

# RF Transistor

10 V, 70 mA,  $f_T = 5.5$  GHz, NPN Single SSFP

## 55GN01FA

### Features

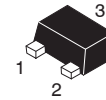
- High Cut-off Frequency:  $f_T = 5.5$  GHz Typ
- High Gain:  $|S_{21e}|^2 = 11$  dB Typ ( $f = 1$  GHz)  
 $|S_{21e}|^2 = 19$  dB Typ ( $f = 400$  MHz)
- Ultrasmall Package Permitting Applied Sets to be Small and Slim
- This Device is Pb-Free and Halide Free

### Specification

#### ABSOLUTE MAXIMUM RATINGS ( $T_a = 25^\circ\text{C}$ )

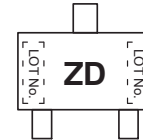
| Symbol    | Parameter                    | Value       | Unit             |
|-----------|------------------------------|-------------|------------------|
| $V_{CBO}$ | Collector-to-Base Voltage    | 20          | V                |
| $V_{CEO}$ | Collector-to-Emitter Voltage | 10          | V                |
| $V_{EBO}$ | Emitter-to-Base Voltage      | 3           | V                |
| $I_C$     | Collector Current            | 70          | mA               |
| $P_C$     | Collector Dissipation        | 250         | mW               |
| $T_j$     | Junction Temperature         | 150         | $^\circ\text{C}$ |
| $T_{stg}$ | Storage Temperature          | -55 to +150 |                  |

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.



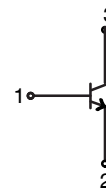
SOT-623 / SSFP  
CASE 631AC

### MARKING DIAGRAM



ZD = Specific Device Code

### ELECTRICAL CONNECTION



### ORDERING INFORMATION

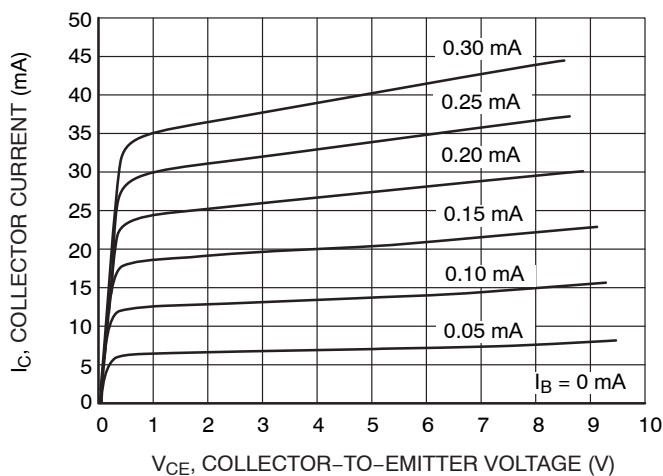
| Device        | Package                                     | Shipping <sup>†</sup> |
|---------------|---------------------------------------------|-----------------------|
| 55GN01FA-TL-H | SOT-623 / SSFP<br>(Pb-Free,<br>Halide Free) | 8000 /<br>Tape & Reel |

<sup>†</sup>For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specification Brochure, [BRD8011/D](#).

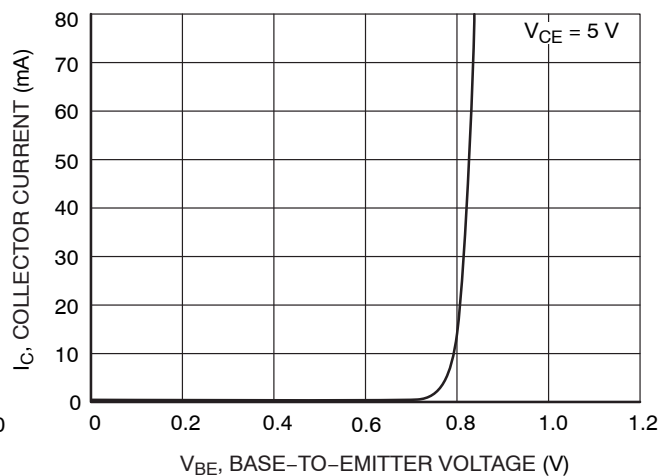
**ELECTRICAL CHARACTERISTICS** ( $T_A = 25^\circ\text{C}$ )

