

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

MGF0911A

L & S BAND /12W
non - matched

DESCRIPTION

The MGF0911A, GaAs FET with an N-channel schottky gate, is designed for use L & S band amplifiers.

FEATURES

- Class A operation
- High output power
P1dB=41.0dBm(T.Y.P) @f=2.3GHz
- High power gain
GLP=11.0dB(TYP.) @f=2.3GHz
- High power added efficiency
P.A.E=40%(TYP.) @f=2.3GHz,P1dB
- Hermetically sealed metal-ceramic package with ceramic lid

APPLICATION

- For L & S band power amplifiers

QUALITY

- IG

RECOMMENDED BIAS CONDITIONS

- Vds=10V
- Ids=2.6A
- Rg=50Ω

Absolute maximum ratings (Ta=25°C)

Symbol	Parameter	Ratings	Unit
VGDO	Gate to Source Voltage	-15	V
VGSO	Gate to source voltage	-15	V
ID	Drain Current	10	A
IGR	Reverse gate current	-30	mA
IGF	Forward gate current	63	mA
PT*1	Total power dissipation	53.6	W
Tch	Channel temperature	175	°C
Tstg	Storage temperature	-65 to +175	°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	-	-	10	A
gm	Transconductance	VDS=3V, ID=2.6A	-	3	-	S
VGS(off)	Gate to source cut-off voltage	VDS=3V, ID=20mA	-2	-	-5.0	V
P1dB	1dB gain compression power	VDS=10V, ID(RF off)=2.6A	40	41	-	dBm
GLP *2	Linear power gain	f=2.3GHz	10	11	-	dB
P.A.E	Power added efficiency	*2 : Pin=22dBm	-	40	-	%
Rth(ch-c) *3	Thermal resistance	Δ Vf method	-	-	2.8	°C/W

*3 :Channel-case

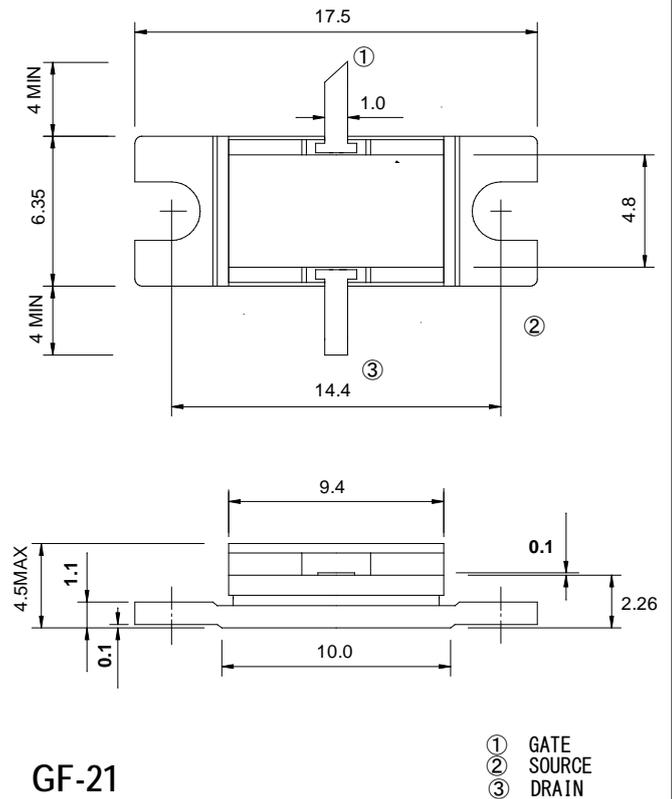
Specification are subject to change without notice.

