MITSUBISHI ELECTRIC

< Power GaAs FET >

MGF1952A

Leadless ceramic package

DESCRIPTION

The MGF1952A power MES FET is designed for use in S to Ku band power amplifiers.

The lead-less ceramic package assures minimum parasitic losses.

Outline Drawing

Fig.1

FEATURES

High gain and High P1dB

Glp=7.0dB , P1dB=17dBm (Typ.) @ f=12GHz

APPLICATION

S to Ku band low noise amplifiers

QUALITY GRADE

GG

RECOMMENDED BIAS CONDITIONS

V_{DS}=3V , I_D=60mA

ORDERING INFORMATION

Tape & reel 3,000pcs/reel

RoHS COMPLIANT

MGF1952A is a RoHS compliant product. RoHS compliance is indicated by the letter “G” after the Lot Marking.

ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

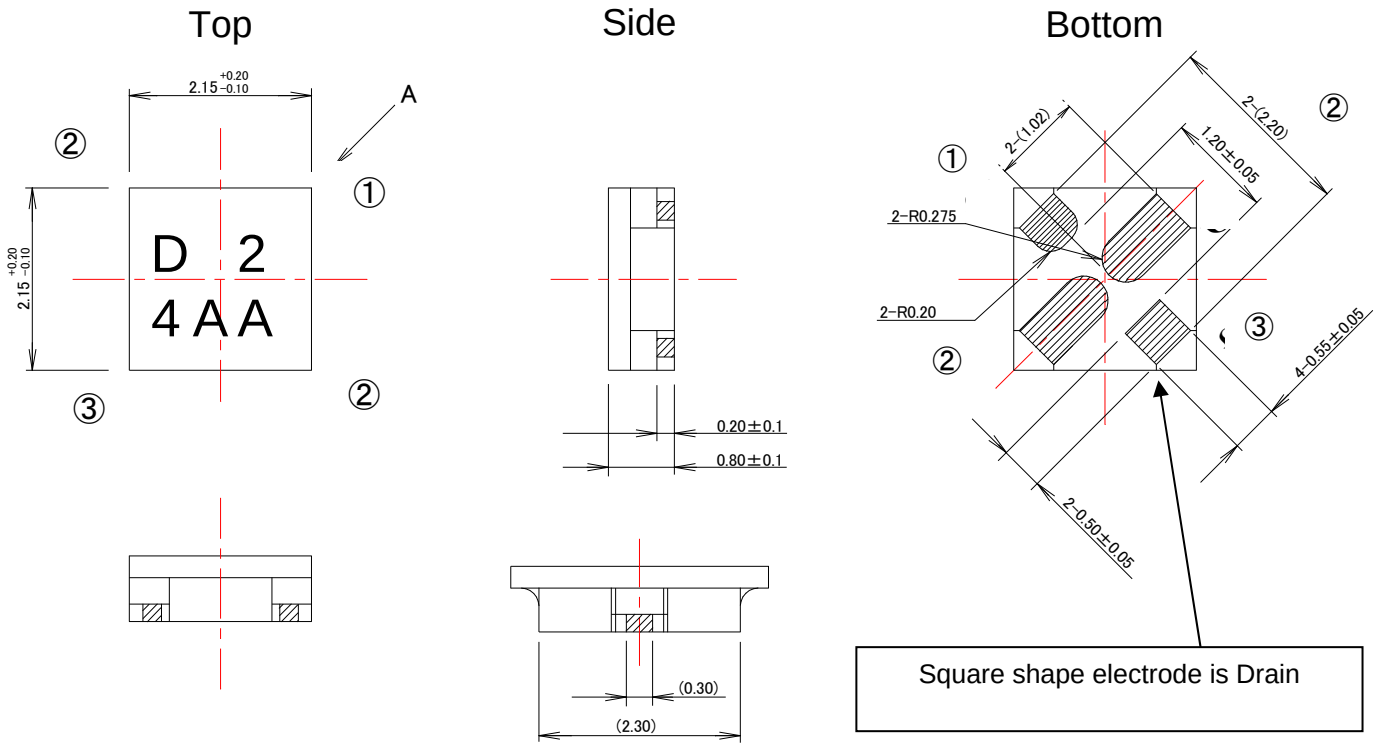
Symbol	Parameter	Ratings	Unit
V_{GDO}	Gate to drain voltage	-8	V
V_{GSO}	Gate to source voltage	-8	V
I_D	Drain current	240	mA
PT	Total power dissipation	600	mW
T_{ch}	Channel temperature	125	°C
T_{stg}	Storage temperature	-65 to +125	°C

ELECTRICAL CHARACTERISTICS (Ta=25°C)

Symbol	Parameter	Test conditions	Limits			Unit
			MIN.	TYP.	MAX	
$V_{(BR)GDO}$	Gate to drain breakdown voltage	I_G=-60μA	-8	-15	--	V
I_{DSS}	Saturated drain current	V_{GS}=0V,V_{DS}=3V	65	120	240	mA
$V_{GS(off)}$	Gate to source cut-off voltage	V_{DS}=3V,I_D=600μA	-0.3	-1.4	-3.5	V
P1dB	Output power at 1dB gain compression	V_{DS}=3V, ID=30mA, f=12GHz	15	17	--	dBm
Glp	Linear power gain	V_{DS}=3V, ID=60mA, f=12GHz, Pin=-5dBm	5	7	--	dB

Note: P1B and Glp are tested with sampling inspection.