| Parameter                    | Symbol          | Test Condition                                                                          | Min | Typ  | Max | Unit          |
|------------------------------|-----------------|-----------------------------------------------------------------------------------------|-----|------|-----|---------------|
| Collector Cutoff Current     | $I_{CBO}$       | $V_{CB} = 10\text{ V}, I_E = 0\text{ A}$                                                | –   | –    | 0.1 | $\mu\text{A}$ |
| Emitter Cutoff Current       | $I_{EBO}$       | $V_{EB} = 2\text{ V}, I_C = 0\text{ A}$                                                 | –   | –    | 1   | $\mu\text{A}$ |
| DC Current Gain              | $h_{FE}$        | $V_{CE} = 5\text{ V}, I_C = 10\text{ mA}$                                               | 100 | –    | 160 |               |
| Gain–Bandwidth Product       | $f_{T1}$        | $V_{CE} = 3\text{ V}, I_C = 5\text{ mA}$                                                | 3.0 | 4.5  | –   | GHz           |
|                              | $f_{T2}$        | $V_{CE} = 5\text{ V}, I_C = 20\text{ mA}$                                               | –   | 5.5  | –   | GHz           |
| Output Capacitance           | $C_{ob}$        | $V_{CB} = 10\text{ V}, f = 1\text{ MHz}$                                                | –   | 0.95 | 1.2 | pF            |
| Reverse Transfer Capacitance | $C_{re}$        |                                                                                         | –   | 0.6  | –   | pF            |
| Forward Transfer Gain        | $ S_{21e} ^2_1$ | $V_{CE} = 5\text{ V}, I_C = 20\text{ mA}, f = 1\text{ GHz}$                             | 8   | 11   | –   | dB            |
|                              | $ S_{21e} ^2_2$ | $V_{CE} = 5\text{ V}, I_C = 20\text{ mA}, f = 400\text{ MHz}$                           | 16  | 19   | –   | dB            |
| Noise Figure                 | NF              | $V_{CE} = 3\text{ V}, I_C = 5\text{ mA}, f = 1\text{ GHz},$<br>$Z_S = Z_L = 50\ \Omega$ | –   | 1.9  | –   | dB            |

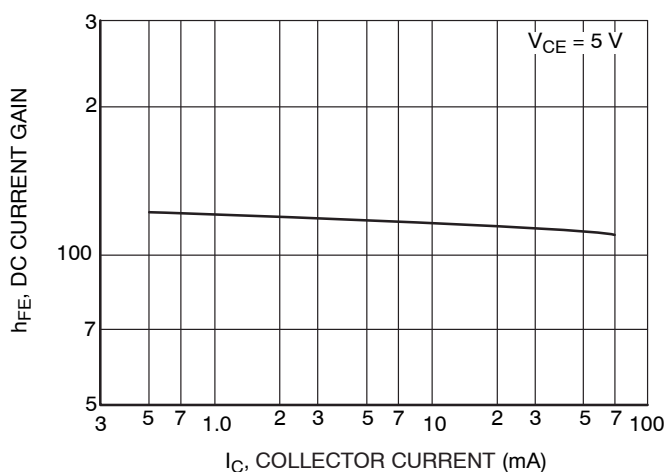
Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.