Publication Date : Dec., 2014

CSTG-16254

OUTLINE DRAWING

Unit : millimeters



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

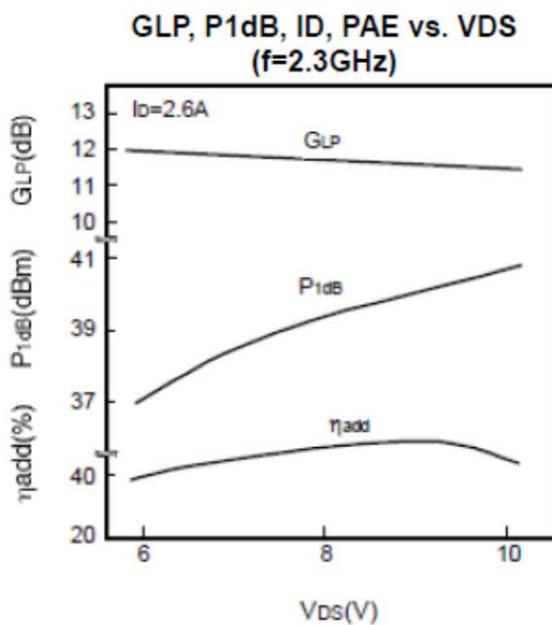
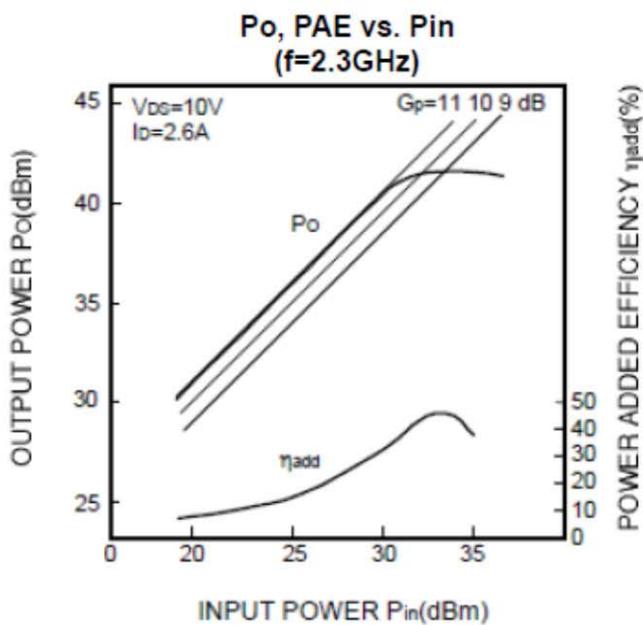
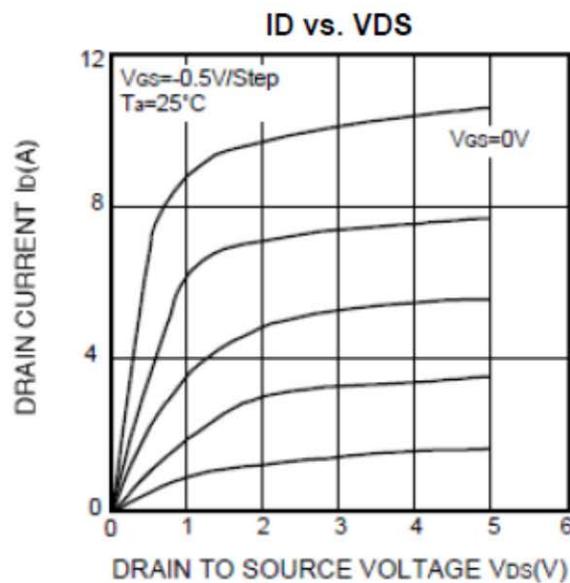
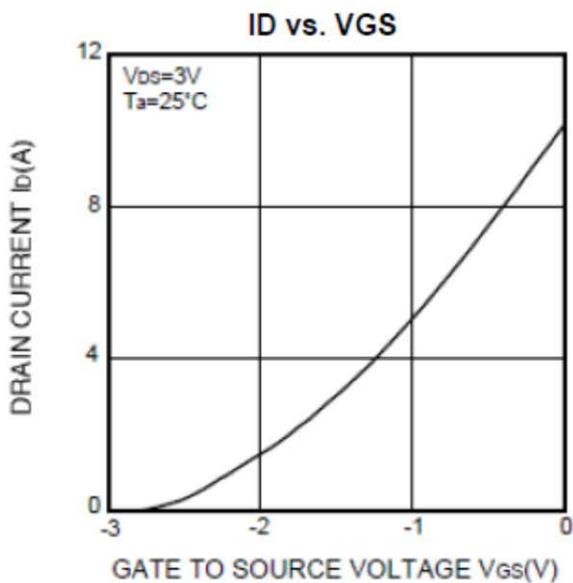
MGF0911A

L & S BAND / 12W

non - matched

MGF0911A
 L & S BAND / 12W
 non - matched

MGF0911A TYPICAL CHARACTERISTICS ($T_a=25\text{deg.C}$)