Fig.1



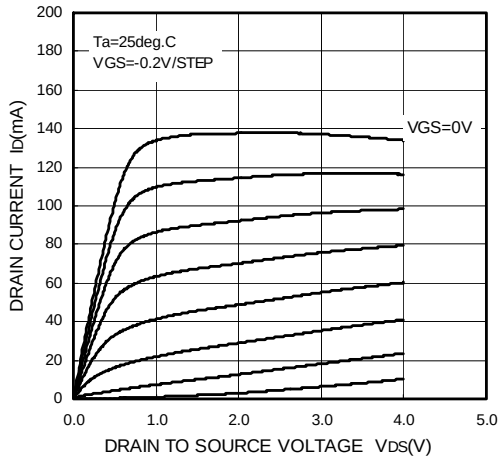
from "A" side view

Unit: mm

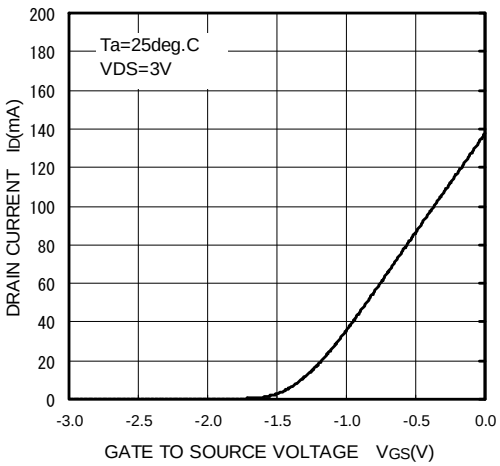
① Gate
② Source
③ Drain

TYPICAL CHARACTERISTICS (Ta=25℃)

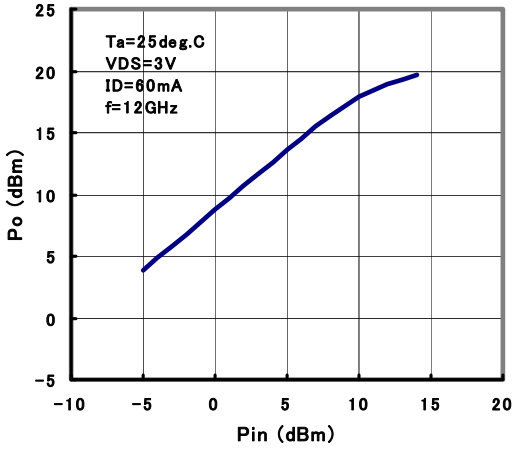
I_D vs. V_{DS}



I_D vs. V_{GS}

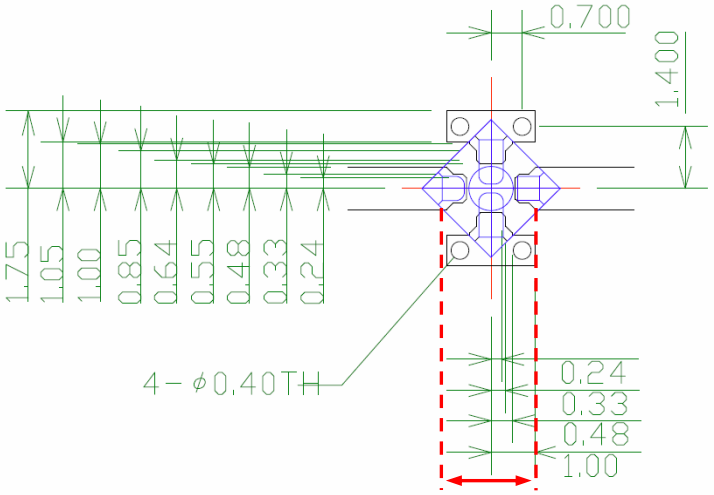


Po vs. Pin



S PARAMETERS (VDS=3V,ID=60mA,Ta=room temperature)