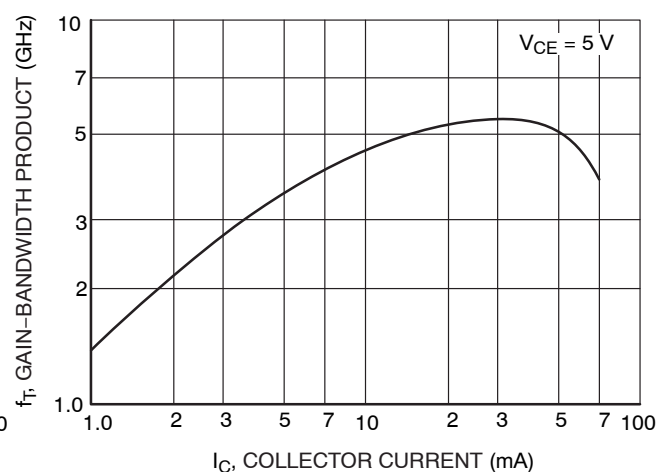
**Figure 1.  $I_C - V_{CE}$**



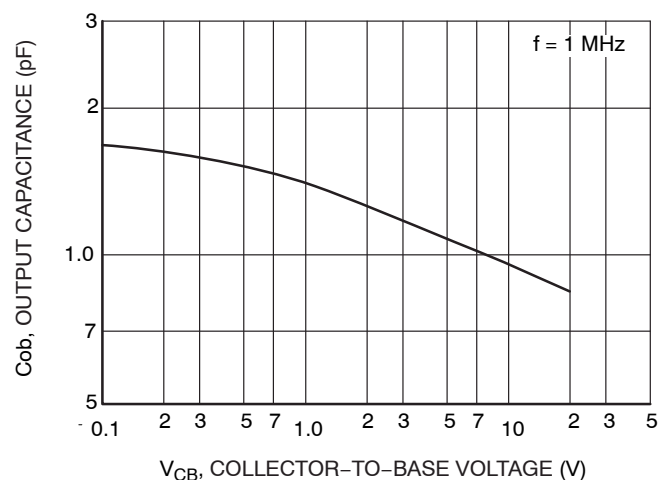
**Figure 2.  $I_C - V_{BE}$**



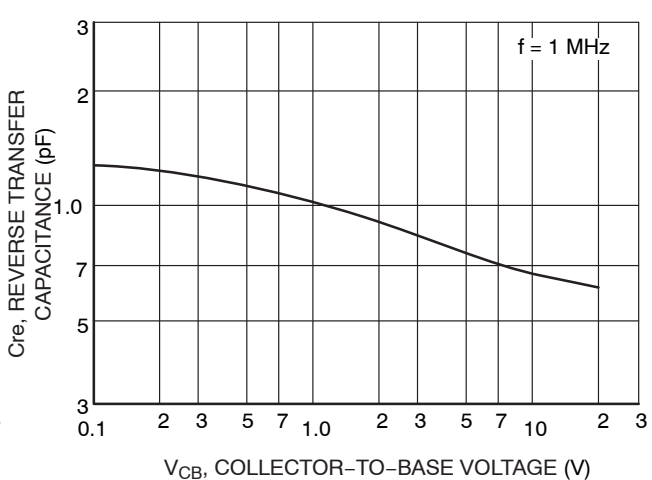
**Figure 3.  $h_{FE} - I_C$**



**Figure 4.  $f_T - I_C$**



**Figure 5.  $C_{ob} - V_{CB}$**



**Figure 6.  $C_{re} - V_{CB}$**

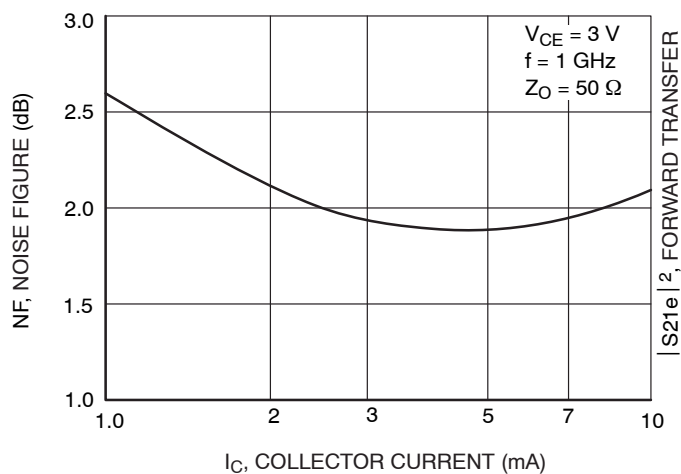


Figure 7. NF –  $I_C$

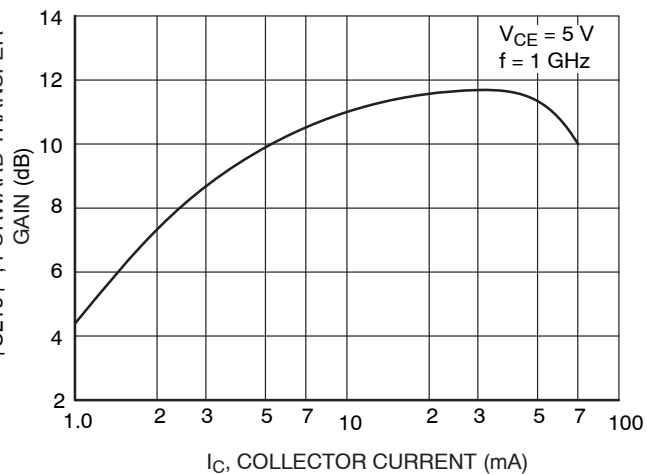


Figure 8.  $|S_{21e}|^2$  –  $I_C$

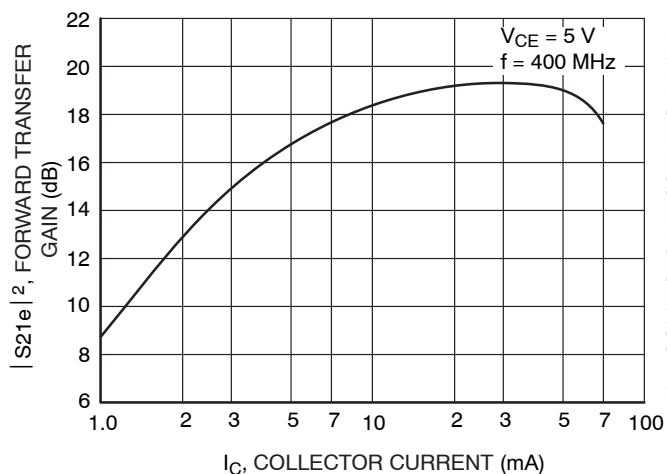


Figure 9.  $|S_{21e}|^2$  –  $I_C$

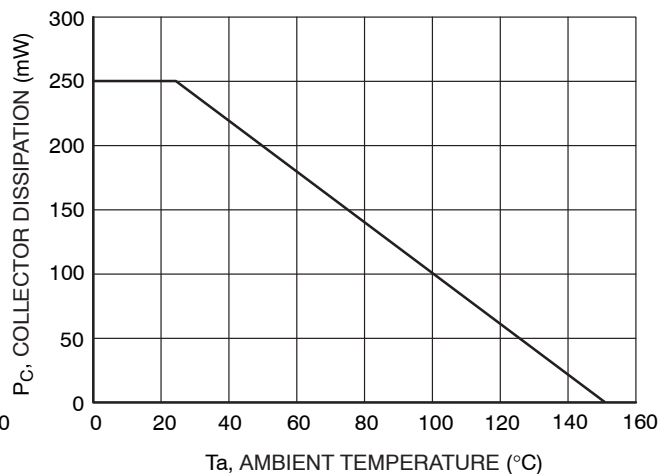


Figure 10.  $P_C$  –  $T_a$

## S Parameters (Common Emitter)

$V_{CE} = 5\text{ V}$ ,  $I_C = 1\text{ mA}$ ,  $Z_0 = 50\ \Omega$

| Freq (MHz) | S11   | $\angle S11$ | S21   | $\angle S21$ | S12   | $\angle S12$ | S22   | $\angle S22$ |
|------------|-------|--------------|-------|--------------|-------|--------------|-------|--------------|
| 100        | 0.960 | -21.33       | 3.404 | 164.99       | 0.046 | 77.57        | 0.986 | -9.38        |
| 200        | 0.943 | -40.21       | 3.215 | 151.43       | 0.085 | 64.91        | 0.938 | -18.56       |
| 400        | 0.888 | -72.87       | 2.700 | 128.23       | 0.139 | 46.91        | 0.838 | -31.44       |
| 600        | 0.853 | -97.36       | 2.288 | 110.64       | 0.167 | 34.66        | 0.757 | -40.30       |
| 800        | 0.816 | -115.67      | 1.926 | 96.26        | 0.179 | 26.17        | 0.706 | -46.95       |
| 1000       | 0.788 | -129.19      | 1.659 | 84.81        | 0.180 | 19.95        | 0.676 | -52.20       |
| 1200       | 0.767 | -140.35      | 1.451 | 74.89        | 0.174 | 16.50        | 0.664 | -56.92       |
| 1400       | 0.749 | -149.12      | 1.286 | 66.48        | 0.168 | 14.89        | 0.662 | -61.86       |
| 1600       | 0.734 | -156.38      | 1.162 | 59.19        | 0.160 | 14.19        | 0.668 | -66.10       |
| 1800       | 0.719 | -163.17      | 1.061 | 52.60        | 0.149 | 15.77        | 0.677 | -70.98       |
| 2000       | 0.705 | -169.31      | 0.977 | 46.28        | 0.141 | 19.10        | 0.683 | -75.24       |
| 2200       | 0.694 | -174.71      | 0.893 | 41.12        | 0.136 | 24.16        | 0.695 | -79.81       |
| 2400       | 0.683 | -179.60      | 0.825 | 36.38        | 0.135 | 30.74        | 0.705 | -84.33       |
