# NSVF4017SG4

## *Advance Information*
## RF Transistor for Low Noise Amplifier

### 12 V, 100 mA, $f_T$ = 10 GHz typ.

This RF transistor is designed for low noise amplifier applications. MCPH package is suitable for use under high temperature environment because it has superior heat radiation characteristics. This RF transistor is AEC−Q101 qualified and PPAP capable for automotive applications.

**Features**

- Low−noise Use: NF = 1.2 dB typ. (f = 1 GHz)
- High Cut−off Frequency: $f_T$ = 10 GHz typ. ($V_{CE}$ = 5 V)
- High Gain: $|S21e|^2$ = 17 dB typ. (f = 1 GHz)
- MCPH4 Package is Pin−compatible with SC−82FL
- AEC−Q101 Qualified and PPAP Capable
- These Devices are Pb−Free, Halogen Free/BFR Free and are RoHS Compliant

**Typical Applications**

- Low Noise Amplifier for Digital Radio
- Low Noise Amplifier for TV
- Low Noise Amplifier for FM Radio
- RF Amplifier for UHF Application

**MAXIMUM RATINGS** at $T_A$ = 25°C

| Rating | Symbol | Value | Unit |
|---|---|---|---|
| Collector to Base Voltage | $V_{CBO}$ | 20 | V |
| Collector to Emitter Voltage | $V_{CEO}$ | 12 | V |
| Emitter to Base Voltage | $V_{EBO}$ | 2 | V |
| Collector Current | $I_C$ | 100 | mA |
| Collector Dissipation | $P_C$ | 450 | mW |
| Operating Junction and Storage Temperature | $T_J$, $T_{stg}$ | −55 to +150 | °C |

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.

This document contains information on a new product. Specifications and information herein are subject to change without notice.
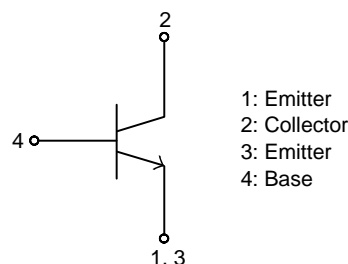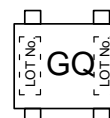
## ON Semiconductor®

**SC−82FL**
**MCPH4**
**CASE 419AR**

**ELECTRICAL CONNECTION**
**NPN**



1: Emitter
2: Collector
3: Emitter
4: Base

**MARKING DIAGRAM**



GQ = Specific Device Code
XX = Lot Number

**ORDERING INFORMATION**

| Device | Package | Shipping† |
|---|---|---|
| NSVF4015SG4T1G | SC−82FL (Pb−Free) | 3000 / Tape & Reel |

†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.

# NSVF4017SG4

**Table 1. ELECTRICAL CHARACTERISTICS** at $T_A = 25°C$ (Note 1)

| Parameter | Symbol | Conditions | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| | | | | Value | | |
| Collector Cutoff Current | $I_{CBO}$ | $V_{CB} = 5$ V, $I_E = 0$ A | | | 1.0 | μA |
| Emitter Cutoff Current | $I_{EBO}$ | $V_{EB} = 1$ V, $I_C = 0$ A | | | 1.0 | μA |
| DC Current Gain | $h_{FE}$ | $V_{CE} = 5$ V, $I_C = 50$ mA | 60 | | 150 | |
| Gain–Bandwidth Product | $f_T$ | $V_{CE} = 5$ V, $I_C = 30$ mA | 8 | 10 | | GHz |
| Forward Transfer Gain | $\mid S21e \mid^2$ | $V_{CE} = 5$ V, $I_C = 30$ mA, $f = 1$ GHz | 14 | 17 | | dB |
| Noise Figure | NF | $V_{CE} = 5$ V, $I_C = 10$ mA, $f = 1$ GHz | | 1.2 | 1.8 | 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.
1. Pay attention to handling since it is liable to be affected by static electricity due to the high–frequency process adopted.
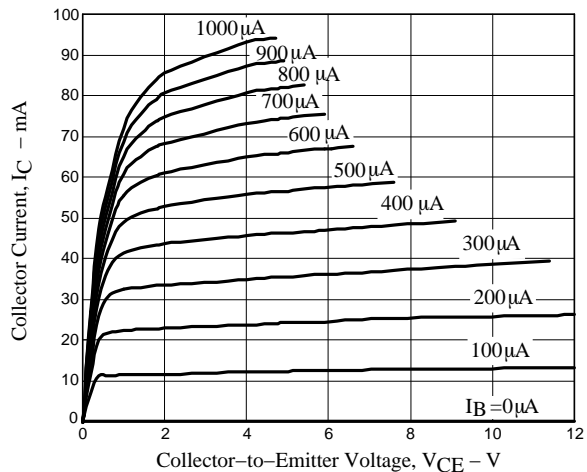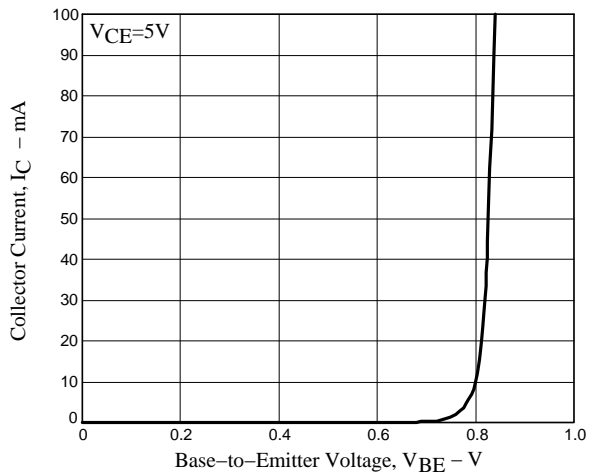
## TYPICAL CHARACTERISTICS

