Ordering number : ENN7055B

N-Channel GaAs MESFET

SGF31

For C to Ku-band Local Oscillator and Amplifier

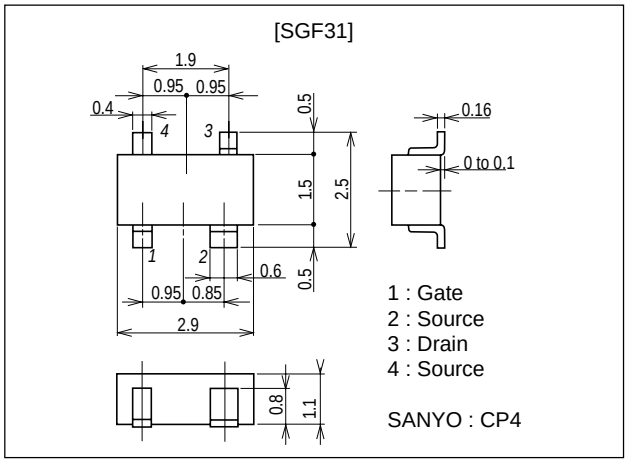
Features

- 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	Tj		150	°C
Storage Temperature	Tstg		−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	|yfs|	V_{DS}=3V, I_D=10mA		34		mS

SANYO Electric Co.,Ltd. Semiconductor Company

TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110-8534 JAPAN

S-Parameter

SGF31

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

FREQUENCY	S11		S21		S12		S22	
MHz	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

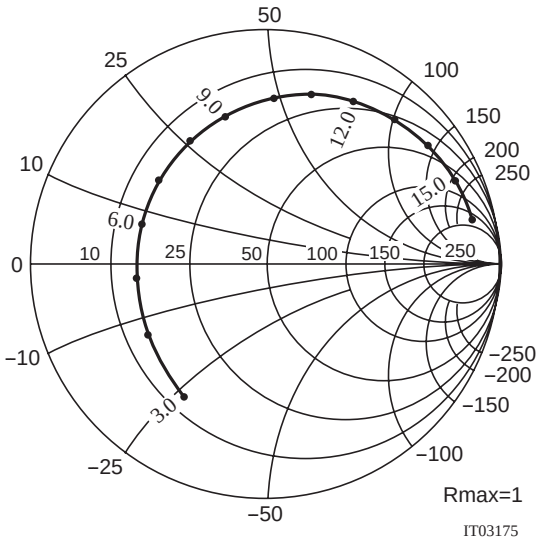
SGF31

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

FREQUENCY	GUmax	GAmax	|S21|^2	|S12|^2	K	Delay	Mason's U	G1	G2
MHz	dB	dB	dB	dB		nsec	dB	dB	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

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

S11



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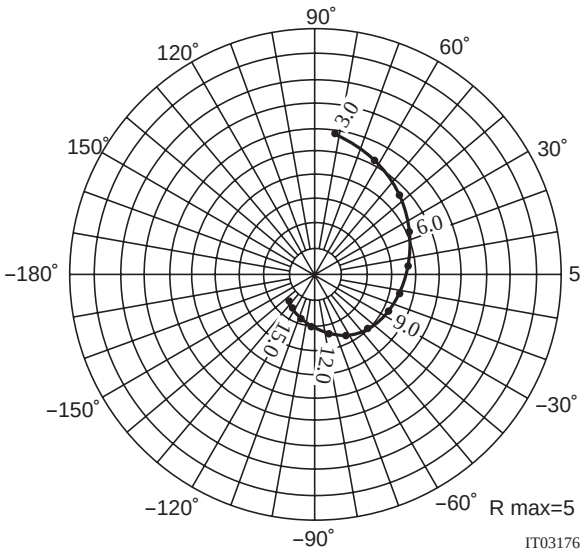
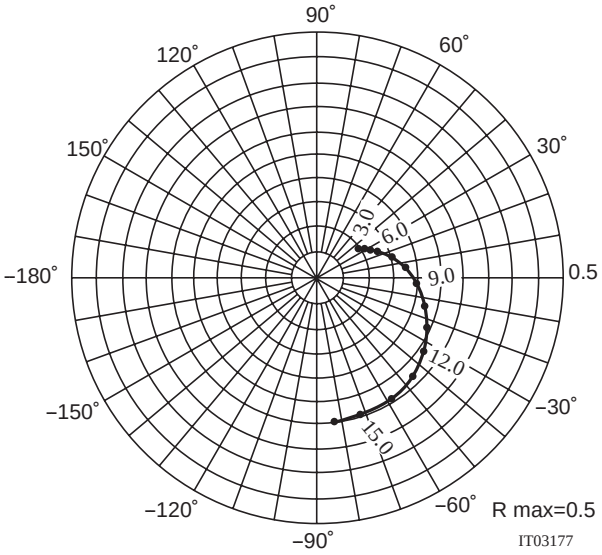
S21