| 2600       | 0.675 | -174.53      | 0.765 | 32.38        | 0.141 | 38.01        | 0.717 | -88.85       |
| 2800       | 0.664 | -169.68      | 0.709 | 29.26        | 0.149 | 45.42        | 0.729 | -93.41       |
| 3000       | 0.653 | -165.11      | 0.667 | 26.87        | 0.163 | 51.07        | 0.737 | -97.77       |

$V_{CE} = 5\text{ V}$ ,  $I_C = 3\text{ mA}$ ,  $Z_0 = 50\ \Omega$

| Freq (MHz) | S11   | $\angle S11$ | S21   | $\angle S21$ | S12   | $\angle S12$ | S22   | $\angle S22$ |
|------------|-------|--------------|-------|--------------|-------|--------------|-------|--------------|
| 100        | 0.897 | -35.17       | 8.858 | 157.25       | 0.044 | 71.22        | 0.940 | -17.73       |
| 200        | 0.846 | -64.07       | 7.795 | 138.86       | 0.073 | 55.30        | 0.816 | -31.57       |
| 400        | 0.761 | -104.22      | 5.532 | 114.15       | 0.100 | 39.30        | 0.626 | -45.72       |
| 600        | 0.727 | -127.47      | 4.177 | 99.10        | 0.110 | 33.80        | 0.530 | -52.62       |
| 800        | 0.698 | -142.65      | 3.306 | 87.99        | 0.115 | 31.00        | 0.483 | -57.50       |
| 1000       | 0.681 | -152.69      | 2.715 | 79.36        | 0.120 | 30.86        | 0.461 | -61.55       |
| 1200       | 0.670 | -160.54      | 2.308 | 72.11        | 0.121 | 33.53        | 0.456 | -65.03       |
| 1400       | 0.656 | -166.79      | 2.012 | 65.45        | 0.124 | 35.60        | 0.461 | -69.34       |
| 1600       | 0.647 | -172.10      | 1.793 | 59.66        | 0.130 | 38.30        | 0.468 | -72.55       |
| 1800       | 0.635 | -176.87      | 1.621 | 54.21        | 0.135 | 41.86        | 0.479 | -76.57       |
| 2000       | 0.628 | -178.54      | 1.481 | 48.73        | 0.144 | 45.68        | 0.490 | -80.11       |
| 2200       | 0.616 | -173.99      | 1.351 | 44.05        | 0.153 | 48.13        | 0.501 | -83.71       |
| 2400       | 0.611 | -169.80      | 1.246 | 39.67        | 0.167 | 50.77        | 0.518 | -87.42       |
| 2600       | 0.601 | -166.00      | 1.157 | 35.62        | 0.178 | 53.54        | 0.528 | -91.49       |
| 2800       | 0.597 | -162.06      | 1.079 | 32.28        | 0.196 | 55.92        | 0.543 | -95.09       |
| 3000       | 0.588 | -158.02      | 1.015 | 29.15        | 0.215 | 56.86        | 0.555 | -98.59       |

