

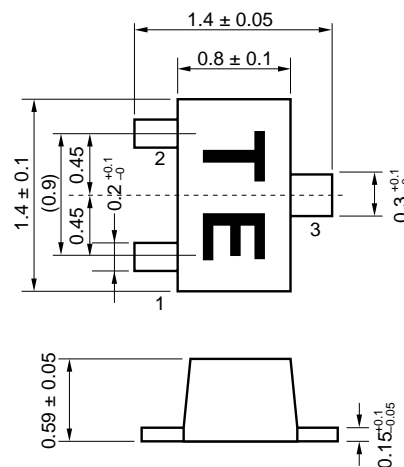
**NPN EPITAXIAL SILICON TRANSISTOR  
FOR HIGH-FREQUENCY LOW-NOISE AMPLIFICATION**

**FEATURE**

- Ultra super mini-mold thin flat package  
(1.4 mm × 0.8 mm × 0.59 mm: TYP.)
- Contains same chip as 2SC5007

**ABSOLUTE MAXIMUM RATINGS (T<sub>A</sub> = 25 °C)**

| PARAMETER                    | SYMBOL           | RATING      | UNIT |
|------------------------------|------------------|-------------|------|
| Collector to Base Voltage    | V <sub>CB0</sub> | 20          | V    |
| Collector to Emitter Voltage | V <sub>CEO</sub> | 10          | V    |
| Emitter to Base Voltage      | V <sub>EBO</sub> | 1.5         | V    |
| Collector Current            | I <sub>C</sub>   | 65          | mA   |
| Total Power Dissipation      | P <sub>T</sub>   | 125         | mW   |
| Junction Temperature         | T <sub>J</sub>   | 150         | °C   |
| Storage Temperature          | T <sub>stg</sub> | -65 to +150 | °C   |

**PACKAGE DIMENSIONS (in mm)****PIN CONNECTIONS**

- 1: Emitter  
2: Base  
3: Collector

**ELECTRICAL CHARACTERISTICS (T<sub>A</sub> = 25 °C)**

| PARAMETER                    | SYMBOL                          | TEST CONDITIONS  | MIN. | TYP. | MAX. | UNIT |
|------------------------------|---------------------------------|--|------|------|------|------|
| Collector Cut-off Current    | I <sub>CBO</sub>                | V <sub>CB</sub> = 10 V, I <sub>E</sub> = 0                             |      |      | 800  | nA   |
| Emitter Cut-off Current      | I <sub>EBO</sub>                | V <sub>EB</sub> = 1 V, I <sub>C</sub> = 0                              |      |      | 800  | nA   |
| DC Current Gain              | h <sub>FE</sub>                 | V <sub>CE</sub> = 3 V, I <sub>C</sub> = 7 mA <sup>Note 1</sup>         | 80   |      | 145  |      |
| Gain Bandwidth Product       | f <sub>T</sub>                  | V <sub>CE</sub> = 3 V, I <sub>C</sub> = 7 mA, f = 1 GHz                | 4.5  | 7.0  |      | GHz  |
| Reverse Transfer Capacitance | C <sub>re</sub>                 | V <sub>CB</sub> = 3 V, I <sub>E</sub> = 0, f = 1 MHz <sup>Note 2</sup> |      |      | 0.9  | pF   |
| Insertion Power Gain         | S <sub>21e</sub>   <sup>2</sup> | V <sub>CE</sub> = 3 V, I <sub>C</sub> = 7 mA, f = 1 GHz                | 10.0 | 12.0 |      | dB   |
| Noise Figure                 | NF                              | V <sub>CE</sub> = 3 V, I <sub>C</sub> = 7 mA, f = 1 GHz                |      | 1.4  | 2.7  | dB   |

**Notes** 1. Pulse measurement P<sub>w</sub> ≤ 350 μs, duty cycle ≤ 2 %

2. Collector to base capacitance measured by capacitance meter (automatic balance bridge method) when emitter pin is connected to the guard pin.

