

**SGF29**

## For C to Ku-band Local Oscillator and Amplifier

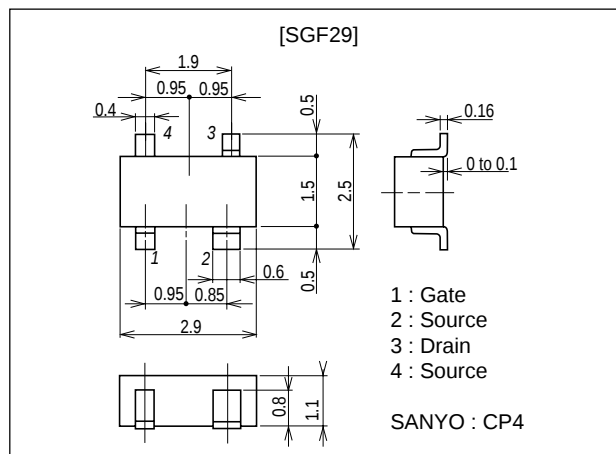
### Features

- Lowest 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  | $\mu A$ |
| Saturated Drain Current        | $I_{DSS}$     | $V_{DS} = 3V, V_{GS} = 0$     | 30      | 50   | 70   | mA      |
| Gate-to-Source Cutoff Voltage  | $V_{GS(off)}$ | $V_{DS} = 3V, I_D = 100\mu A$ | -0.5    | -1.4 | -2.5 | V       |
| Forward Transfer Admittance    | $ y_{fs} $    | $V_{DS} = 3V, I_D = 10mA$     |         | 44   |      | mS      |

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11802 GI IM / 91001 GI IM No.7054-1/5

## SGF29

### S-Parameter

SGF29

V<sub>DS</sub>=3V I<sub>DS</sub>=30mA

| FREQUENCY<br>MHz | S11  |        | S21   |        | S12  |       | S22  |        |
|------------------|------|--------|-------|--------|------|-------|------|--------|
|                  | MAG  | ANG    | MAG   | ANG    | MAG  | ANG   | MAG  | ANG    |
| 3000.0000        | .605 | -139.1 | 3.198 | 72.5   | .103 | 31.6  | .431 | -43.5  |
| 4000.0000        | .546 | -167.5 | 2.686 | 53.3   | .114 | 28.7  | .352 | -57.1  |
| 5000.0000        | .535 | 167.9  | 2.338 | 35.2   | .127 | 24.2  | .296 | -72.1  |
| 6000.0000        | .551 | 145.9  | 2.060 | 17.6   | .146 | 18.5  | .245 | -90.5  |
| 7000.0000        | .585 | 126.4  | 1.834 | .4     | .169 | 10.6  | .201 | -114.8 |
| 8000.0000        | .630 | 109.1  | 1.649 | -16..4 | .192 | 1.1   | .172 | -147.1 |
| 9000.0000        | .677 | 93.6   | 1.491 | -32.7  | .212 | -9.2  | .171 | 174.9  |
| 10000.0000       | .723 | 79.4   | 1.350 | -48.5  | .230 | -19.7 | .204 | 140.1  |
| 11000.0000       | .765 | 66.4   | 1.222 | -63.9  | .247 | -30.3 | .260 | 113.0  |
| 12000.0000       | .803 | 54.2   | 1.106 | -78.8  | .263 | -41.4 | .328 | 91.7   |
| 13000.0000       | .837 | 42.5   | .999  | -93.4  | .276 | -53.0 | .401 | 73.9   |
| 14000.0000       | .865 | 30.9   | .899  | -107.9 | .285 | -65.0 | .474 | 58.2   |
| 15000.0000       | .887 | 19.4   | .800  | -122.3 | .288 | -76.8 | .545 | 43.8   |
| 16000.0000       | .908 | 8.4    | .675  | -136.6 | .288 | -87.6 | .633 | 30.1   |

