

Ordering number : ENN7055A

N-Channel GaAs MESFET



SGF31

For C to Ku-band Local Oscillator and Amplifier

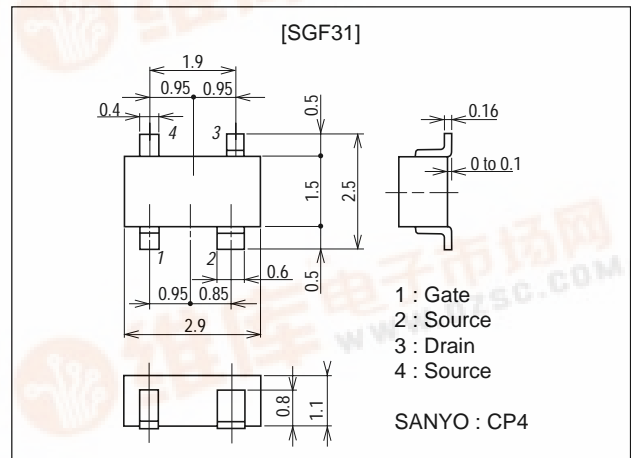
Features

- Lower phase noise.
- The chip surface is covered with the highly reliable protection film.
- Super miniaturized plastic-mold package (CP4).
- Automatic surface mounting is available.

Package Dimensions

unit : mm

2134A



Specifications

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V _{DS}		6	V
Gate-to-Source Voltage	V _{GS}		-5	V
Drain Current	I _D		100	mA
Allowable Power Dissipation	P _D		200	mW
Junction Temperature	T _J		150	°C
Storage Temperature	T _{stg}		-55 to +150	°C

Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Gate-to-Source Leakage Current	I _{GSO}	V _{GS} =-5V			-10	μA
Saturated Drain Current	I _{DSS}	V _{DS} =3V, V _{GS} =0	30	50	70	mA
Gate-to-Source Cutoff Voltage	V _{GS(off)}	V _{DS} =3V, I _D =100μA	-0.5	-1.6	-2.7	V
Forward Transfer Admittance	y _{fs}	V _{DS} =3V, I _D =10mA		34		mS

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S-Parameter

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V_{DS}=3V I_{DS}=30mA

FREQUENCY MHz	S11		S21		S12		S22	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
3000.0000	.671	-120.6	2.964	81.8	.098	34.1	.514	-39.1
4000.0000	.585	-148.0	2.559	61.8	.104	31.2	.441	-52.3
5000.0000	.552	-173.3	2.276	43.0	.114	27.9	.389	-66.5
6000.0000	.550	163.0	2.044	24.7	.131	23.5	.342	-82.7
7000.0000	.573	141.4	1.850	6.8	.154	16.7	.299	-102.3
8000.0000	.611	122.0	1.686	-10.6	.178	7.6	.261	-126.3
9000.0000	.656	104.6	1.541	-27.6	.200	-2.5	.236	-155.4
10000.0000	.702	88.9	1.408	-44.2	.220	-13.0	.235	172.0
11000.0000	.747	74.5	1.284	-60.3	.240	-23.7	.263	140.4
12000.0000	.789	61.1	1.167	-76.1	.260	-35.0	.316	113.3
13000.0000	.827	48.4	1.058	-91.6	.277	-47.0	.384	90.7
14000.0000	.858	35.8	.954	-107.0	.289	-59.5	.457	71.4
15000.0000	.883	23.4	.848	-122.3	.296	-72.0	.533	54.1
16000.0000	.905	11.5	.716	-137.8	.299	-83.6	.625	37.8

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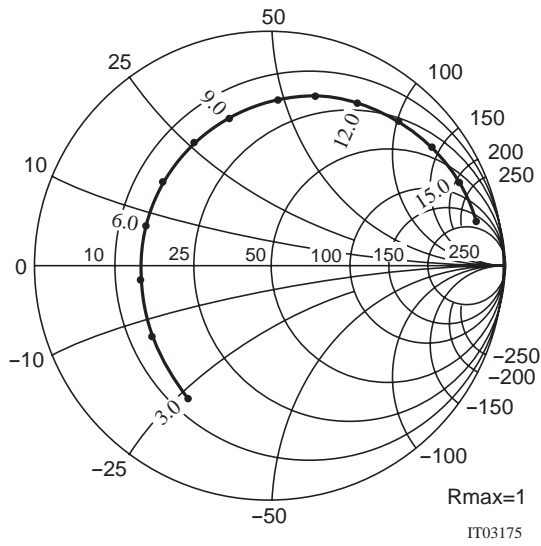
V_{DS}=3V I_{DS}=30mA