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

**Figure 2. $I_C$ vs. $V_{BE}$**
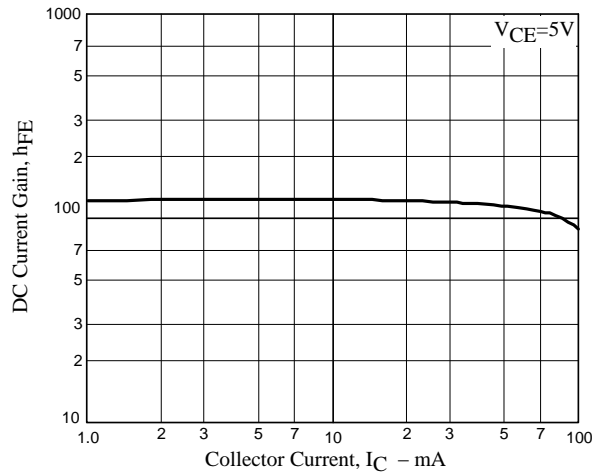
**Figure 3. $h_{FE}$ vs. $I_C$**
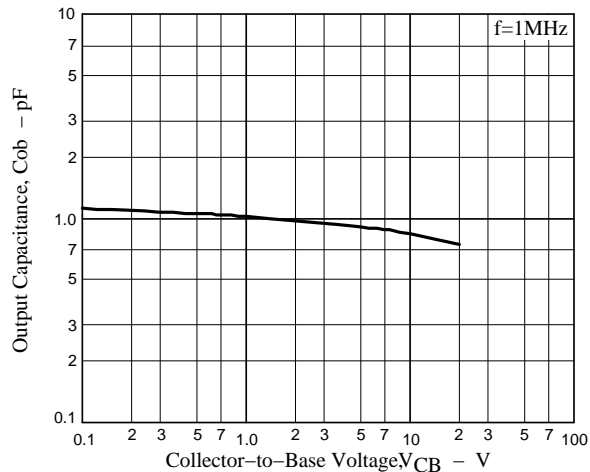
**Figure 4. $C_{ob}$ vs. $V_{CB}$**
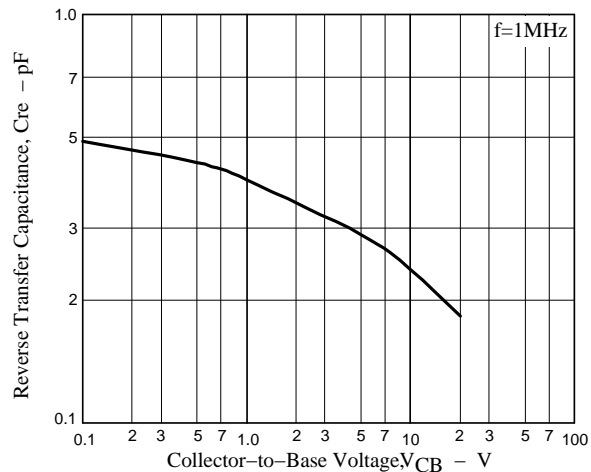
**Figure 5. Cre vs. $V_{CB}$**
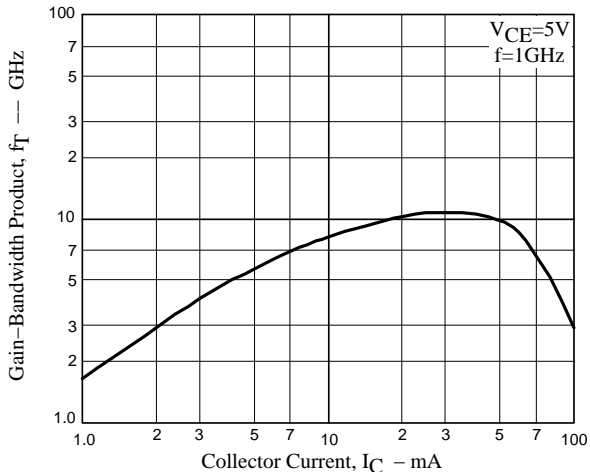
**Figure 6. $f_T$ vs. $I_C$**