$V_{CE} = 5\text{ V}$ ,  $I_C = 5\text{ mA}$ ,  $Z_O = 50\ \Omega$

| Freq (MHz) | S11   | $\angle S11$ | S21    | $\angle S21$ | S12   | $\angle S12$ | S22   | $\angle S22$ |
|------------|-------|--------------|--------|--------------|-------|--------------|-------|--------------|
| 100        | 0.842 | -46.44       | 13.174 | 151.15       | 0.040 | 64.28        | 0.891 | -24.16       |
| 200        | 0.777 | -81.34       | 10.723 | 130.44       | 0.062 | 50.01        | 0.716 | -39.59       |
| 400        | 0.699 | -121.57      | 6.861  | 106.89       | 0.080 | 39.73        | 0.508 | -52.96       |
| 600        | 0.679 | -141.39      | 4.942  | 94.02        | 0.089 | 37.45        | 0.424 | -58.67       |
| 800        | 0.661 | -153.84      | 3.830  | 84.43        | 0.096 | 38.27        | 0.390 | -62.90       |
| 1000       | 0.648 | -162.04      | 3.117  | 77.09        | 0.103 | 40.59        | 0.376 | -66.27       |
| 1200       | 0.641 | -168.02      | 2.643  | 70.51        | 0.111 | 43.94        | 0.374 | -69.52       |
| 1400       | 0.629 | -173.53      | 2.286  | 64.60        | 0.120 | 46.56        | 0.382 | -73.45       |
| 1600       | 0.620 | -177.70      | 2.039  | 59.33        | 0.130 | 48.48        | 0.390 | -76.69       |
| 1800       | 0.610 | -177.97      | 1.841  | 54.24        | 0.139 | 50.63        | 0.400 | -79.97       |
| 2000       | 0.603 | -173.76      | 1.676  | 49.26        | 0.153 | 53.08        | 0.413 | -83.21       |
| 2200       | 0.594 | -169.87      | 1.528  | 44.84        | 0.167 | 53.92        | 0.426 | -86.71       |
| 2400       | 0.588 | -166.14      | 1.413  | 40.43        | 0.181 | 55.16        | 0.441 | -89.93       |
| 2600       | 0.580 | -162.49      | 1.313  | 36.57        | 0.195 | 56.19        | 0.453 | -93.54       |
| 2800       | 0.576 | -158.82      | 1.231  | 33.47        | 0.213 | 57.85        | 0.466 | -96.88       |
| 3000       | 0.565 | -155.09      | 1.156  | 30.12        | 0.232 | 57.84        | 0.481 | -99.87       |

$V_{CE} = 5\text{ V}$ ,  $I_C = 10\text{ mA}$ ,  $Z_O = 50\ \Omega$

| Freq (MHz) | S11   | $\angle S11$ | S21    | $\angle S21$ | S12   | $\angle S12$ | S22   | $\angle S22$ |
|------------|-------|--------------|--------|--------------|-------|--------------|-------|--------------|
| 100        | 0.739 | -68.53       | 20.705 | 140.20       | 0.033 | 59.97        | 0.784 | -35.06       |
| 200        | 0.678 | -107.92      | 14.465 | 118.48       | 0.048 | 46.54        | 0.555 | -51.65       |
| 400        | 0.639 | -142.44      | 8.256  | 98.88        | 0.060 | 44.77        | 0.362 | -62.32       |
| 600        | 0.636 | -156.46      | 5.721  | 88.62        | 0.070 | 47.35        | 0.306 | -66.66       |
| 800        | 0.628 | -165.41      | 4.393  | 80.84        | 0.082 | 51.17        | 0.286 | -70.68       |
| 1000       | 0.620 | -171.30      | 3.549  | 74.44        | 0.094 | 53.84        | 0.280 | -73.86       |
| 1200       | 0.615 | -176.02      | 2.981  | 68.87        | 0.108 | 55.37        | 0.285 | -76.55       |
| 1400       | 0.606 | -179.70      | 2.584  | 63.58        | 0.121 | 57.13        | 0.297 | -80.44       |
| 1600       | 0.599 | -176.38      | 2.298  | 58.72        | 0.134 | 58.54        | 0.307 | -83.02       |
| 1800       | 0.589 | -173.12      | 2.065  | 54.21        | 0.149 | 58.63        | 0.319 | -86.36       |
| 2000       | 0.586 | -169.27      | 1.889  | 49.40        | 0.165 | 59.48        | 0.329 | -88.76       |
| 2200       | 0.573 | -165.75      | 1.719  | 45.30        | 0.179 | 59.22        | 0.344 | -91.59       |
| 2400       | 0.567 | -162.49      | 1.589  | 41.42        | 0.195 | 59.66        | 0.362 | -94.36       |
| 2600       | 0.562 | -158.91      | 1.481  | 37.55        | 0.211 | 59.11        | 0.374 | -97.29       |
| 2800       | 0.558 | -155.91      | 1.385  | 34.30        | 0.229 | 59.13        | 0.388 | -100.28      |
| 3000       | 0.548 | -152.46      | 1.310  | 31.07        | 0.248 | 58.50        | 0.400 | -102.49      |