FREQUENCY MHz	G _{Umax} dB	G _{Amax} dB	S ₂₁ ² dB	S ₁₂ ² dB	K	Delay nsec	Mason's U dB	G ₁ dB	G ₂ dB
3000.0000	13.37		9.44	-20.21	.81	.057	20.258	2.60	1.33
4000.0000	10.93	12.95	8.16	-19.66	1.02	.054	18.447	1.82	.94
5000.0000	9.43	10.83	7.15	-18.87	1.13	.052	17.436	1.58	.71
6000.0000	8.32	9.79	6.21	-17.66	1.12	.051	17.386	1.56	.54
7000.0000	7.48	9.39	5.34	-16.27	1.05	.049	18.673	1.73	.41
8000.0000	6.87		4.54	-15.01	.97	.048	23.592	2.03	.31
9000.0000	6.45		3.76	-13.99	.88	.047		2.44	.25
10000.0000	6.17		2.97	-13.14	.80	.046		2.95	.25
11000.0000	6.02		2.17	-12.39	.73	.044		3.54	.31
12000.0000	6.03		1.34	-11.70	.65	.044		4.22	.46
13000.0000	6.17		.49	-11.14	.57	.043		4.99	.69
14000.0000	6.40		-.41	-10.77	.49	.043		5.79	1.02
15000.0000	6.57		-1.43	-10.58	.43	.043		6.55	1.45
16000.0000	6.68		-2.90	-10.50	.36	.043		7.43	2.15

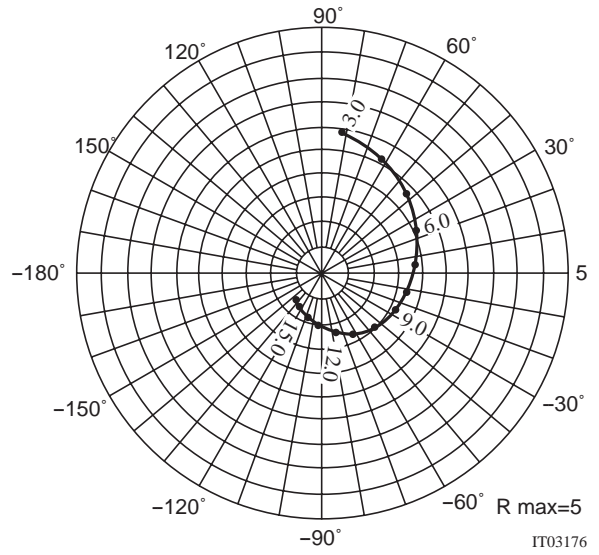
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S-Parameter $V_{DS}=3V$ $I_{DS}=30mA$, START 3 GHz STOP 16 GHz