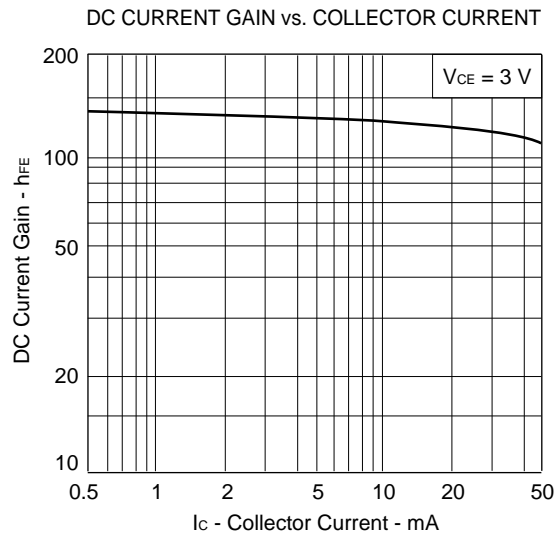
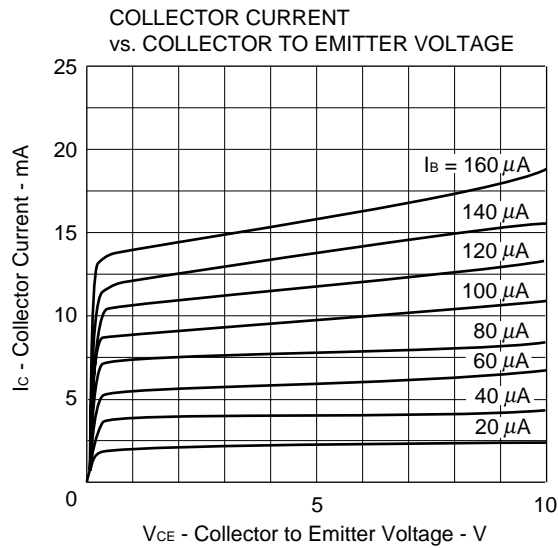
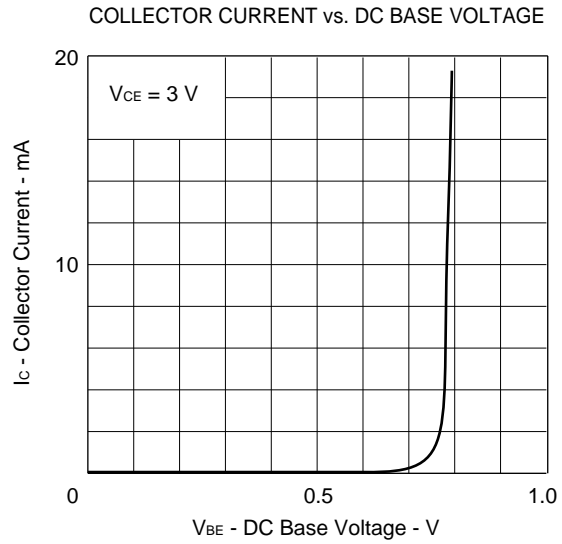
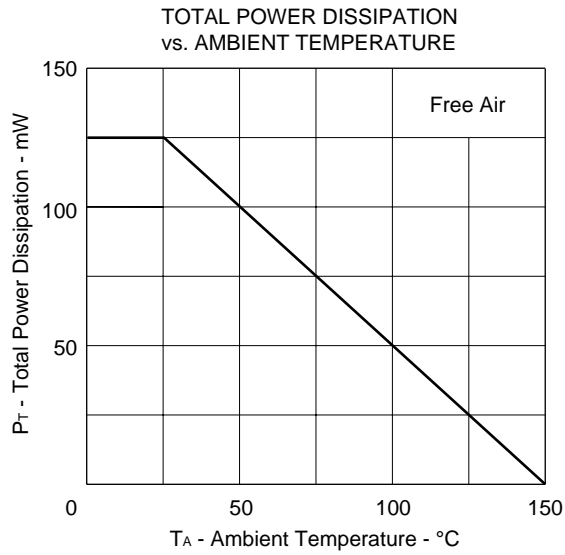
**Because this product uses high-frequency process, avoid excessive input of static electricity, etc.**