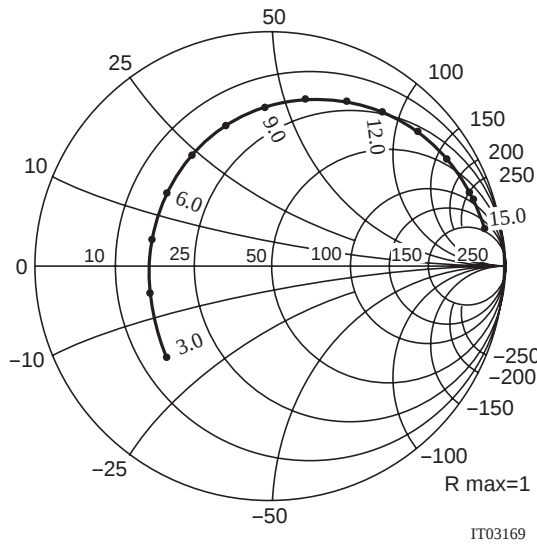
SGF29

V<sub>DS</sub>=3V I<sub>DS</sub>=30mA

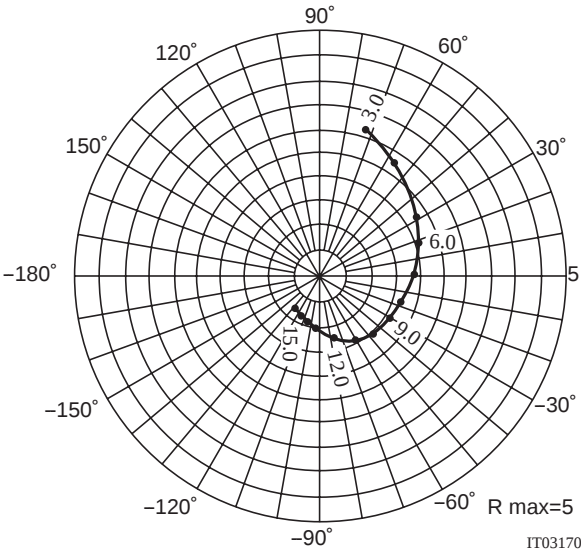
| FREQUENCY<br>MHz | G <sub>Umax</sub><br>dB | G <sub>Amax</sub><br>dB | S <sub>21</sub>   <sup>2</sup><br>dB | S <sub>12</sub>   <sup>2</sup><br>dB | K    | Delay<br>nsec | Mason's U<br>dB | G <sub>1</sub><br>dB | G <sub>2</sub><br>dB |
|------------------|-------------------------|-------------------------|--------------------------------------|--------------------------------------|------|---------------|-----------------|----------------------|----------------------|
| 3000.0000        | 12.97                   |                         | 10.10                                | -19.73                               | .87  | .055          | 21.072          | 1.98                 | .89                  |
| 4000.0000        | 10.70                   | 12.48                   | 8.58                                 | -18.85                               | 1.04 | .052          | 19.171          | 1.54                 | .58                  |
| 5000.0000        | 9.24                    | 10.57                   | 7.38                                 | -17.90                               | 1.12 | .050          | 17.886          | 1.46                 | .40                  |
| 6000.0000        | 8.12                    | 9.47                    | 6.28                                 | -16.70                               | 1.11 | .049          | 17.431          | 1.57                 | .27                  |
| 7000.0000        | 7.27                    | 8.93                    | 5.27                                 | -15.44                               | 1.05 | .048          | 18.036          | 1.82                 | .18                  |
| 8000.0000        | 6.67                    |                         | 4.34                                 | -14.35                               | .98  | .046          | 20.510          | 2.19                 | .13                  |
| 9000.0000        | 6.26                    |                         | 3.47                                 | -13.47                               | .91  | .045          |                 | 2.66                 | .13                  |
| 10000.0000       | 6.00                    |                         | 2.61                                 | -12.76                               | .85  | .044          |                 | 3.21                 | .18                  |
| 11000.0000       | 5.86                    |                         | 1.74                                 | -12.14                               | .78  | .042          |                 | 3.82                 | .30                  |
| 12000.0000       | 5.87                    |                         | .87                                  | -11.60                               | .71  | .041          |                 | 4.50                 | .49                  |
| 13000.0000       | 6.00                    |                         | -.01                                 | -11.17                               | .63  | .041          |                 | 5.24                 | .76                  |
| 14000.0000       | 6.18                    |                         | -.92                                 | -10.91                               | .56  | .040          |                 | 6.00                 | 1.10                 |
| 15000.0000       | 6.31                    |                         | -1.94                                | -10.81                               | .50  | .040          |                 | 6.72                 | 1.53                 |
| 16000.0000       | 6.38                    |                         | -3.41                                | -10.81                               | .44  | .040          |                 | 7.56                 | 2.22                 |

