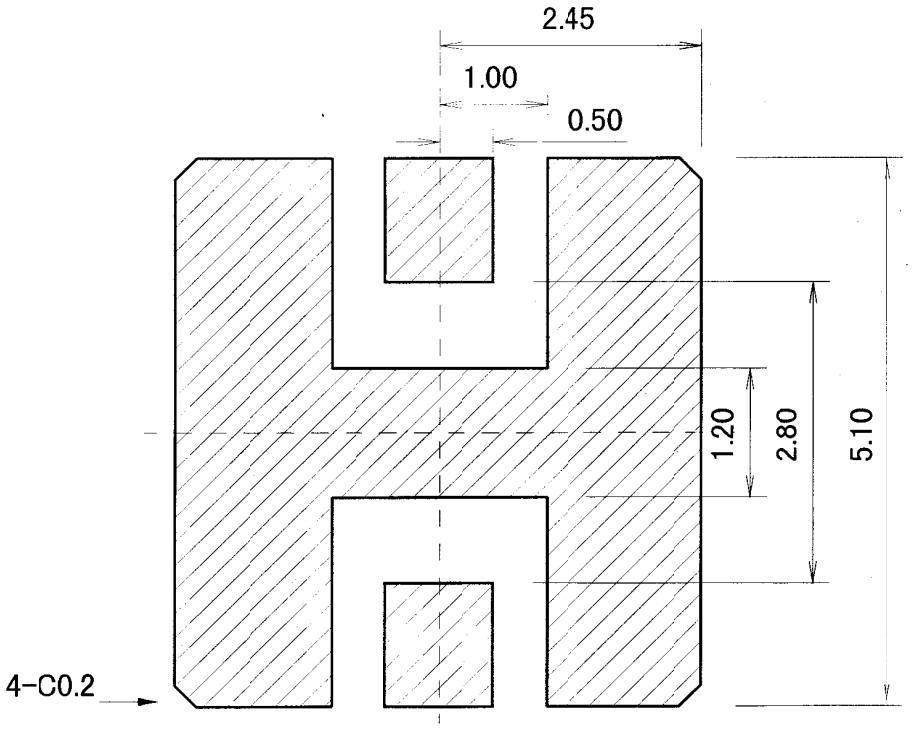


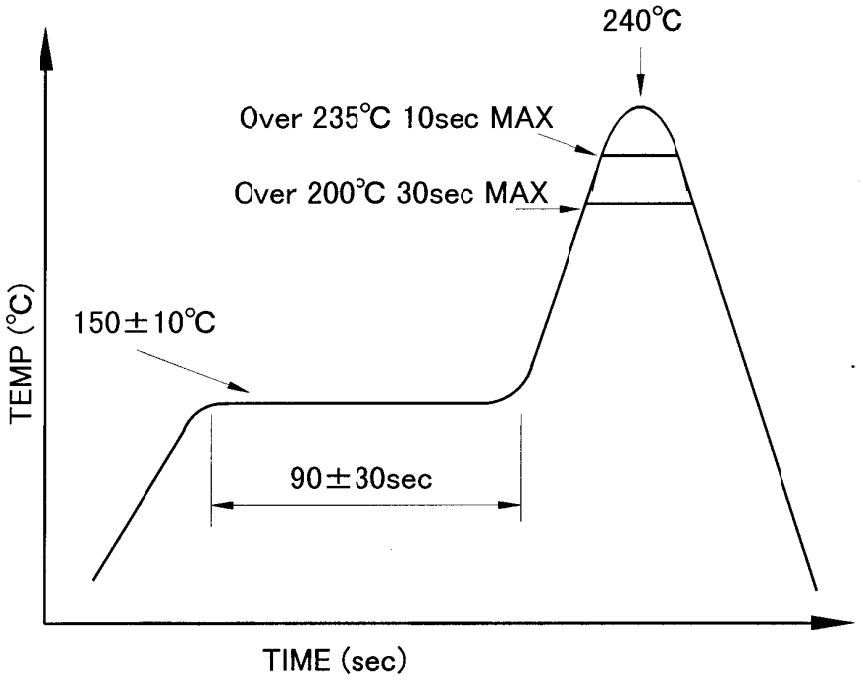
Fig.1 OUTLINE DRAWING

RECOMMENDATION FOR SOLDERING OF H/P SMD

- SOLDER: CREAM SLDER (Sn63%, Pb37%)
- SOLDER THICKNESS: 150±50μm



RECOMMENDED PCB PATTERN



RECOMMENDED TEMP. PROFILE