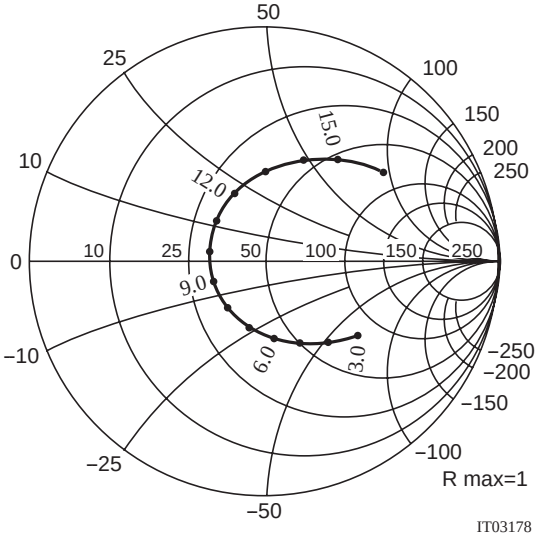
IT03176

S12



IT03177

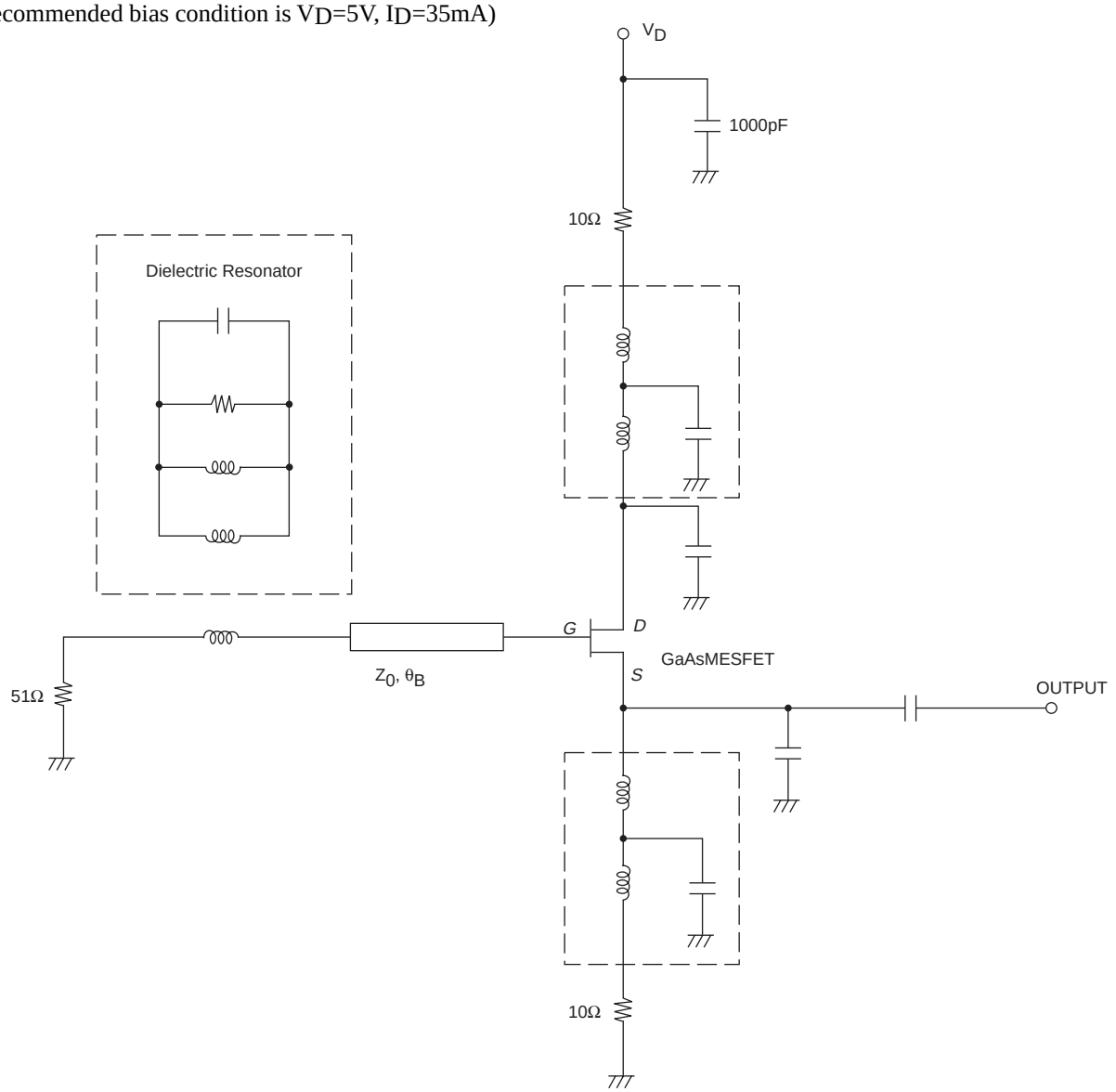
S22