$V_{CE} = 5\text{ V}$ ,  $I_C = 15\text{ mA}$ ,  $Z_O = 50\ \Omega$

| Freq (MHz) | S11   | $\angle S11$ | S21    | $\angle S21$ | S12   | $\angle S12$ | S22   | $\angle S22$ |
|------------|-------|--------------|--------|--------------|-------|--------------|-------|--------------|
| 100        | 0.680 | -83.50       | 24.897 | 133.56       | 0.029 | 56.21        | 0.704 | -41.82       |
| 200        | 0.639 | -122.13      | 16.056 | 112.77       | 0.040 | 47.85        | 0.468 | -57.53       |
| 400        | 0.621 | -151.34      | 8.769  | 95.48        | 0.052 | 50.10        | 0.300 | -67.15       |
| 600        | 0.623 | -162.54      | 6.015  | 86.49        | 0.064 | 53.63        | 0.258 | -70.98       |
| 800        | 0.620 | -170.29      | 4.606  | 79.25        | 0.079 | 57.27        | 0.244 | -74.71       |
| 1000       | 0.611 | -175.21      | 3.708  | 73.36        | 0.093 | 58.61        | 0.243 | -78.49       |
| 1200       | 0.606 | -179.14      | 3.121  | 67.87        | 0.107 | 60.22        | 0.249 | -80.66       |
| 1400       | 0.599 | 176.96       | 2.697  | 63.02        | 0.122 | 61.45        | 0.262 | -84.17       |
| 1600       | 0.593 | 174.14       | 2.394  | 58.44        | 0.138 | 61.14        | 0.275 | -86.76       |
| 1800       | 0.584 | 170.85       | 2.158  | 54.02        | 0.153 | 61.15        | 0.287 | -89.61       |
| 2000       | 0.577 | 167.75       | 1.973  | 49.36        | 0.168 | 61.74        | 0.298 | -91.80       |
| 2200       | 0.569 | 164.22       | 1.790  | 45.54        | 0.184 | 61.18        | 0.314 | -94.29       |
| 2400       | 0.564 | 160.80       | 1.659  | 41.46        | 0.201 | 60.23        | 0.330 | -97.05       |
| 2600       | 0.556 | 157.53       | 1.542  | 37.83        | 0.216 | 60.12        | 0.342 | -99.52       |
| 2800       | 0.552 | 154.68       | 1.446  | 34.40        | 0.234 | 59.34        | 0.352 | -101.94      |
| 3000       | 0.543 | 151.47       | 1.361  | 31.44        | 0.253 | 58.86        | 0.366 | -103.99      |

$V_{CE} = 5\text{ V}$ ,  $I_C = 20\text{ mA}$ ,  $Z_O = 50\ \Omega$

| Freq (MHz) | S11   | $\angle S11$ | S21    | $\angle S21$ | S12   | $\angle S12$ | S22   | $\angle S22$ |
|------------|-------|--------------|--------|--------------|-------|--------------|-------|--------------|
| 100        | 0.641 | -94.49       | 27.471 | 128.94       | 0.027 | 55.26        | 0.649 | -46.11       |
| 200        | 0.620 | -130.76      | 16.818 | 109.44       | 0.036 | 46.79        | 0.413 | -61.30       |
| 400        | 0.615 | -156.41      | 9.019  | 93.57        | 0.048 | 53.11        | 0.265 | -70.11       |
| 600        | 0.619 | -165.97      | 6.162  | 85.24        | 0.062 | 57.92        | 0.228 | -73.77       |
| 800        | 0.615 | -172.83      | 4.701  | 78.51        | 0.078 | 61.14        | 0.223 | -77.54       |
| 1000       | 0.608 | -177.23      | 3.787  | 72.80        | 0.092 | 61.33        | 0.223 | -81.02       |
| 1200       | 0.605 | 179.19       | 3.189  | 67.44        | 0.108 | 63.68        | 0.231 | -83.24       |
| 1400       | 0.597 | 175.70       | 2.755  | 62.79        | 0.123 | 63.07        | 0.245 | -86.33       |
| 1600       | 0.590 | 172.88       | 2.442  | 58.12        | 0.138 | 62.89        | 0.255 | -88.33       |
| 1800       | 0.581 | 169.98       | 2.201  | 53.81        | 0.156 | 63.03        | 0.272 | -91.87       |
| 2000       | 0.578 | 166.61       | 2.013  | 49.41        | 0.172 | 62.58        | 0.281 | -93.44       |
| 2200       | 0.567 | 163.21       | 1.834  | 45.29        | 0.187 | 61.81        | 0.298 | -95.50       |
| 2400       | 0.564 | 160.39       | 1.691  | 41.48        | 0.204 | 61.15        | 0.311 | -98.00       |
| 2600       | 0.556 | 157.07       | 1.572  | 37.96        | 0.218 | 61.01        | 0.326 | -100.45      |
| 2800       | 0.552 | 153.99       | 1.478  | 34.76        | 0.239 | 59.99        | 0.337 | -102.57      |
| 3000       | 0.544 | 151.04       | 1.389  | 31.49        | 0.256 | 58.80        | 0.349 | -104.89      |