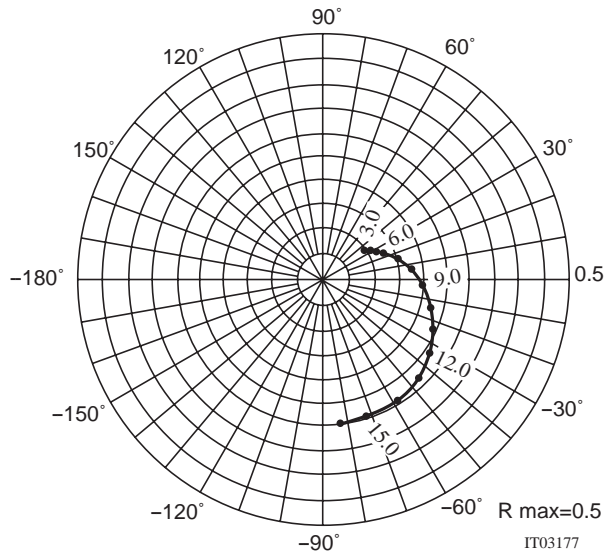
S11



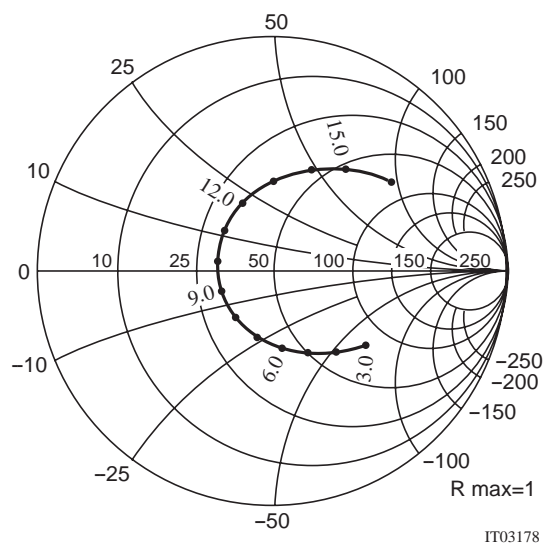
S21



S12



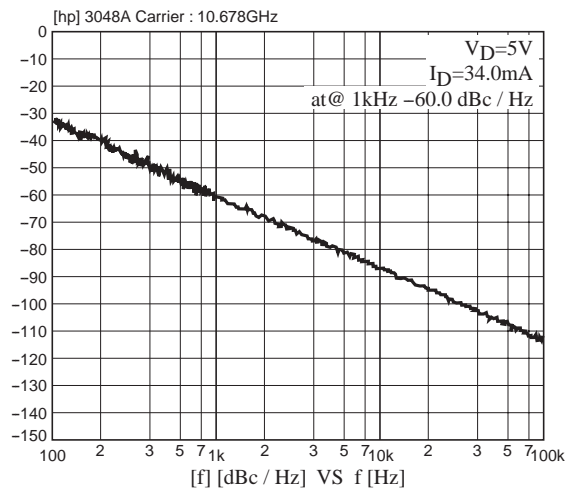
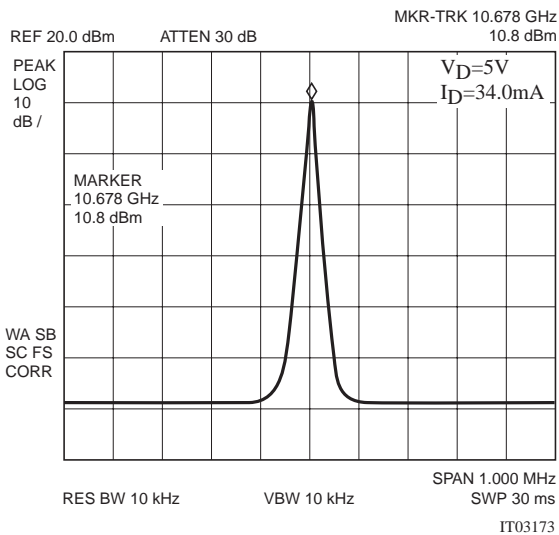
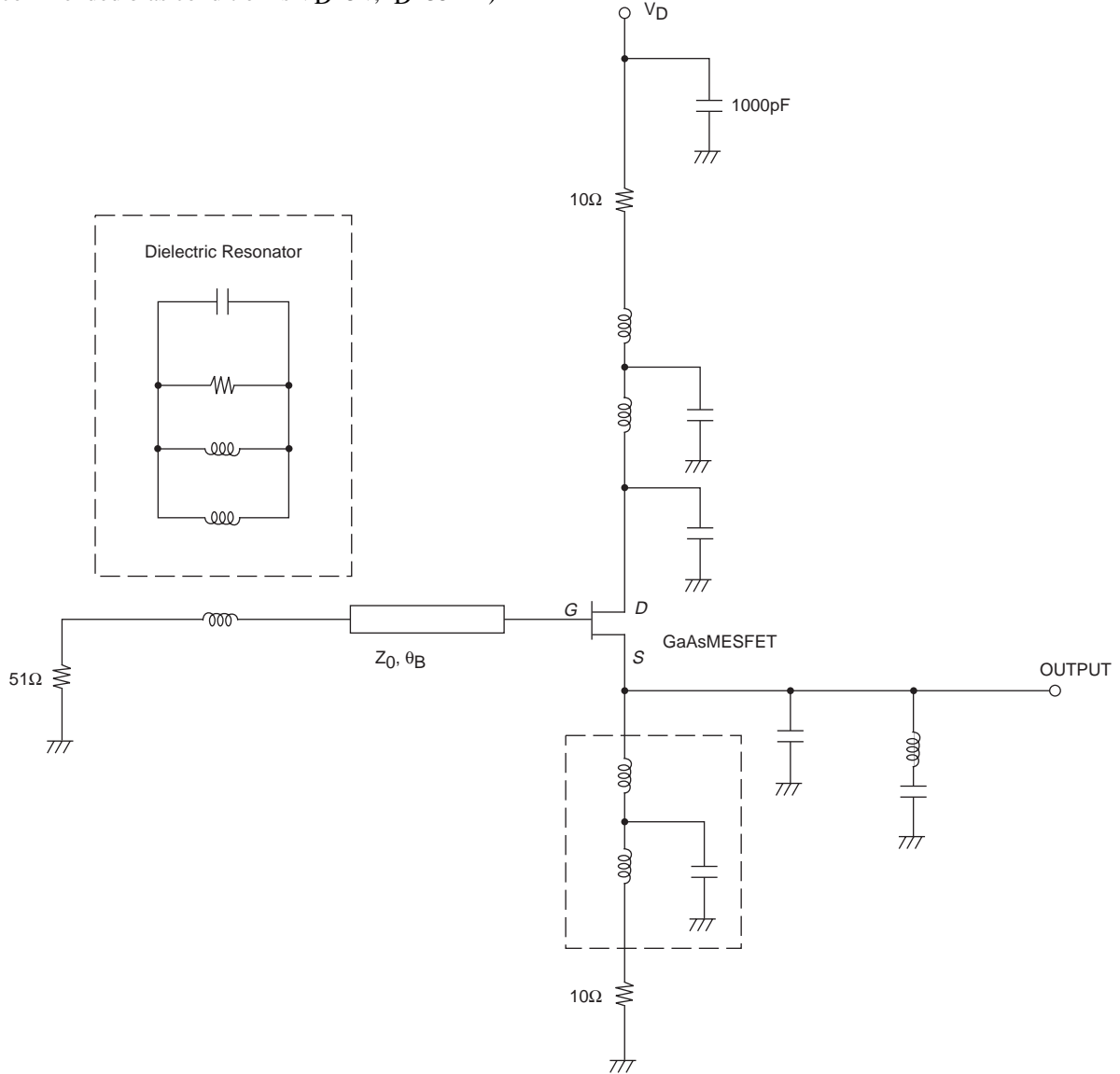
S22



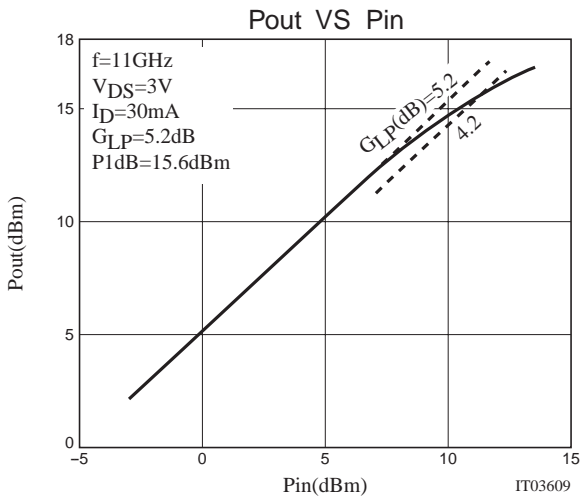
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Oscillation Characteristics Measured by the Application JIG for SGF31

Equivalent Circuit of the Application JIG
 (Recommended bias condition is $V_D=5V$, $I_D=35mA$)



Amplification Characteristics Measured by the DUT



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