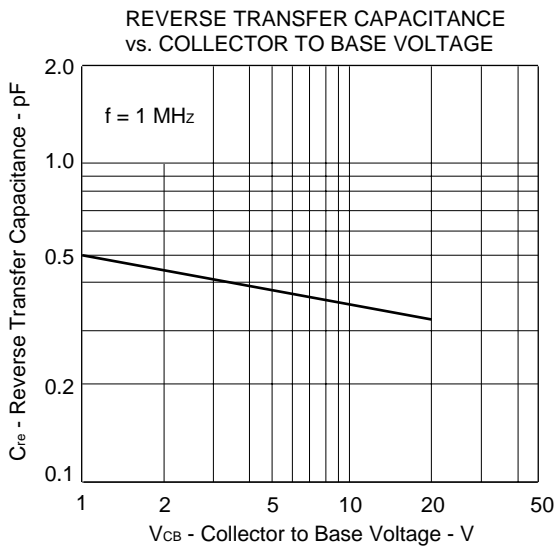
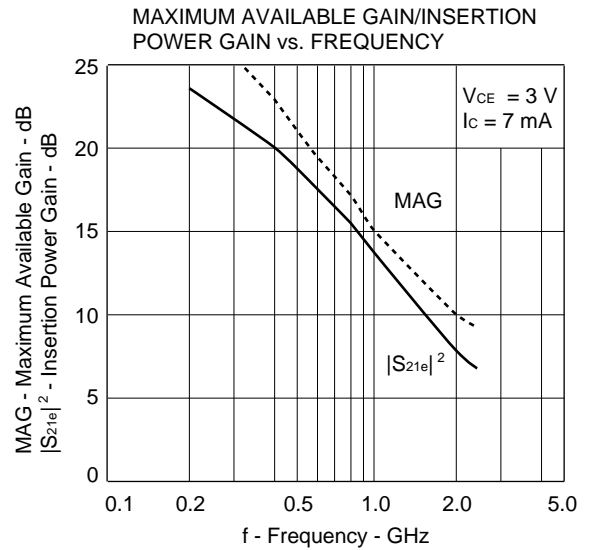
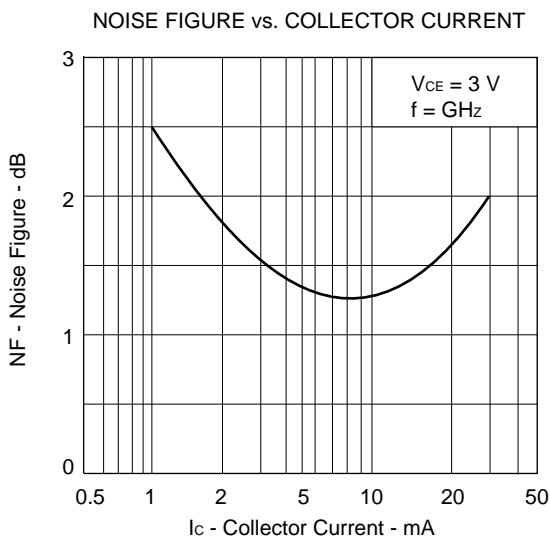
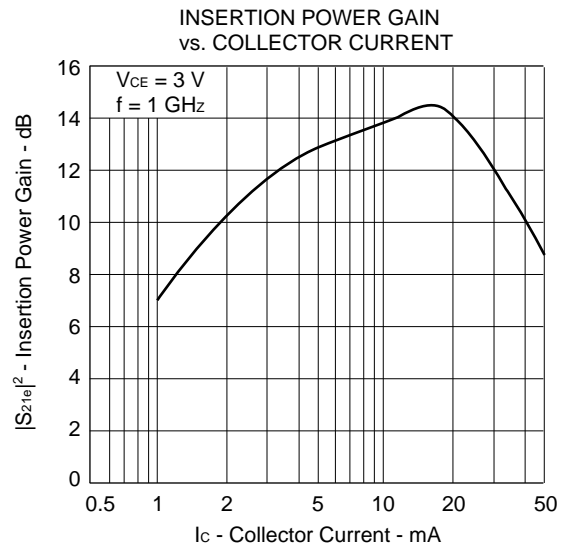
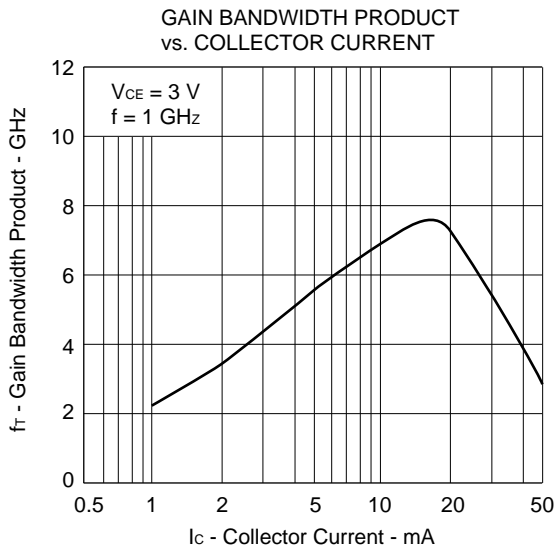
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**h<sub>FE</sub> CLASSIFICATION**

|                 |           |            |
|-----------------|-----------|------------|
| RANK            | EB        | FB         |
| Marking         | TE        | TF         |
| h <sub>FE</sub> | 80 to 110 | 100 to 145 |

