PRELIMINARY

MGF1951A

Medium Power Microwave MESFET

DESCRIPTION

The MGF1951A is a 20mW MESFET for S- to Ku-band driver amplifiers and oscillators.
Its lead-less ceramic package assures minimum parasitics.

FEATURES

- High Gain and High Output Power
  G_{LP}=9dB, P_{1dB}=13dBm (typ) @ f=12GHz
- Leadless Ceramic Package

APPLICATION

S- to Ku-Band Driver Amplifiers and Oscillators

QUALITY

General Grade

ORDERING INFORMATION

Part Number	Quantity	Supply Form
MGF1951A-01	3.000 pcs/reel	Tape & Reel

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.

ABSOLUTE MAXIMUM RATINGS (T_a=+25°C)

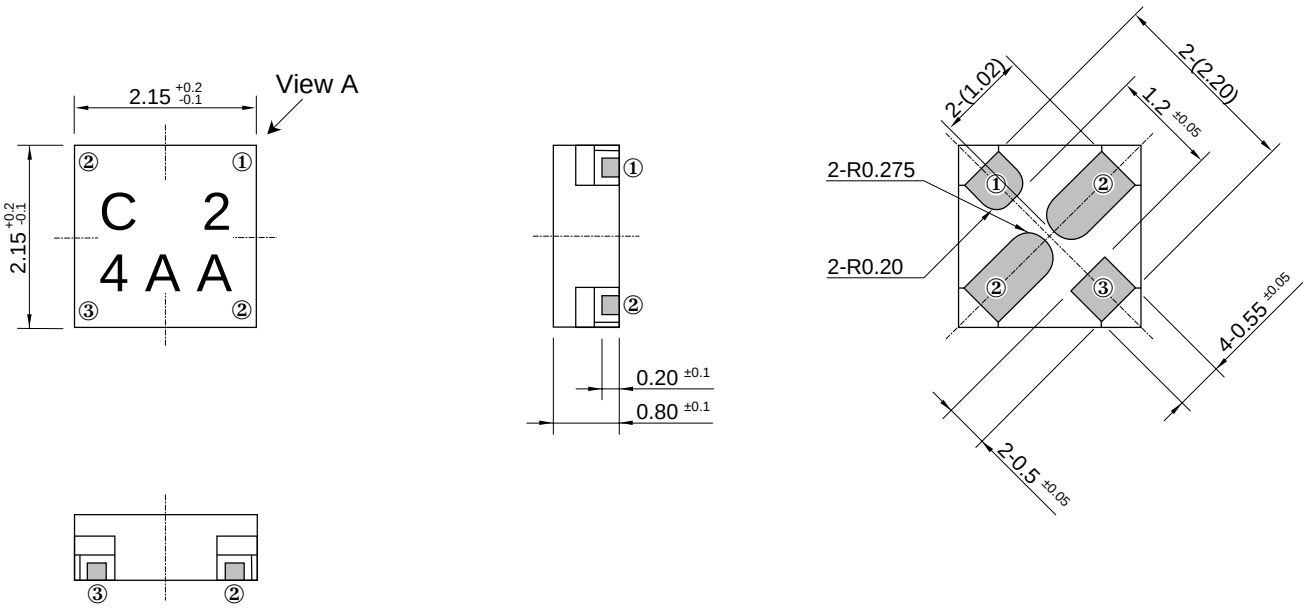
Symbol	Parameter	Rating	Unit
V_{GDO}	Gate to Drain Voltage	-8	V
V_{GSO}	Gate to Source Voltage	-8	V
I_D	Drain Current	120	mA
P_T	Total Power Dissipation	300	mW
T_{ch}	Channel Temperature	125	°C
T_{stg}	Storage Temperature	-65 to +125	°C

ELECTRICAL CHARACTERISTICS (T_a=+25°C)

Symbol	Parameter	Test Conditions	MIN	TYP	MAX	Unit
$V_{(BR)GDO}$	Gate to Drain Breakdown Voltage	I_G=-30µA	-8	-15	—	V
I_{DSS}	Saturated Drain Current	V_{DS}=3V, V_{GS}=0V	35	60	120	mA
$V_{GS(off)}$	Gate to Source Cut-off Voltage	V_{DS}=3V, I_D=300µA	-0.3	-1.4	-3.5	V
P_{1dB}	Output Power at 1dB Gain Compression	V_{DS}=3V, I_D=30mA, f=12GHz	11	13	—	dBm
G_{LP}	Linear Power Gain	V_{DS}=3V, I_D=30mA, P_{in}=-5dBm, f=12GHz	7	9	—	dB

OUTLINE DRAWING (mm)