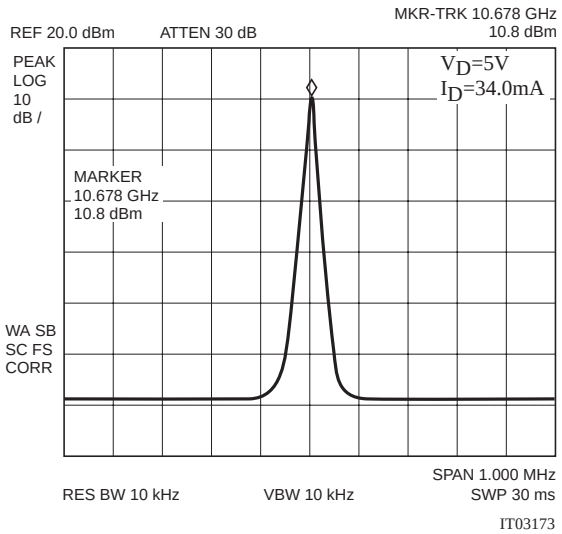


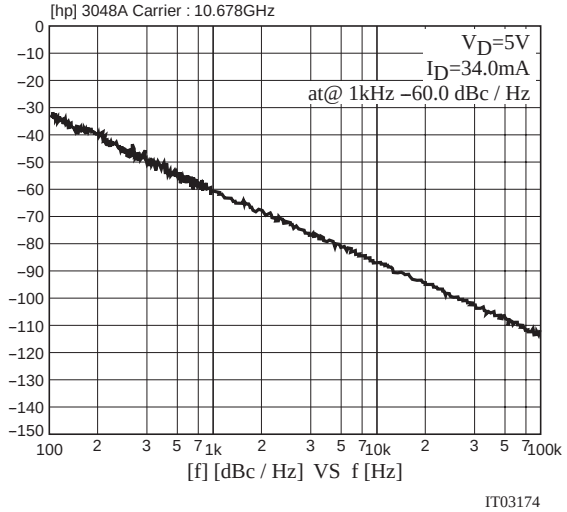
IT03178

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