**TYPICAL CHARACTERISTICS (T<sub>A</sub> = 25 °C)**





2SC5433 S PARAMETER

V<sub>CE</sub> = 3 V, I<sub>c</sub> = 10 mA, Z<sub>0</sub> = 50 Ω

| FREQUENCY<br>MHz | S <sub>11</sub> |        | S <sub>21</sub> |       | S <sub>12</sub> |      | S <sub>22</sub> |        |
|------------------|-----------------|--------|-----------------|-------|-----------------|------|-----------------|--------|
|                  | MAG             | ANG    | MAG             | ANG   | MAG             | ANG  | MAG             | ANG    |
| 200.00           | 0.593           | -73.5  | 17.349          | 130.6 | 0.036           | 58.5 | 0.701           | -33.6  |
| 400.00           | 0.470           | -115.9 | 10.897          | 108.5 | 0.051           | 53.7 | 0.454           | -43.4  |
| 600.00           | 0.435           | -138.3 | 7.822           | 95.9  | 0.063           | 55.3 | 0.348           | -47.0  |
| 800.00           | 0.418           | -153.3 | 6.134           | 89.3  | 0.075           | 57.9 | 0.300           | -48.0  |
| 1000.00          | 0.418           | -165.0 | 5.060           | 84.4  | 0.087           | 59.6 | 0.270           | -46.9  |
| 1200.00          | 0.431           | -172.7 | 4.321           | 79.2  | 0.100           | 61.1 | 0.243           | -45.7  |
| 1400.00          | 0.438           | -177.4 | 3.713           | 73.9  | 0.115           | 62.5 | 0.219           | -46.7  |
| 1600.00          | 0.432           | 176.8  | 3.234           | 70.3  | 0.129           | 63.8 | 0.196           | -49.6  |
| 1800.00          | 0.438           | 170.0  | 2.853           | 66.8  | 0.139           | 65.3 | 0.179           | -53.7  |
| 2000.00          | 0.461           | 164.5  | 2.564           | 63.4  | 0.150           | 64.6 | 0.164           | -58.5  |
| 2200.00          | 0.483           | 161.1  | 2.350           | 59.0  | 0.162           | 63.6 | 0.148           | -64.3  |
| 2400.00          | 0.499           | 158.4  | 2.213           | 55.1  | 0.178           | 62.5 | 0.134           | -73.7  |
| 2600.00          | 0.512           | 155.5  | 2.095           | 52.9  | 0.195           | 62.6 | 0.130           | -83.7  |
| 2800.00          | 0.529           | 152.8  | 1.922           | 50.8  | 0.207           | 63.5 | 0.127           | -92.6  |
| 3000.00          | 0.547           | 151.0  | 1.785           | 46.8  | 0.213           | 63.1 | 0.125           | -101.2 |

V<sub>CE</sub> = 3 V, I<sub>c</sub> = 7 mA, Z<sub>0</sub> = 50 Ω

| FREQUENCY<br>MHz | S <sub>11</sub> |        | S <sub>21</sub> |       | S <sub>12</sub> |      | S <sub>22</sub> |       |
|------------------|-----------------|--------|-----------------|-------|-----------------|------|-----------------|-------|
|                  | MAG             | ANG    | MAG             | ANG   | MAG             | ANG  | MAG             | ANG   |
| 200.00           | 0.673           | -61.7  | 14.941          | 136.5 | 0.040           | 61.6 | 0.773           | -29.2 |
| 400.00           | 0.523           | -103.4 | 10.008          | 113.4 | 0.058           | 51.9 | 0.527           | -41.0 |
| 600.00           | 0.474           | -127.5 | 7.335           | 99.6  | 0.070           | 51.2 | 0.406           | -46.4 |
| 800.00           | 0.444           | -144.1 | 5.814           | 91.9  | 0.080           | 52.6 | 0.349           | -48.3 |
| 1000.00          | 0.435           | -157.2 | 4.839           | 86.4  | 0.091           | 54.3 | 0.313           | -47.9 |
| 1200.00          | 0.444           | -166.4 | 4.135           | 80.8  | 0.102           | 56.2 | 0.281           | -47.0 |
| 1400.00          | 0.450           | -172.3 | 3.562           | 75.0  | 0.116           | 58.0 | 0.254           | -47.9 |
| 1600.00          | 0.442           | -178.6 | 3.109           | 71.0  | 0.128           | 60.2 | 0.228           | -50.6 |
| 1800.00          | 0.445           | 173.9  | 2.741           | 67.5  | 0.137           | 62.2 | 0.211           | -54.4 |
| 2000.00          | 0.466           | 167.7  | 2.474           | 63.9  | 0.146           | 61.8 | 0.195           | -58.5 |
| 2200.00          | 0.489           | 163.8  | 2.266           | 59.2  | 0.159           | 61.1 | 0.178           | -63.8 |
| 2400.00          | 0.505           | 160.7  | 2.136           | 55.1  | 0.173           | 60.3 | 0.164           | -72.0 |
| 2600.00          | 0.518           | 157.7  | 2.021           | 53.0  | 0.190           | 61.0 | 0.159           | -80.7 |
| 2800.00          | 0.534           | 154.6  | 1.855           | 50.6  | 0.201           | 62.2 | 0.157           | -88.3 |
| 3000.00          | 0.551           | 152.6  | 1.722           | 46.5  | 0.207           | 61.9 | 0.153           | -95.5 |

