

DESCRIPTION

The MGF1953A is designed for use in S to Ku band power amplifiers.

The lead-less ceramic package assures minimum parasitic losses.

FEATURES

High gain and High P1dB

Glp=6.0dB , P1dB=20dBm (Typ.) @ f=12GHz

APPLICATION

S to Ku band power Amplifiers

QUALITY GRADE

GG

RECOMMENDED BIAS CONDITION

$V_{DS}=6V$, $I_D=100mA$

ORDERING INFORMATION

Tape & reel 3000pcs./reel

Outline Drawing

Fig.1

ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

Symbol	Parameter	Ratings	Unit
V_{GDO}	Gate to drain voltage	-10	V
V_{GSO}	Gate to source voltage	-10	V
I_D	Drain current	400	mA
PT	Total power dissipation	1	W
T_{ch}	Channel temperature	125	°C
T_{stg}	Storage temperature	-65 to +125	°C

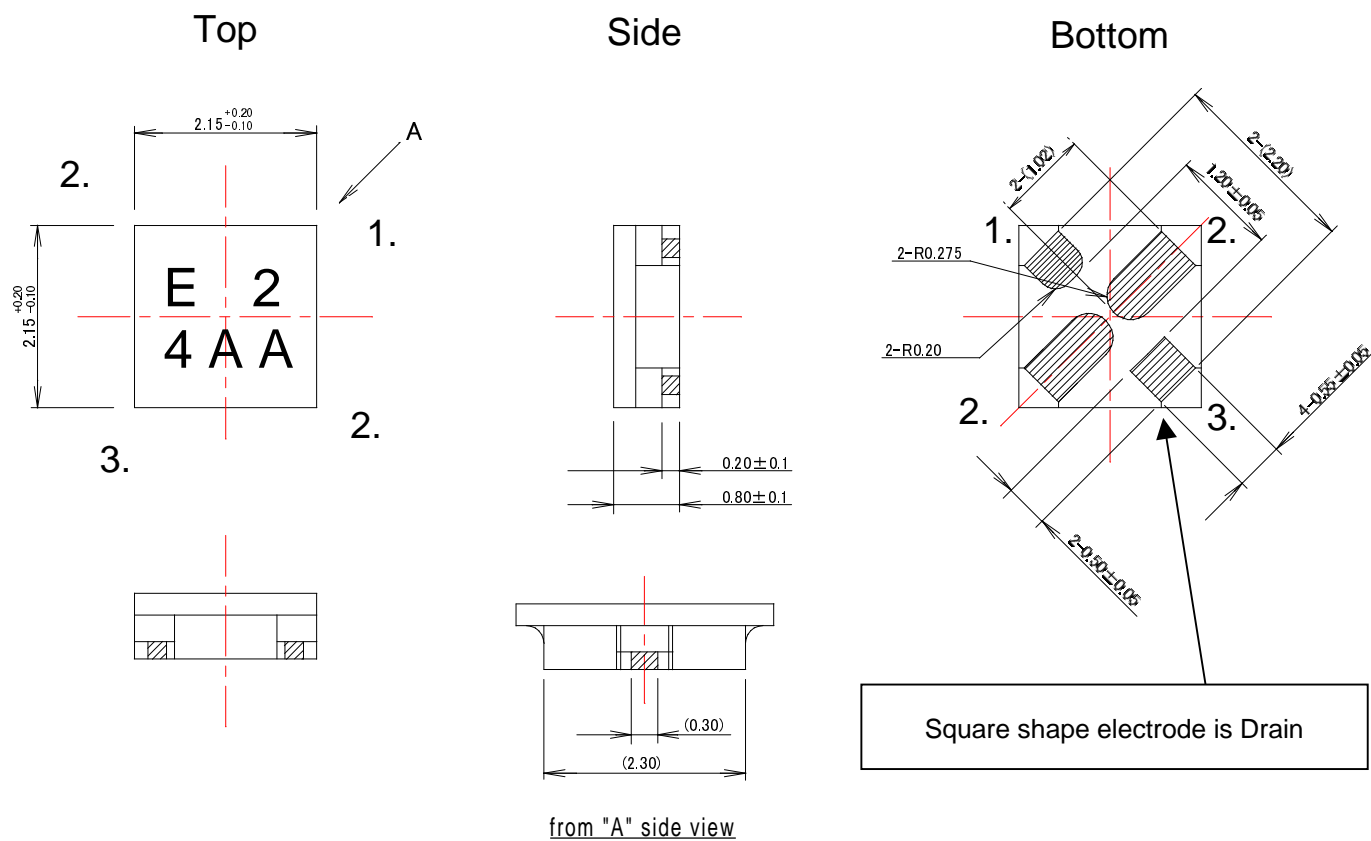
Keep Safety first in your circuit designs!
Mitsubishi Electric Corporation puts the maximum effort into making semiconductor products better and more reliable, but there is always the possibility that trouble may occur with them. Trouble with semiconductors may lead to personal injury, fire or property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