## TYPICAL CHARACTERISTICS
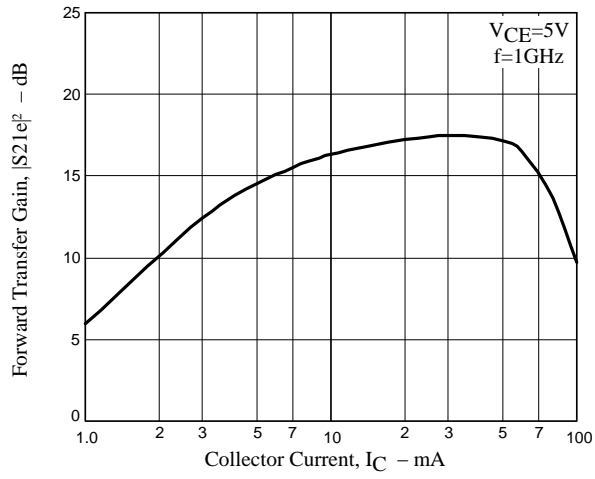


**Figure 7.  |S21e|$^2$ vs. I$_C$**
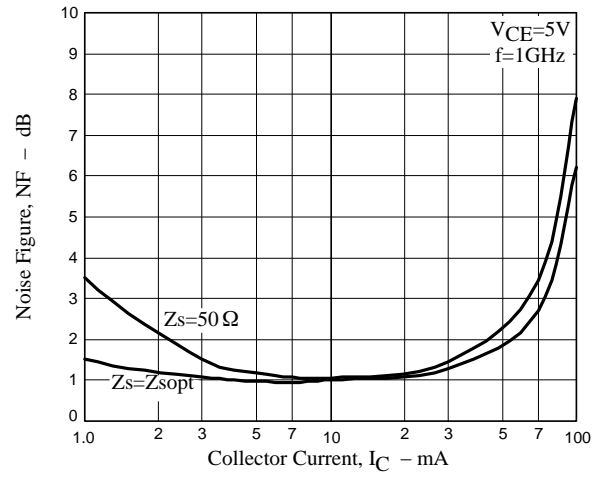


**Figure 8. NF vs. I$_C$**
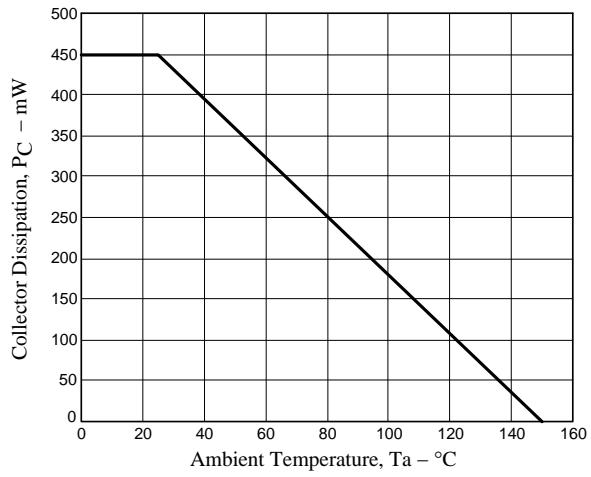


**Figure 9. P$_C$ vs. T$_A$**

**S Parameters (Common emitter)**

$V_{CE}=3V$, $I_C=10mA$

| Freq(MHz) | \|S11\| | ∠S11 | \|S21\| | ∠S21 | \|S12\| | ∠S12 | \|S22\| | ∠S22 |
|---|---|---|---|---|---|---|---|---|
| 100 | 0.763 | -38.0 | 22.980 | 155.3 | 0.018 | 71.5 | 0.923 | -22.7 |
| 200 | 0.733 | -71.8 | 20.122 | 135.9 | 0.031 | 58.6 | 0.798 | -40.2 |
| 300 | 0.702 | -98.5 | 17.019 | 121.3 | 0.038 | 50.6 | 0.703 | -53.5 |
| 400 | 0.690 | -116.5 | 14.110 | 110.7 | 0.043 | 46.3 | 0.626 | -62.9 |
| 500 | 0.701 | -127.2 | 12.307 | 103.5 | 0.048 | 45.0 | 0.592 | -67.4 |
| 600 | 0.679 | -137.1 | 10.431 | 97.5 | 0.050 | 43.7 | 0.531 | -72.0 |
| 700 | 0.663 | -145.1 | 8.949 | 92.7 | 0.052 | 43.6 | 0.484 | -75.2 |
| 800 | 0.651 | -152.1 | 7.848 | 88.4 | 0.054 | 43.9 | 0.446 | -78.7 |
| 900 | 0.646 | -157.6 | 6.993 | 84.8 | 0.057 | 44.0 | 0.422 | -81.6 |
| 1000 | 0.639 | -162.3 | 6.272 | 81.9 | 0.059 | 45.1 | 0.404 | -84.4 |
| 1200 | 0.635 | -170.2 | 5.211 | 76.5 | 0.063 | 47.1 | 0.375 | -88.7 |
| 1400 | 0.634 | -176.5 | 4.462 | 71.7 | 0.068 | 49.1 | 0.362 | -92.4 |
| 1600 | 0.633 | 177.9 | 3.907 | 67.3 | 0.073 | 51.2 | 0.352 | -95.9 |
| 1800 | 0.636 | 173.2 | 3.463 | 63.4 | 0.079 | 52.7 | 0.351 | -99.0 |
| 2000 | 0.637 | 169.1 | 3.122 | 59.5 | 0.085 | 54.3 | 0.352 | -102.3 |
| 2200 | 0.637 | 164.9 | 2.838 | 55.8 | 0.091 | 55.5 | 0.356 | -105.2 |