V<sub>CE</sub> = 3 V, I<sub>c</sub> = 5 mA, Z<sub>0</sub> = 50 Ω

| FREQUENCY<br>MHz | S <sub>11</sub> |        | S <sub>21</sub> |       | S <sub>12</sub> |      | S <sub>22</sub> |       |
|------------------|-----------------|--------|-----------------|-------|-----------------|------|-----------------|-------|
|                  | MAG             | ANG    | MAG             | ANG   | MAG             | ANG  | MAG             | ANG   |
| 200.00           | 0.759           | -50.6  | 12.082          | 142.5 | 0.045           | 62.8 | 0.844           | -24.2 |
| 400.00           | 0.593           | -89.5  | 8.740           | 119.7 | 0.067           | 51.4 | 0.615           | -36.8 |
| 600.00           | 0.533           | -115.2 | 6.641           | 104.4 | 0.080           | 47.9 | 0.483           | -44.2 |
| 800.00           | 0.487           | -132.9 | 5.367           | 95.5  | 0.088           | 47.5 | 0.418           | -47.3 |
| 1000.00          | 0.467           | -147.3 | 4.496           | 89.2  | 0.097           | 48.2 | 0.376           | -47.5 |
| 1200.00          | 0.468           | -158.3 | 3.871           | 83.0  | 0.107           | 49.6 | 0.338           | -46.9 |
| 1400.00          | 0.473           | -165.5 | 3.337           | 76.7  | 0.118           | 52.2 | 0.306           | -48.2 |
| 1600.00          | 0.462           | -172.6 | 2.925           | 72.2  | 0.127           | 55.0 | 0.277           | -50.6 |
| 1800.00          | 0.460           | 179.1  | 2.585           | 68.2  | 0.135           | 57.1 | 0.258           | -54.1 |
| 2000.00          | 0.479           | 171.9  | 2.349           | 64.7  | 0.142           | 57.2 | 0.241           | -57.8 |
| 2200.00          | 0.502           | 167.4  | 2.139           | 59.5  | 0.154           | 57.4 | 0.224           | -62.4 |
| 2400.00          | 0.518           | 163.9  | 2.017           | 55.1  | 0.166           | 57.3 | 0.209           | -69.5 |
| 2600.00          | 0.529           | 160.4  | 1.908           | 52.8  | 0.182           | 58.6 | 0.204           | -76.9 |
| 2800.00          | 0.544           | 157.1  | 1.752           | 50.1  | 0.192           | 60.3 | 0.202           | -83.4 |
| 3000.00          | 0.562           | 154.8  | 1.631           | 45.8  | 0.198           | 60.5 | 0.195           | -89.3 |