ELECTRICAL CHARACTERISTICS (Ta=25°C)

Symbol	Parameter	Test conditions	Limits			Unit
			MIN.	TYP.	MAX	
$V_{(BR)GDO}$	Gate to drain breakdown voltage	$I_g=-100\mu A$	-10	-15	--	V
I_{DSS}	Saturated drain current	$V_{GS}=0V, V_{DS}=3V$	105	200	400	mA
$V_{GS(off)}$	Gate to source cut-off voltage	$V_{DS}=3V, I_D=1mA$	-0.3	-1.4	-3.5	V
P1dB	Output Power at 1dB gain Compression	$V_{DS}=4V, I_D=100mA$ $f=12GHz$	18	20	--	dBm
Glp	Linear Power Gain	$V_{DS}=4V, I_D=100mA$ $f=12GHz, Pin=5dBm$	4	6	--	dB

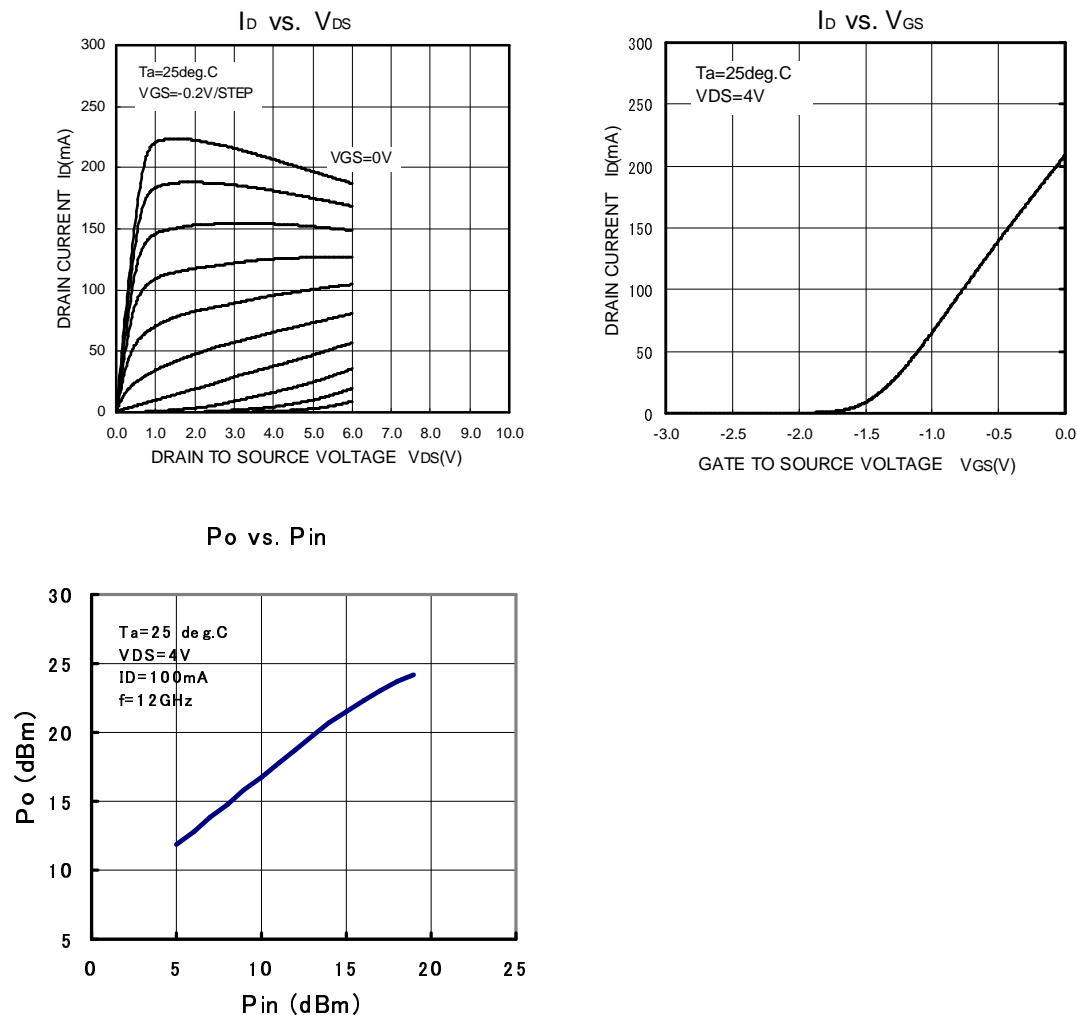
Fig.1

Unit : mm



1. Gate
2. Source
3. Drain

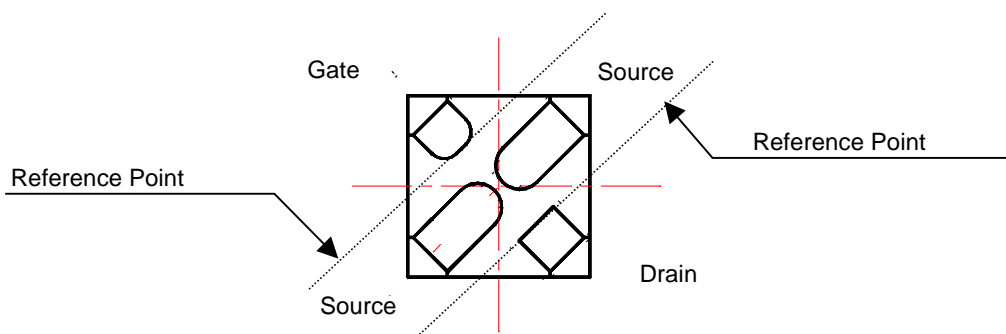
TYPICAL CHARACTERISTICS (Ta=25°C)



S PARAMETERS

(Conditions : $V_{DS}=4V, I_D=100mA, T_a=25deg.C$)