Top **Side** **Bottom**



View A

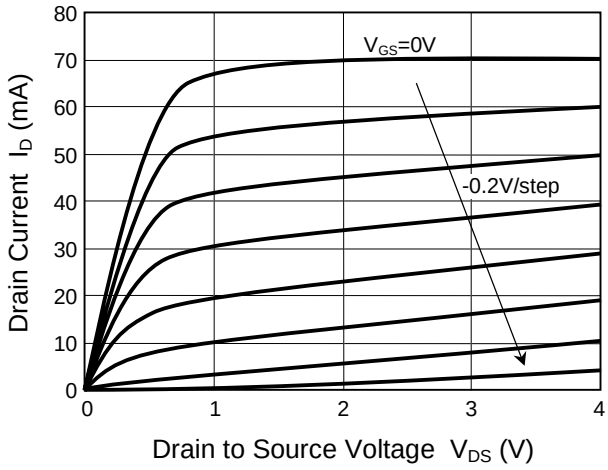
① Gate (round shape)

② Source

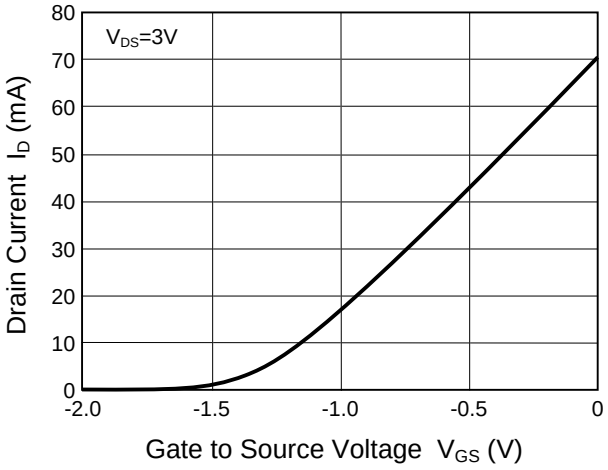
③ Drain (square shape)

TYPICAL CHARACTERISTICS (T_a=+25°C)

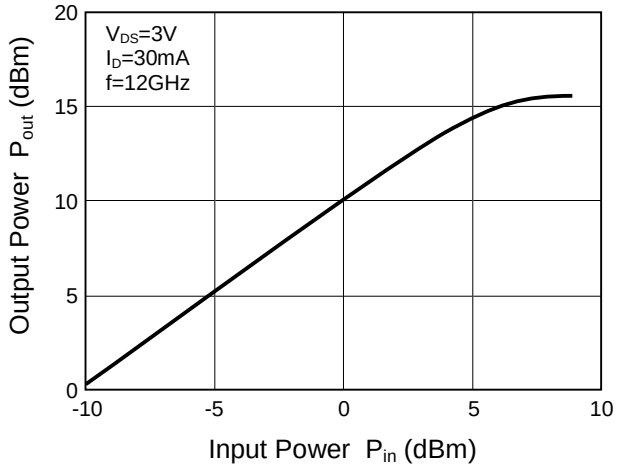
DRAIN CURRENT vs DRAIN VOLTAGE



DRAIN CURRENT vs GATE VOLTAGE



OUTPUT POWER vs INPUT POWER



S PARAMETERS (V_{DS}=3V, I_D=30mA, T_a=+25°C)

f (GHz)	S_{11}		S_{21}		S_{12}		S_{22}		K	MAG/MSG (dB)
	Mag	Ang	Mag	Ang	Mag	Ang	Mag	Ang		
1	0.984	-17.7	4.239	163.2	0.016	78.2	0.581	-11.3	0.18	24.3
2	0.946	-38.6	4.103	144.3	0.031	64.3	0.565	-26.2	0.32	21.3
3	0.906	-52.5	3.914	131.2	0.043	54.3	0.548	-34.3	0.43	19.6
4	0.857	-71.1	3.710	115.9	0.054	44.2	0.518	-45.5	0.53	18.4
5	0.811	-85.3	3.445	103.3	0.061	35.6	0.509	-54.9	0.64	17.5
6	0.771	-97.4	3.197	92.5	0.065	29.6	0.500	-61.4	0.76	16.9
7	0.736	-109.8	2.984	81.7	0.069	23.7	0.502	-66.9	0.86	16.4
8	0.710	-121.6	2.847	70.7	0.071	19.0	0.507	-72.1	0.93	16.0
9	0.679	-133.6	2.737	60.4	0.075	15.1	0.509	-75.9	0.99	15.6
10	0.645	-146.3	2.659	50.1	0.083	11.3	0.513	-79.6	0.99	15.1
11	0.594	-159.8	2.600	39.5	0.089	2.6	0.496	-84.2	1.09	12.8
12	0.549	-175.7	2.570	28.4	0.091	-2.7	0.472	-87.2	1.19	11.9
13	0.508	165.8	2.532	16.2	0.095	-9.0	0.443	-91.4	1.27	11.1
14	0.481	142.3	2.480	2.5	0.100	-18.0	0.399	-96.7	1.34	10.5
15	0.472	116.9	2.378	-10.9	0.101	-26.7	0.342	-101.7	1.45	9.7
16	0.508	92.7	2.289	-23.8	0.103	-34.7	0.279	-107.6	1.47	9.4
17	0.573	70.4	2.160	-37.5	0.105	-42.9	0.211	-112.1	1.44	9.2
18	0.646	52.2	1.975	-51.6	0.103	-50.4	0.135	-115.3	1.44	8.9