2SC5433 S PARAMETER

V<sub>CE</sub> = 3 V, I<sub>c</sub> = 3 mA, Z<sub>0</sub> = 50 Ω

| FREQUENCY<br>MHz | S <sub>11</sub> |        | S <sub>21</sub> |       | S <sub>12</sub> |      | S <sub>22</sub> |       |
|------------------|-----------------|--------|-----------------|-------|-----------------|------|-----------------|-------|
|                  | MAG             | ANG    | MAG             | ANG   | MAG             | ANG  | MAG             | ANG   |
| 200.00           | 0.849           | -39.1  | 8.593           | 149.9 | 0.049           | 67.9 | 0.910           | -18.1 |
| 400.00           | 0.690           | -72.9  | 6.799           | 128.1 | 0.078           | 53.3 | 0.728           | -30.3 |
| 600.00           | 0.626           | -99.3  | 5.461           | 111.5 | 0.096           | 46.0 | 0.595           | -39.2 |
| 800.00           | 0.565           | -117.8 | 4.546           | 101.0 | 0.104           | 42.3 | 0.525           | -44.2 |
| 1000.00          | 0.528           | -133.4 | 3.893           | 93.5  | 0.111           | 40.7 | 0.478           | -45.5 |
| 1200.00          | 0.515           | -146.4 | 3.387           | 86.5  | 0.118           | 40.9 | 0.433           | -45.6 |
| 1400.00          | 0.515           | -155.4 | 2.949           | 79.2  | 0.126           | 43.1 | 0.394           | -47.1 |
| 1600.00          | 0.500           | -163.5 | 2.631           | 74.4  | 0.130           | 46.1 | 0.360           | -49.6 |
| 1800.00          | 0.490           | -172.8 | 2.342           | 69.8  | 0.134           | 48.8 | 0.339           | -53.2 |
| 2000.00          | 0.505           | 178.7  | 2.095           | 65.4  | 0.137           | 49.3 | 0.322           | -56.7 |
| 2200.00          | 0.528           | 173.1  | 1.910           | 59.7  | 0.146           | 50.5 | 0.302           | -60.7 |
| 2400.00          | 0.543           | 168.9  | 1.808           | 54.9  | 0.156           | 51.9 | 0.287           | -66.9 |
| 2600.00          | 0.553           | 164.9  | 1.713           | 52.3  | 0.169           | 53.8 | 0.283           | -73.6 |
| 2800.00          | 0.566           | 161.0  | 1.571           | 49.3  | 0.177           | 56.6 | 0.284           | -79.0 |
| 3000.00          | 0.583           | 158.0  | 1.464           | 44.8  | 0.182           | 57.8 | 0.276           | -84.0 |

V<sub>CE</sub> = 3 V, I<sub>c</sub> = 1 mA, Z<sub>0</sub> = 50 Ω

| FREQUENCY<br>MHz | S <sub>11</sub> |        | S <sub>21</sub> |       | S <sub>12</sub> |      | S <sub>22</sub> |       |
|------------------|-----------------|--------|-----------------|-------|-----------------|------|-----------------|-------|
|                  | MAG             | ANG    | MAG             | ANG   | MAG             | ANG  | MAG             | ANG   |
| 200.00           | 0.955           | -23.9  | 3.465           | 160.1 | 0.053           | 73.5 | 0.977           | -9.3  |
| 400.00           | 0.852           | -47.2  | 3.060           | 142.4 | 0.097           | 60.6 | 0.894           | -17.6 |
| 600.00           | 0.803           | -71.0  | 2.702           | 126.3 | 0.130           | 49.7 | 0.802           | -26.5 |
| 800.00           | 0.759           | -88.9  | 2.480           | 113.4 | 0.147           | 41.4 | 0.754           | -33.8 |
| 1000.00          | 0.710           | -104.8 | 2.263           | 103.8 | 0.159           | 34.0 | 0.723           | -37.4 |
| 1200.00          | 0.667           | -119.3 | 1.995           | 95.1  | 0.167           | 29.3 | 0.677           | -39.2 |
| 1400.00          | 0.653           | -131.7 | 1.791           | 85.4  | 0.169           | 27.8 | 0.630           | -41.7 |
| 1600.00          | 0.632           | -141.9 | 1.654           | 78.2  | 0.164           | 27.1 | 0.589           | -45.0 |
| 1800.00          | 0.602           | -152.6 | 1.508           | 72.1  | 0.154           | 26.6 | 0.565           | -49.1 |
| 2000.00          | 0.599           | -163.9 | 1.359           | 66.4  | 0.147           | 25.0 | 0.549           | -53.3 |
| 2200.00          | 0.621           | -172.4 | 1.256           | 59.2  | 0.143           | 26.8 | 0.529           | -57.3 |
| 2400.00          | 0.635           | -178.4 | 1.200           | 53.7  | 0.139           | 30.1 | 0.511           | -63.4 |
| 2600.00          | 0.639           | 176.3  | 1.137           | 50.5  | 0.138           | 34.9 | 0.513           | -70.0 |
| 2800.00          | 0.645           | 171.0  | 1.038           | 46.5  | 0.136           | 41.1 | 0.522           | -75.1 |
| 3000.00          | 0.659           | 166.4  | 0.976           | 41.4  | 0.135           | 46.7 | 0.512           | -79.8 |