Freq. (GHz)	S11		S21		S12		S22	
	(mag)	(ang)	(mag)	(ang)	(mag)	(ang)	(mag)	(ang)
1	0.959	−30.4	5.765	154.3	0.024	72.3	0.348	−17.5
2	0.884	−58.8	5.306	130.9	0.044	59.7	0.321	−34.7
3	0.797	−85.4	4.730	109.6	0.060	48.5	0.285	−49.5
4	0.723	−111.1	4.211	90.4	0.072	39.0	0.247	−63.9
5	0.669	−135.7	3.736	72.8	0.081	31.1	0.205	−81.3
6	0.626	−154.9	3.362	57.5	0.089	25.4	0.185	−86.3
7	0.591	−174.9	3.070	43.2	0.097	19.3	0.162	−93.2
8	0.564	165.3	2.835	28.8	0.106	13.7	0.137	−102.6
9	0.552	144.4	2.626	14.4	0.114	7.9	0.106	−119.5
10	0.561	122.9	2.439	0.0	0.121	0.9	0.078	−149.8
11	0.593	102.0	2.257	−14.7	0.129	−6.9	0.075	157.7
12	0.647	83.3	2.057	−29.2	0.134	−14.8	0.118	115.3
13	0.707	67.7	1.852	−43.1	0.135	−23.2	0.185	92.9
14	0.763	54.7	1.644	−56.6	0.133	−31.5	0.264	78.0
15	0.805	44.8	1.446	−68.5	0.130	−39.1	0.337	69.2
16	0.837	37.0	1.270	−79.6	0.125	−45.5	0.409	61.3
17	0.856	30.0	1.127	−89.5	0.120	−51.4	0.471	55.5
18	0.867	23.6	1.024	−99.1	0.118	−57.7	0.523	49.7
19	0.880	16.4	0.946	−108.7	0.118	−65.4	0.566	43.3
20	0.881	9.0	0.882	−118.7	0.114	−73.8	0.595	36.8



Measurement plane (2.2mm)

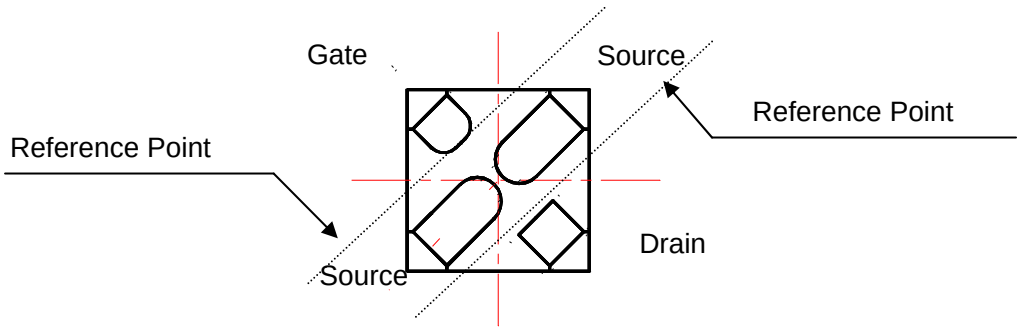
Recommended foot pattern; PTFE(εr=2.60, t=0.40mm)

Note:
We are ready to provide nonlinear model for ADS and MWO users. If you are interested, please contact our sales offices.

S PARAMETERS

(Conditions : VDS=3V,ID=60mA,Ta=25deg.C)

f	S11		S21		S12		S22		K	MAG/MSG
(GHz)	Mag.	Angle	Mag.	Angle	Mag.	Angle	Mag.	Angle		(dB)
1	0.963	-32.6	6.695	154.5	0.024	72.0	0.314	-24.7	0.21	24.4
2	0.888	-66.5	6.024	128.4	0.043	52.3	0.297	-51.3	0.38	21.4
3	0.822	-89.7	5.294	110.6	0.056	42.0	0.281	-66.0	0.51	19.7
4	0.764	-114.3	4.599	93.5	0.065	32.3	0.259	-83.0	0.64	18.5
5	0.720	-132.8	4.030	79.6	0.071	24.2	0.254	-94.1	0.77	17.5
6	0.685	-149.2	3.591	67.1	0.075	19.2	0.250	-100.0	0.90	16.8
7	0.660	-165.2	3.243	54.4	0.079	14.0	0.247	-104.2	1.01	15.5
8	0.643	-179.8	2.993	42.2	0.082	9.4	0.243	-108.3	1.10	13.7
9	0.629	165.3	2.785	30.5	0.088	4.4	0.232	-111.5	1.15	12.6
10	0.624	150.0	2.614	18.5	0.095	-0.8	0.214	-115.4	1.17	11.9
11	0.618	133.3	2.460	6.4	0.099	-8.3	0.179	-119.8	1.25	11.0
12	0.620	115.8	2.310	-6.9	0.104	-14.8	0.137	-125.6	1.29	10.2
13	0.639	98.6	2.163	-19.8	0.107	-21.6	0.085	-134.3	13.27	9.6
14	0.670	81.9	2.017	-33.9	0.111	-30.5	0.025	-176.9	1.32	9.2
15	0.709	66.3	1.846	-47.2	0.113	-39.4	0.063	61.7	1.33	8.7
16	0.765	52.1	1.700	-60.1	0.113	-48.6	0.145	47.0	1.25	8.8
17	0.815	37.9	1.537	-73.9	0.112	-57.5	0.237	37.8	1.18	8.8
18	0.850	25.1	1.353	-88.1	0.109	-67.0	0.328	29.2	1.16	8.5



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