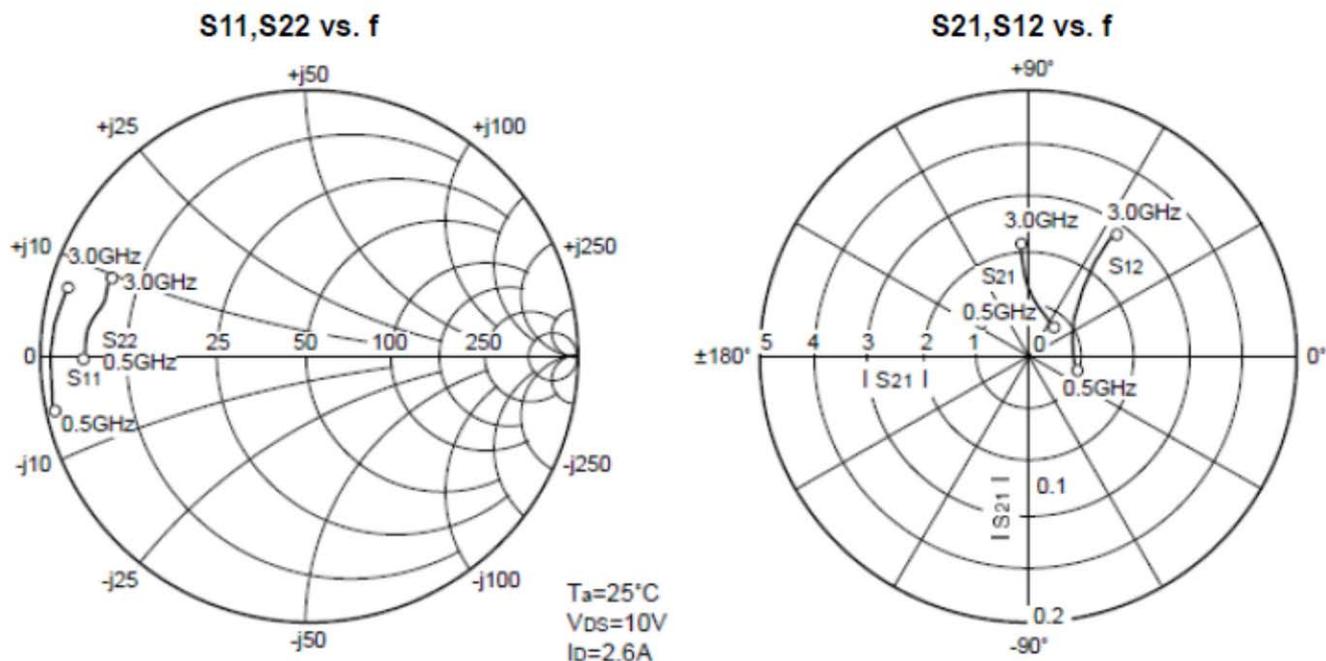


MGF0911A

L & S BAND / 12W

non - matched

MGF0911A S-parameters(Ta=25deg.C , VDS=10(V),IDS=2.6(A))



Freq. (GHz)	S11		S21		S12		S22		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

Keep safety first in your circuit designs!

Mitsubishi Electric Corporation puts the maximum effort into making semiconductor products better and more reliable, but there is always the possibility that trouble may occur with them. Trouble with semiconductors may lead to personal injury, fire or property damage. Remember to give due consideration to safety when making your circuit designs, with appropriate measures such as (i) placement of substitutive, auxiliary circuits, (ii) use of non-flammable material or (iii) prevention against any malfunction or mishap.

Notes regarding these materials

- These materials are intended as a reference to assist our customers in the selection of the Mitsubishi semiconductor product best suited to the customer's application; they do not convey any license under any intellectual property rights, or any other rights, belonging to Mitsubishi Electric Corporation or a third party.
- Mitsubishi Electric Corporation assumes no responsibility for any damage, or infringement of any third-party's rights, originating in the use of any product data, diagrams, charts, programs, algorithms, or circuit application examples contained in these materials.
- All information contained in these materials, including product data, diagrams, charts, programs and algorithms represents information on products at the time of publication of these materials, and are subject to change by Mitsubishi Electric Corporation without notice due to product improvements or other reasons. It is therefore recommended that customers contact Mitsubishi Electric Corporation or an authorized Mitsubishi Semiconductor product distributor for the latest product information before purchasing a product listed herein.
The information described here may contain technical inaccuracies or typographical errors. Mitsubishi Electric Corporation assumes no responsibility for any damage, liability, or other loss rising from these inaccuracies or errors.
Please also pay attention to information published by Mitsubishi Electric Corporation by various means, including the Mitsubishi Semiconductor home page (<http://www.MitsubishiElectric.com/>).
- When using any or all of the information contained in these materials, including product data, diagrams, charts, programs, and algorithms, please be sure to evaluate all information as a total system before making a final decision on the applicability of the information and products. Mitsubishi Electric Corporation assumes no responsibility for any damage, liability or other loss resulting from the information contained herein.
- Mitsubishi Electric Corporation semiconductors are not designed or manufactured for use in a device or system that is used under circumstances in which human life is potentially at stake. Please contact Mitsubishi Electric Corporation or an authorized Mitsubishi Semiconductor product distributor when considering the use of a product contained herein for any specific purposes, such as apparatus or systems for transportation, vehicular, medical, aerospace, nuclear, or undersea repeater use.
- The prior written approval of Mitsubishi Electric Corporation is necessary to reprint or reproduce in whole or in part these materials.
- If these products or technologies are subject to the Japanese export control restrictions, they must be exported under a license from the Japanese government and cannot be imported into a country other than the approved destination.
Any diversion or re-export contrary to the export control laws and regulations of Japan and/or the country of destination is prohibited.
- Please contact Mitsubishi Electric Corporation or an authorized Mitsubishi Semiconductor product distributor for further details on these materials or the products contained therein.