V<sub>CE</sub> = 1 V, I<sub>c</sub> = 5 mA, Z<sub>0</sub> = 50 Ω

| FREQUENCY<br>MHz | S <sub>11</sub> |        | S <sub>21</sub> |       | S <sub>12</sub> |      | S <sub>22</sub> |        |
|------------------|-----------------|--------|-----------------|-------|-----------------|------|-----------------|--------|
|                  | MAG             | ANG    | MAG             | ANG   | MAG             | ANG  | MAG             | ANG    |
| 200.00           | 0.732           | -59.6  | 11.569          | 138.4 | 0.055           | 60.0 | 0.790           | -31.6  |
| 400.00           | 0.588           | -101.6 | 8.006           | 115.1 | 0.081           | 47.5 | 0.536           | -48.4  |
| 600.00           | 0.543           | -126.5 | 5.948           | 100.2 | 0.094           | 44.0 | 0.403           | -58.2  |
| 800.00           | 0.511           | -143.6 | 4.748           | 91.7  | 0.102           | 43.7 | 0.334           | -63.0  |
| 1000.00          | 0.501           | -156.8 | 3.960           | 85.6  | 0.112           | 44.2 | 0.283           | -64.7  |
| 1200.00          | 0.511           | -166.4 | 3.400           | 79.2  | 0.123           | 45.5 | 0.243           | -66.6  |
| 1400.00          | 0.516           | -172.5 | 2.936           | 73.0  | 0.135           | 47.9 | 0.213           | -70.5  |
| 1600.00          | 0.505           | -179.0 | 2.602           | 69.1  | 0.145           | 50.7 | 0.189           | -75.6  |
| 1800.00          | 0.506           | 173.1  | 2.296           | 65.0  | 0.153           | 52.4 | 0.170           | -81.5  |
| 2000.00          | 0.527           | 166.8  | 2.047           | 61.0  | 0.161           | 52.3 | 0.157           | -88.6  |
| 2200.00          | 0.548           | 162.8  | 1.865           | 55.7  | 0.173           | 52.1 | 0.144           | -99.3  |
| 2400.00          | 0.564           | 159.5  | 1.761           | 51.5  | 0.186           | 52.1 | 0.144           | -110.9 |
| 2600.00          | 0.574           | 156.2  | 1.661           | 49.1  | 0.202           | 53.0 | 0.150           | -119.7 |
| 2800.00          | 0.588           | 153.1  | 1.521           | 46.6  | 0.210           | 54.2 | 0.156           | -127.5 |
| 3000.00          | 0.605           | 151.0  | 1.415           | 42.1  | 0.217           | 54.2 | 0.163           | -134.9 |

2SC5433 S PARAMETER

$V_{CE} = 1\text{ V}$ ,  $I_c = 3\text{ mA}$ ,  $Z_0 = 50\ \Omega$

| FREQUENCY<br>MHz | S <sub>11</sub> |        | S <sub>21</sub> |       | S <sub>12</sub> |      | S <sub>22</sub> |        |
|------------------|-----------------|--------|-----------------|-------|-----------------|------|-----------------|--------|
|                  | MAG             | ANG    | MAG             | ANG   | MAG             | ANG  | MAG             | ANG    |
| 200.00           | 0.829           | -45.4  | 8.382           | 146.5 | 0.061           | 64.5 | 0.878           | -23.6  |
| 400.00           | 0.673           | -82.9  | 6.392           | 123.5 | 0.097           | 49.0 | 0.662           | -39.2  |
| 600.00           | 0.619           | -109.4 | 5.005           | 106.9 | 0.115           | 41.6 | 0.521           | -50.1  |
| 800.00           | 0.568           | -127.9 | 4.115           | 96.8  | 0.122           | 38.0 | 0.444           | -56.0  |
| 1000.00          | 0.542           | -143.0 | 3.493           | 89.2  | 0.130           | 36.2 | 0.387           | -58.3  |
| 1200.00          | 0.540           | -154.9 | 3.029           | 82.2  | 0.138           | 36.4 | 0.340           | -59.8  |
| 1400.00          | 0.543           | -162.7 | 2.607           | 75.3  | 0.146           | 38.7 | 0.301           | -63.0  |
| 1600.00          | 0.529           | -170.3 | 2.338           | 70.4  | 0.149           | 41.4 | 0.271           | -67.1  |
| 1800.00          | 0.522           | -179.2 | 2.072           | 65.8  | 0.153           | 43.4 | 0.251           | -71.8  |
| 2000.00          | 0.540           | 173.2  | 1.850           | 61.3  | 0.156           | 43.6 | 0.234           | -76.9  |
| 2200.00          | 0.563           | 168.2  | 1.692           | 55.5  | 0.165           | 44.5 | 0.215           | -84.6  |
| 2400.00          | 0.577           | 164.4  | 1.598           | 51.0  | 0.176           | 45.8 | 0.209           | -93.4  |
| 2600.00          | 0.586           | 160.6  | 1.511           | 48.4  | 0.188           | 47.7 | 0.213           | -101.4 |
| 2800.00          | 0.600           | 157.1  | 1.382           | 45.4  | 0.195           | 49.7 | 0.216           | -108.0 |
| 3000.00          | 0.616           | 154.4  | 1.288           | 40.7  | 0.199           | 50.6 | 0.217           | -114.8 |