$V_{CE} = 5\text{ V}$ ,  $I_C = 30\text{ mA}$ ,  $Z_O = 50\ \Omega$

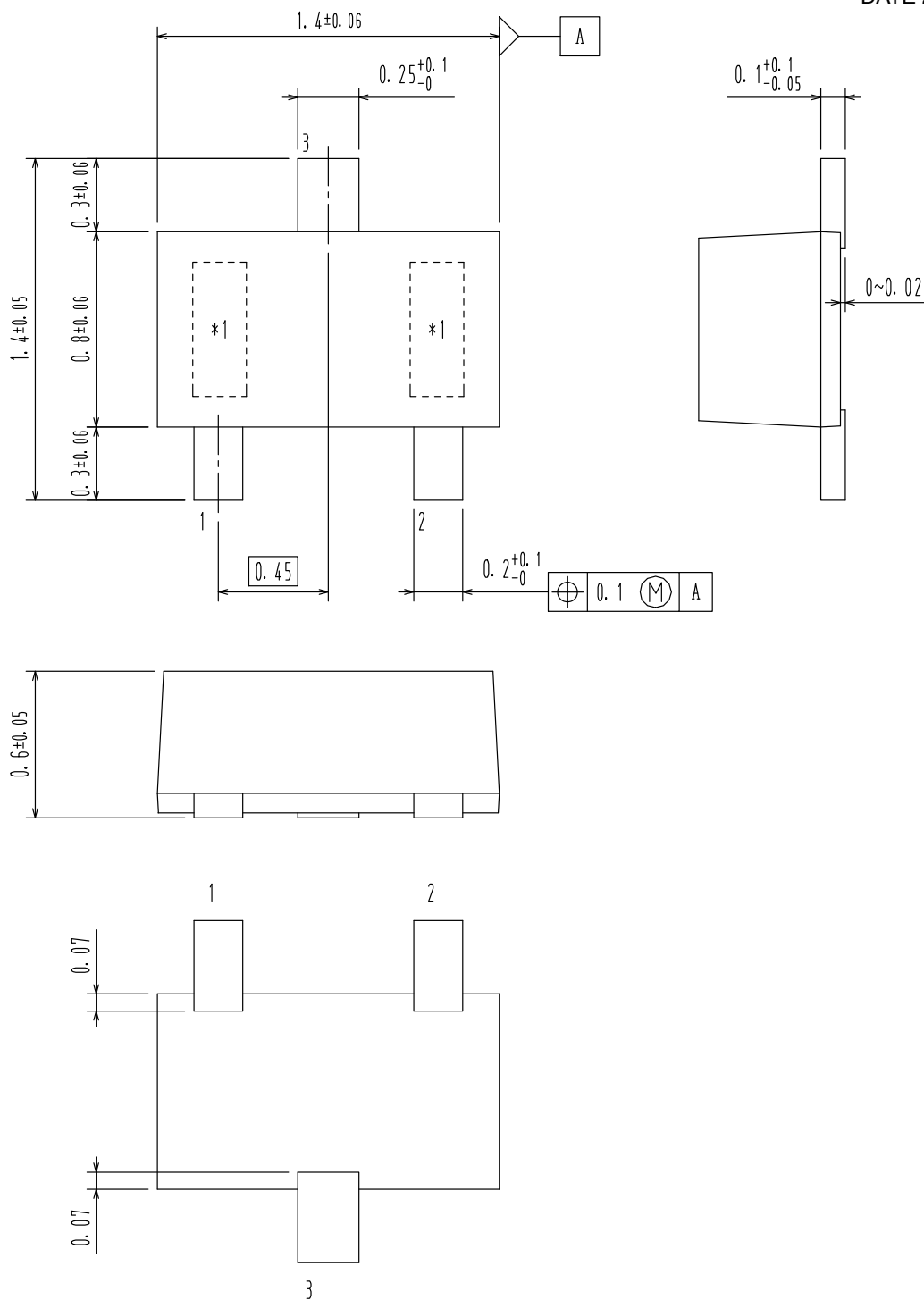
| Freq (MHz) | S11   | $\angle S11$ | S21    | $\angle S21$ | S12   | $\angle S12$ | S22   | $\angle S22$ |
|------------|-------|--------------|--------|--------------|-------|--------------|-------|--------------|
| 100        | 0.606 | -108.75      | 29.954 | 123.54       | 0.022 | 52.56        | 0.574 | -51.26       |
| 200        | 0.604 | -140.73      | 17.448 | 105.68       | 0.031 | 50.23        | 0.355 | -64.86       |
| 400        | 0.610 | -161.95      | 9.185  | 91.52        | 0.044 | 57.91        | 0.229 | -71.81       |
| 600        | 0.617 | -169.73      | 6.244  | 83.80        | 0.061 | 62.49        | 0.202 | -74.91       |
| 800        | 0.612 | -175.60      | 4.752  | 77.41        | 0.077 | 64.49        | 0.201 | -79.23       |
| 1000       | 0.608 | -179.42      | 3.833  | 71.88        | 0.091 | 66.02        | 0.204 | -82.01       |
| 1200       | 0.604 | 177.51       | 3.213  | 66.72        | 0.108 | 65.81        | 0.214 | -84.26       |
| 1400       | 0.598 | 174.16       | 2.786  | 62.07        | 0.124 | 64.91        | 0.229 | -87.74       |
| 1600       | 0.591 | 171.45       | 2.465  | 57.60        | 0.141 | 64.74        | 0.242 | -89.81       |
| 1800       | 0.584 | 168.71       | 2.221  | 53.24        | 0.156 | 64.27        | 0.255 | -92.03       |
| 2000       | 0.582 | 165.57       | 2.027  | 48.84        | 0.173 | 63.95        | 0.266 | -93.76       |
| 2200       | 0.569 | 162.47       | 1.842  | 44.77        | 0.189 | 62.96        | 0.281 | -96.01       |
| 2400       | 0.566 | 159.27       | 1.707  | 41.02        | 0.205 | 62.39        | 0.298 | -98.15       |
| 2600       | 0.560 | 156.39       | 1.589  | 37.71        | 0.221 | 61.62        | 0.312 | -100.74      |
| 2800       | 0.555 | 153.39       | 1.489  | 34.29        | 0.241 | 60.71        | 0.324 | -103.01      |
| 3000       | 0.546 | 150.41       | 1.401  | 31.06        | 0.260 | 59.58        | 0.339 | -104.84      |