f (GHz)	S11		S21		S12		S22		K	MAG/MSG (dB)
	Mag.	Angle	Mag.	Angle	Mag.	Angle	Mag.	Angle		
1	0.907	-51.1	8.288	143.0	0.026	63.3	0.148	-62.0	0.40	25.0
2	0.775	-95.1	6.461	112.7	0.041	42.5	0.161	-105.9	0.73	21.9
3	0.702	-121.5	5.090	95.3	0.049	34.4	0.173	-123.3	0.99	20.1
4	0.674	-144.5	4.128	79.9	0.055	28.9	0.187	-138.9	1.16	16.3
5	0.661	-161.3	3.521	66.9	0.060	23.7	0.190	-145.1	1.29	14.5
6	0.653	-175.4	3.105	54.6	0.065	20.8	0.185	-146.9	1.38	13.1
7	0.650	170.8	2.810	41.7	0.071	17.5	0.175	-147.3	1.41	12.2
8	0.650	157.4	2.609	28.9	0.078	12.7	0.164	-149.1	1.40	11.5
9	0.642	143.3	2.440	16.2	0.086	6.9	0.142	-154.0	1.40	10.8
10	0.640	127.4	2.270	2.4	0.096	-0.1	0.114	-165.1	1.39	10.0
11	0.623	109.0	2.091	-12.5	0.103	-10.3	0.083	166.0	1.50	8.9
12	0.619	90.0	1.908	-27.6	0.106	-20.4	0.085	113.6	1.63	7.9
13	0.634	71.7	1.710	-42.4	0.108	-29.8	0.140	75.8	1.75	7.0
14	0.666	54.3	1.507	-57.2	0.107	-41.2	0.217	54.5	1.86	6.2
15	0.713	39.4	1.314	-70.2	0.105	-50.7	0.300	41.8	1.89	5.5
16	0.769	27.0	1.139	-82.8	0.101	-59.9	0.378	32.0	1.84	5.2
17	0.822	15.6	0.976	-95.2	0.097	-68.4	0.455	23.4	1.76	5.0
18	0.865	5.9	0.821	-107.2	0.091	-77.2	0.513	15.3	1.67	4.7



Requests Regarding Safety Designs

Mitsubishi Electric constantly strives to raise the level of its quality and reliability. Despite these concerted efforts, however, there will be occasions when our semiconductor products suffer breakdowns, malfunctions or other problems. In view of this reality, it is requested that every feasible precaution be taken in the pursuit of redundancy design, malfunction prevention design and other safety-related designs, to prevent breakdowns or malfunctions in our products from resulting in accidents involving people, fires, social losses or other problems, thereby upholding the highest levels of safety in the products when in use by customers.

Matters of Importance when Using these Materials

1. These materials are designed as reference materials to ensure that all customers purchase Mitsubishi Electric semiconductors best suited to their specific use applications. Please be aware, however, that the technical information contained in these materials does not comprise consent for the execution or use of intellectual property rights or other rights owned by Mitsubishi Electric Corporation.
2. Mitsubishi Electric does not assume responsibility for damages resulting from the use of product data, graphs, charts, programs, algorithms or other applied circuit examples described in these materials, or for the infringement of the rights of third-party owners resulting from such use.
3. The data, graphs, charts, programs, algorithms and all other information described in these materials were current at the issue of these materials, with Mitsubishi Electric reserving the right to make any necessary updates or changes in the products or specifications in these materials without prior notice. Before purchasing Mitsubishi Electric semiconductor products, therefore, please obtain the latest available information from Mitsubishi Electric directly or an authorized dealer.
4. Every possible effort has been made to ensure that the information described in these materials is fully accurate. However, Mitsubishi Electric assumes no responsibility for damages resulting from inaccuracies occurring within these materials.
5. When using the product data, technical contents indicated on the graphs, charts, programs or algorithms described in these materials, assessments should not be limited to only the technical contents, programs and algorithm units. Rather, it is requested that ample evaluations be made of each individual system as a whole, with the customer assuming full responsibility for decisions on the propriety of application. Mitsubishi Electric does not accept responsibility for the propriety of application.
6. The products described in these materials, with the exception of special mention concerning use and reliability, have been designed and manufactured with the purpose of use in general electronic machinery. Accordingly these products have not been designed and manufactured with the purpose of application in machinery or systems that will be used under conditions that can affect human life, or in machinery or systems used in social infrastructure that demand a particularly high degree of reliability. When considering the use of the products described in these materials in transportation machinery (automobiles, trains, vessels), for objectives related to medical treatment, aerospace, nuclear power control, submarine repeaters or systems or other specialized applications, please consult with Mitsubishi Electric directly or an authorized dealer.
7. When considering use of products for purposes other than the specific applications described in these materials, please inquire at Mitsubishi Electric or an authorized dealer.
8. The prior consent of Mitsubishi Electric in writing is required for any reprinting or reproduction of these materials.
9. Please direct any inquiries regarding further details of these materials, or any other comments or matters of attention, to Mitsubishi Electric or an authorized dealer.