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

| FREQUENCY<br>MHz | S <sub>11</sub> |        | S <sub>21</sub> |       | S <sub>12</sub> |      | S <sub>22</sub> |       |
|------------------|-----------------|--------|-----------------|-------|-----------------|------|-----------------|-------|
|                  | MAG             | ANG    | MAG             | ANG   | MAG             | ANG  | MAG             | ANG   |
| 200.00           | 0.947           | -26.7  | 3.453           | 158.0 | 0.068           | 72.9 | 0.967           | -11.9 |
| 400.00           | 0.835           | -52.6  | 2.996           | 138.7 | 0.123           | 57.4 | 0.863           | -22.3 |
| 600.00           | 0.787           | -77.5  | 2.609           | 121.6 | 0.161           | 45.7 | 0.757           | -32.9 |
| 800.00           | 0.738           | -95.9  | 2.363           | 108.5 | 0.178           | 36.8 | 0.699           | -40.9 |
| 1000.00          | 0.692           | -112.1 | 2.118           | 98.6  | 0.192           | 29.0 | 0.654           | -44.9 |
| 1200.00          | 0.656           | -126.6 | 1.853           | 89.4  | 0.200           | 24.3 | 0.602           | -47.4 |
| 1400.00          | 0.648           | -138.2 | 1.663           | 79.7  | 0.201           | 22.9 | 0.554           | -50.7 |
| 1600.00          | 0.629           | -148.0 | 1.528           | 72.7  | 0.194           | 21.7 | 0.513           | -55.0 |
| 1800.00          | 0.603           | -158.4 | 1.385           | 66.6  | 0.182           | 20.6 | 0.490           | -59.6 |
| 2000.00          | 0.606           | -169.1 | 1.247           | 60.9  | 0.173           | 18.5 | 0.472           | -64.2 |
| 2200.00          | 0.629           | -176.8 | 1.156           | 53.8  | 0.169           | 19.6 | 0.448           | -69.6 |
| 2400.00          | 0.643           | 177.7  | 1.100           | 48.3  | 0.163           | 22.6 | 0.437           | -77.1 |
| 2600.00          | 0.649           | 172.8  | 1.039           | 45.1  | 0.159           | 26.0 | 0.445           | -84.3 |
| 2800.00          | 0.656           | 167.8  | 0.945           | 41.3  | 0.153           | 31.0 | 0.452           | -89.8 |
| 3000.00          | 0.672           | 163.6  | 0.886           | 35.9  | 0.151           | 35.5 | 0.444           | -95.4 |

[MEMO]

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NEC devices are classified into the following three quality grades:

"Standard", "Special", and "Specific". The Specific quality grade applies only to devices developed based on a customer designated "quality assurance program" for a specific application. The recommended applications of a device depend on its quality grade, as indicated below. Customers must check the quality grade of each device before using it in a particular application.

Standard: Computers, office equipment, communications equipment, test and measurement equipment, audio and visual equipment, home electronic appliances, machine tools, personal electronic equipment and industrial robots

Special: Transportation equipment (automobiles, trains, ships, etc.), traffic control systems, anti-disaster systems, anti-crime systems, safety equipment and medical equipment (not specifically designed for life support)

Specific: Aircrafts, aerospace equipment, submersible repeaters, nuclear reactor control systems, life support systems or medical equipment for life support, etc.

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Anti-radioactive design is not implemented in this product.