MGF0911A

L, S BAND POWER GaAs FET

DESCRIPTION

The MGF0911A, GaAs FET with an N-channel schottky gate, is designed for use in UHF band amplifiers.

FEATURES

- Class A operation
- High output power
  P_{1dB}=41dBm(TYP) @2.3GHz
- High power gain
  G_{LP}=11dB(TYP) @2.3GHz
- High power added efficiency
  η_{add}=40%(TYP) @2.3GHz,P_{1dB}
- Hermetically sealed metal-ceramic package with ceramic lid

APPLICATION

UHF band power amplifiers

QUALITY GRADE

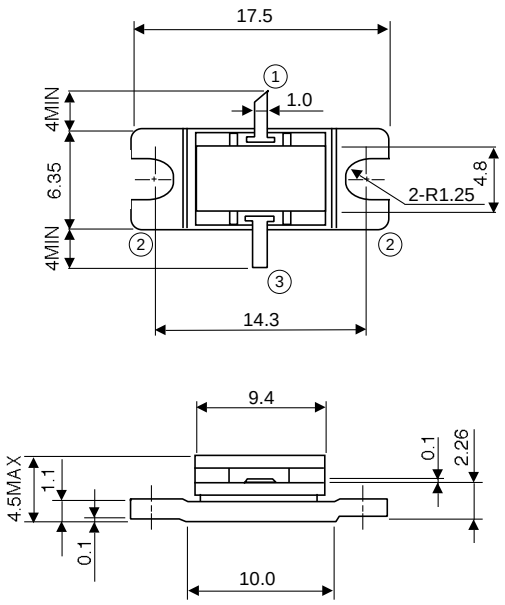
- IG

RECOMMENDED BIAS CONDITIONS

- V_{DS}=10V
- I_D=2.6A
- Rg=50Ω
- Refer to Bias Procedure

OUTLINE DRAWING

Unit:millimeters



① GATE
② SOURCE(FLANGE)
③ DRAIN

GF-21

ABSOLUTE MAXIMUM RATINGS (T_a=25˚C)

Symbol	Parameter	Ratings	Unit
V_{GDO}	Gate to drain voltage	-15	V
V_{GSO}	Gate to source voltage	-15	V
I_D	Drain current	10	A
I_{GR}	Reverse gate current	30	mA
I_{GF}	Forward gate current	63	mA
P_T	Total power dissipation *1	37.5	W
T_{ch}	Channel temperature	175	˚C
T_{stg}	Storage temperature	-65 to +175	˚C

*1:TC=25˚C

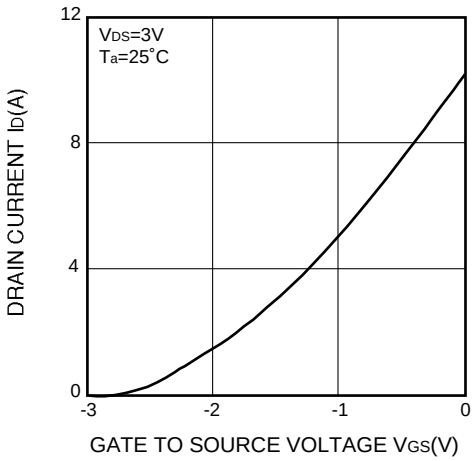
ELECTRICAL CHARACTERISTICS (T_a=25˚C)

Symbol	Parameter		Limits			Unit
			Min	Typ	Max	
I_{DSS}	Saturated drain current	V_{DS}=3V,V_{GS}=0V	–	–	10	A
g_m	Transconductance	V_{DS}=3V,I_D=2.6A	–	3.0	–	S
$V_{GS(off)}$	Gate to source cut-off voltage	V_{DS}=3V,I_D=20mA Test conditions	-2	–	-5	V
P_{1dB}	Output power at 1dB gain compression	V_{DS}=10V,I_D≒2.6A,f=2.3GHz	40	41	–	dBm
G_{LP}	Linear power gain *2		10	11	–	dB
η_{add}	Power added efficiency at P_{1dB}		–	40	–	%
$R_{th(ch-c)}$	Thermal resistance *1	ΔVf method	–	–	4.0	˚C/W