$V_{CE} = 5\text{ V}$ ,  $I_C = 50\text{ mA}$ ,  $Z_O = 50\ \Omega$

| Freq (MHz) | S11   | $\angle S11$ | S21    | $\angle S21$ | S12   | $\angle S12$ | S22   | $\angle S22$ |
|------------|-------|--------------|--------|--------------|-------|--------------|-------|--------------|
| 100        | 0.587 | -124.93      | 30.667 | 118.01       | 0.020 | 53.81        | 0.493 | -53.52       |
| 200        | 0.607 | -151.01      | 17.135 | 101.95       | 0.027 | 56.26        | 0.302 | -62.86       |
| 400        | 0.618 | -167.42      | 8.863  | 89.36        | 0.042 | 61.87        | 0.204 | -65.99       |
| 600        | 0.625 | -173.36      | 6.015  | 82.09        | 0.057 | 67.05        | 0.188 | -69.08       |
| 800        | 0.625 | -178.39      | 4.579  | 75.84        | 0.073 | 68.51        | 0.192 | -73.08       |
| 1000       | 0.621 | 178.24       | 3.676  | 70.38        | 0.090 | 67.50        | 0.200 | -76.57       |
| 1200       | 0.617 | 175.49       | 3.102  | 65.41        | 0.106 | 67.96        | 0.213 | -79.88       |
| 1400       | 0.611 | 172.50       | 2.675  | 60.74        | 0.123 | 67.75        | 0.228 | -83.13       |
| 1600       | 0.605 | 170.02       | 2.371  | 56.11        | 0.138 | 67.29        | 0.245 | -85.73       |
| 1800       | 0.598 | 167.32       | 2.131  | 51.76        | 0.155 | 65.91        | 0.261 | -88.36       |
| 2000       | 0.594 | 164.43       | 1.944  | 47.33        | 0.173 | 65.72        | 0.273 | -90.18       |
| 2200       | 0.587 | 161.08       | 1.771  | 43.20        | 0.189 | 64.76        | 0.291 | -93.08       |
| 2400       | 0.582 | 158.20       | 1.636  | 39.59        | 0.204 | 63.82        | 0.308 | -95.85       |
| 2600       | 0.575 | 155.22       | 1.517  | 36.00        | 0.222 | 63.08        | 0.325 | -98.58       |
| 2800       | 0.571 | 151.88       | 1.420  | 32.74        | 0.241 | 62.62        | 0.341 | -100.91      |
| 3000       | 0.564 | 149.04       | 1.345  | 29.50        | 0.259 | 61.30        | 0.351 | -102.73      |

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