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

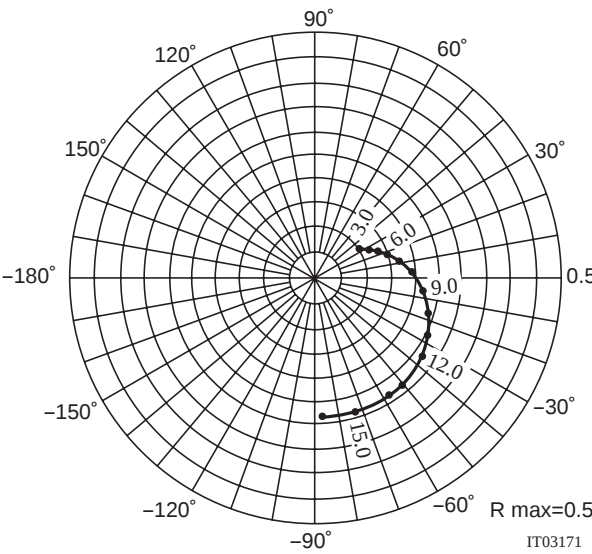
S11



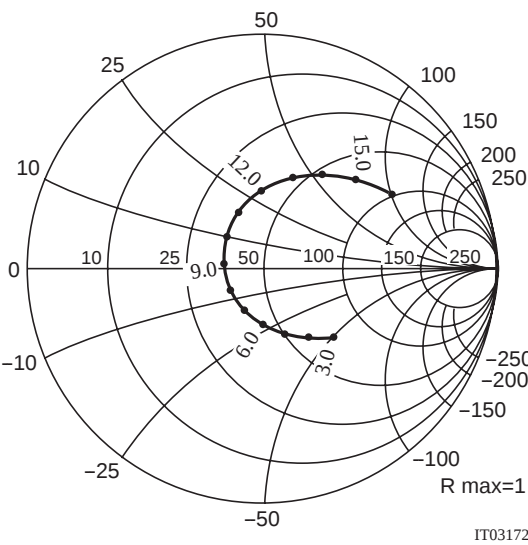
S21



S12



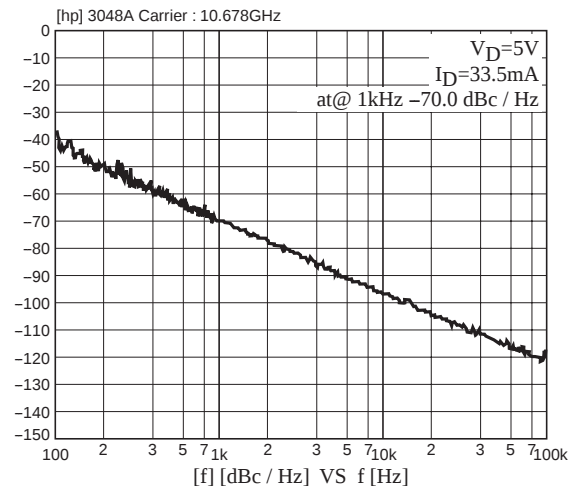
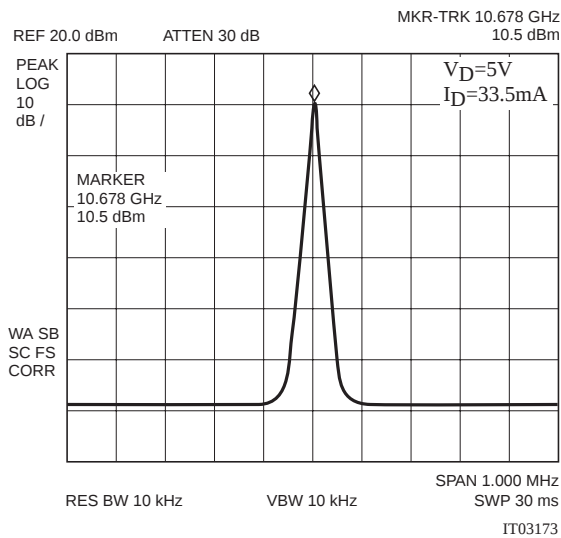
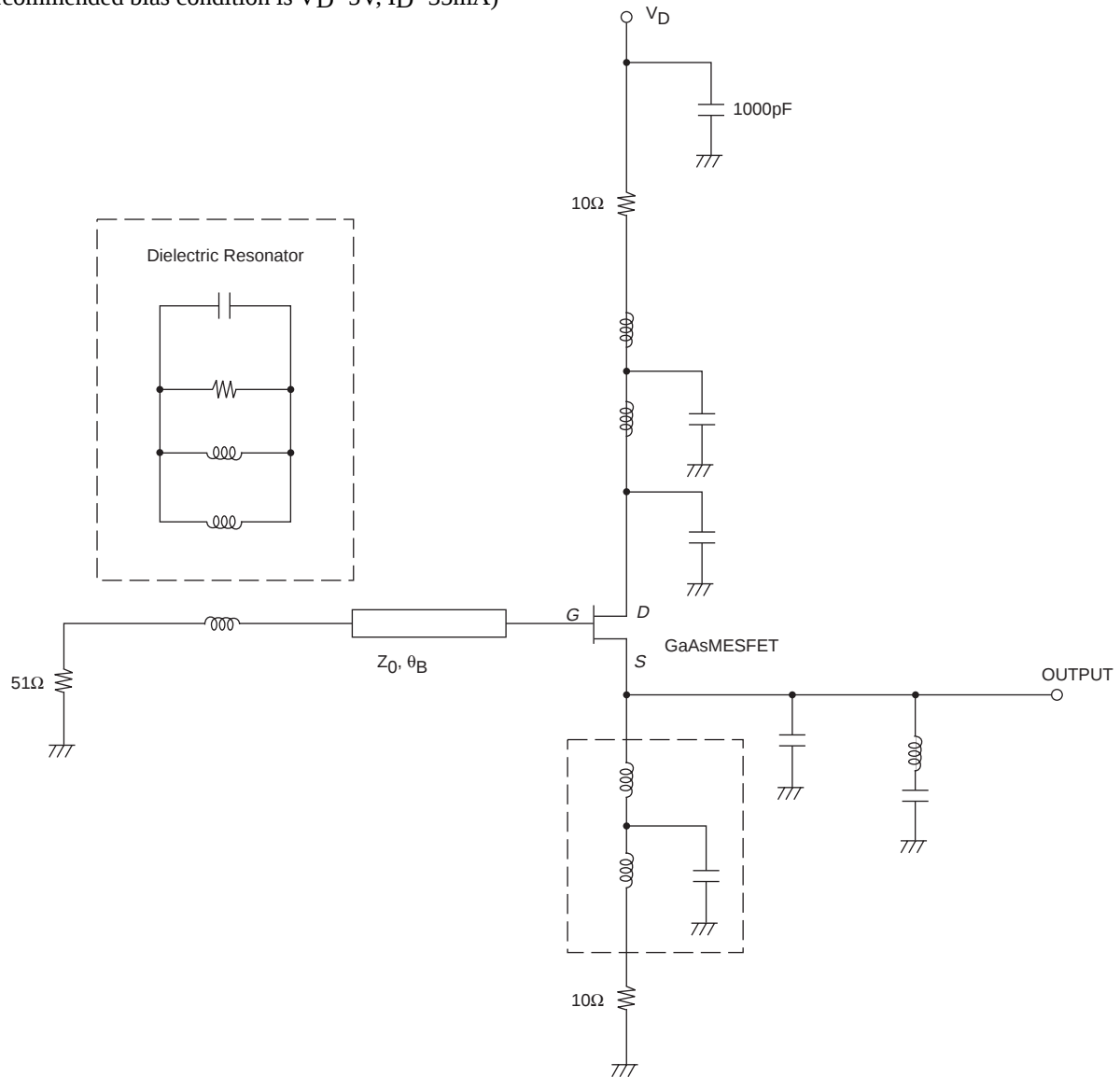
S22



## Oscillation Characteristics Measured by the Application JIG for SGF29

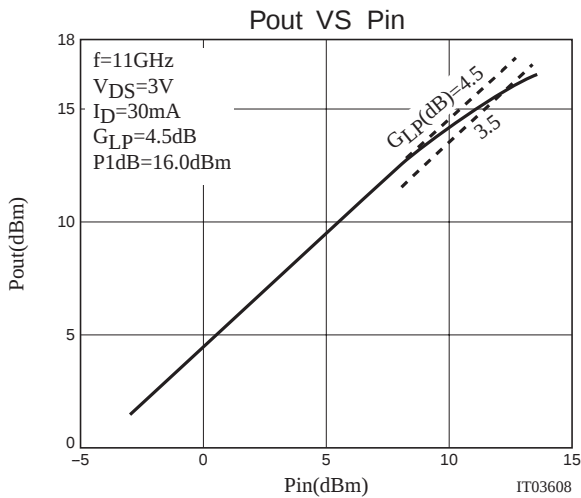
Equivalent Circuit of the Application JIG

(Recommended bias condition is  $V_D=5V$ ,  $I_D=35mA$ )



IT03174

## Amplification Characteristics Measured by the DUT



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