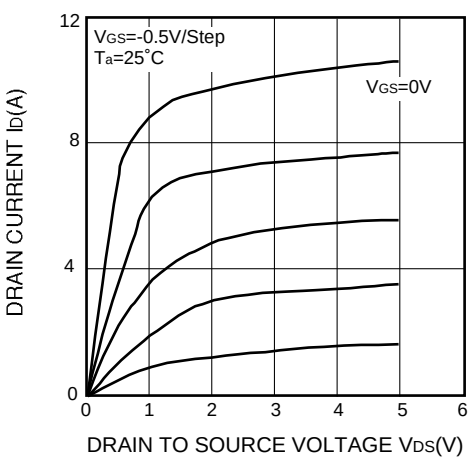
*1:Channel to case *2:Pin=25dBm

TYPICAL CHARACTERISTICS

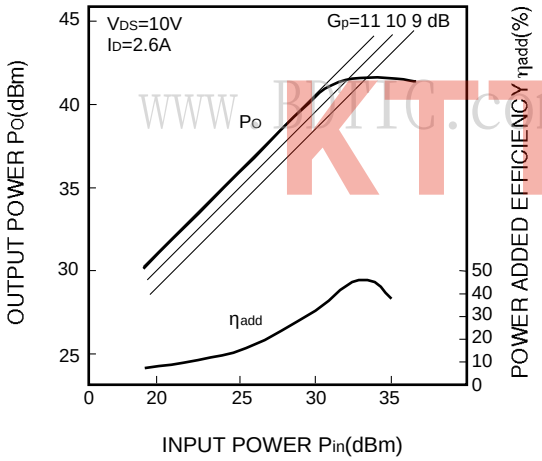
ID vs. VGS



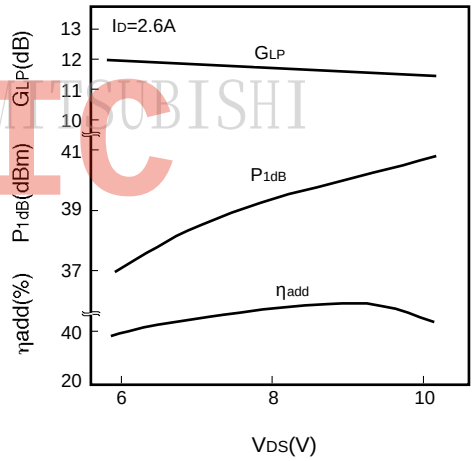
ID vs. VDS



PO & ηadd vs. Pin
(f=2.3GHz)



GLP,P1dB, ID and ηadd vs. VDS
(f=2.3GHz)



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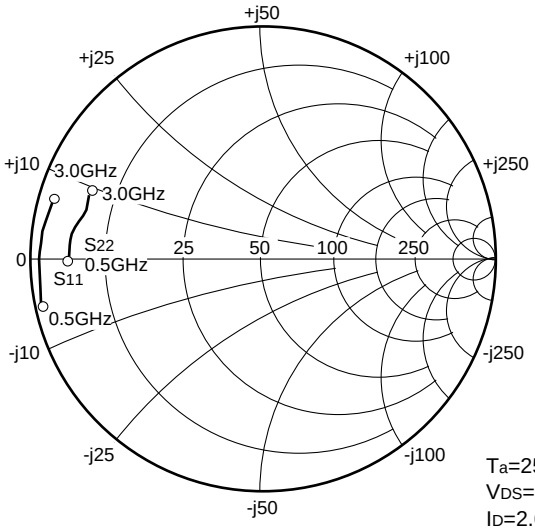
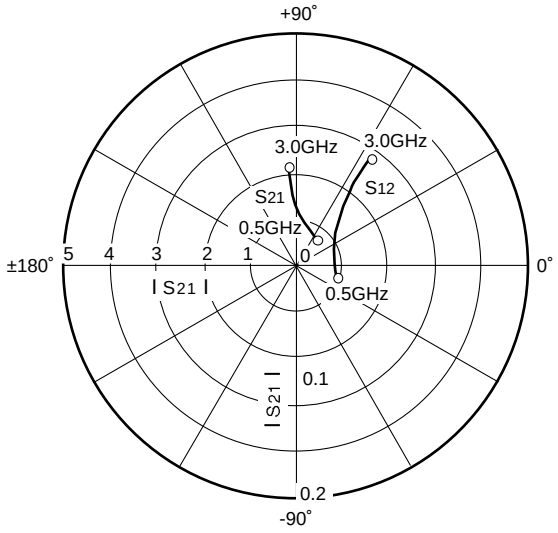
S_{11} ,S_{22} vs. f.



T_a=25˚C
V_{DS}=10V
I_D=2.6A

S_{21} ,S_{12} vs. f.



S PARAMETERS (T_a=25˚C,V_{DS}=10V,I_D=2.6A)

Freq. (GHz)	S_{11}		S_{21}		S_{12}		S_{22}		K	MSG/MAG (dB)
	Magn.	Angle(deg.)	Magn.	Angle(deg.)	Magn.	Angle(deg.)	Magn.	Angle(deg.)		
0.50	0.986	-167.3	2.046	91.2	0.008	44.1	0.913	-178.6	0.515	23.1
0.60	0.985	-171.3	1.833	87.9	0.010	44.2	0.911	-179.9	0.567	22.7
0.70	0.984	-174.3	1.515	86.1	0.011	44.6	0.909	178.6	0.583	21.8
0.80	0.983	-175.5	1.356	83.6	0.012	44.9	0.907	178.2	0.675	21.2
0.90	0.982	-172.1	1.233	84.0	0.013	45.3	0.904	177.7	0.683	20.3
1.00	0.981	-173.9	1.128	81.1	0.013	45.8	0.902	176.6	0.713	19.6
1.10	0.980	-175.3	1.033	79.7	0.015	46.4	0.898	175.7	0.736	19.3
1.20	0.979	-176.3	0.970	77.8	0.015	46.8	0.895	176.6	0.785	18.7
1.30	0.978	-176.9	0.919	75.8	0.016	47.0	0.889	176.0	0.815	18.2
1.40	0.976	-177.9	0.878	73.6	0.017	47.3	0.883	175.6	0.835	17.5
1.50	0.975	-178.2	0.845	71.6	0.018	47.6	0.875	175.2	0.900	17.1
1.60	0.974	-179.3	0.811	69.4	0.019	48.0	0.865	175.0	0.951	16.8
1.70	0.973	-179.8	0.788	67.8	0.020	48.4	0.858	174.6	0.989	15.8
1.80	0.972	179.5	0.771	65.8	0.020	48.9	0.850	173.6	1.011	14.7
1.90	0.971	178.6	0.754	64.1	0.022	49.2	0.843	173.4	1.050	14.1
2.00	0.970	176.7	0.653	63.1	0.023	49.6	0.837	172.6	1.149	13.9
2.10	0.969	175.9	0.638	60.9	0.023	49.9	0.833	174.1	1.170	13.7
2.20	0.968	175.1	0.638	59.0	0.023	50.4	0.829	173.6	1.221	12.7
2.30	0.967	174.1	0.635	56.3	0.024	50.7	0.826	172.9	1.242	12.3
2.40	0.966	173.1	0.625	54.2	0.025	51.0	0.823	171.0	1.256	11.9
2.50	0.965	172.3	0.628	52.3	0.025	51.2	0.820	170.3	1.267	11.6
2.60	0.965	171.2	0.634	51.3	0.027	51.6	0.818	168.8	1.292	11.4
2.70	0.964	170.2	0.635	48.9	0.027	51.9	0.816	167.1	1.315	11.0
2.80	0.963	168.7	0.646	46.3	0.028	52.3	0.814	165.7	1.327	10.1
2.90	0.962	167.6	0.642	44.0	0.029	52.5	0.812	164.6	1.366	9.8
3.00	0.961	166.3	0.651	41.0	0.029	52.7	0.811	162.7	1.412	9.4

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