| 2400 | 0.638 | 161.0 | 2.604 | 52.1 | 0.098 | 56.5 | 0.364 | -108.1 |
| 2600 | 0.639 | 157.3 | 2.413 | 48.7 | 0.105 | 57.2 | 0.372 | -111.1 |
| 2800 | 0.642 | 153.7 | 2.244 | 45.1 | 0.112 | 57.9 | 0.384 | -113.5 |
| 3000 | 0.641 | 150.0 | 2.095 | 41.8 | 0.120 | 57.8 | 0.396 | -116.2 |

S Parameters (Common emitter)

V$_{CE}$=3V, I$_{C}$=30mA

| Freq(MHz) | \|S11\| | ∠S11 | \|S21\| | ∠S21 | \|S12\| | ∠S12 | \|S22\| | ∠S22 |
|---|---|---|---|---|---|---|---|---|
| 100 | 0.542 | -76.9 | 42.437 | 142.3 | 0.013 | 63.9 | 0.801 | -36.2 |
| 200 | 0.588 | -118.2 | 30.735 | 119.6 | 0.020 | 53.9 | 0.602 | -56.8 |
| 300 | 0.614 | -138.6 | 22.677 | 106.5 | 0.024 | 52.3 | 0.505 | -69.3 |
| 400 | 0.626 | -150.0 | 17.506 | 98.4 | 0.027 | 53.8 | 0.448 | -77.9 |
| 500 | 0.635 | -155.0 | 14.522 | 92.7 | 0.031 | 55.6 | 0.423 | -79.8 |
| 600 | 0.630 | -161.3 | 12.035 | 88.5 | 0.035 | 57.8 | 0.381 | -83.6 |
| 700 | 0.627 | -166.4 | 10.249 | 85.2 | 0.038 | 59.8 | 0.350 | -86.9 |
| 800 | 0.626 | -170.9 | 8.902 | 82.2 | 0.042 | 61.3 | 0.327 | -90.4 |
| 900 | 0.627 | -174.7 | 7.888 | 79.5 | 0.045 | 62.3 | 0.314 | -93.2 |
| 1000 | 0.626 | -177.8 | 7.046 | 77.3 | 0.049 | 63.4 | 0.303 | -96.1 |
| 1200 | 0.629 | 176.7 | 5.835 | 73.1 | 0.057 | 65.4 | 0.287 | -100.4 |
| 1400 | 0.631 | 171.9 | 4.976 | 69.2 | 0.065 | 66.2 | 0.282 | -103.8 |
| 1600 | 0.633 | 167.7 | 4.344 | 65.6 | 0.073 | 66.5 | 0.280 | -106.9 |
| 1800 | 0.637 | 163.9 | 3.854 | 62.0 | 0.082 | 66.8 | 0.281 | -109.7 |
| 2000 | 0.638 | 160.5 | 3.474 | 58.7 | 0.090 | 66.6 | 0.287 | -112.5 |
| 2200 | 0.638 | 156.8 | 3.160 | 55.5 | 0.099 | 66.5 | 0.293 | -115.1 |
| 2400 | 0.640 | 153.5 | 2.900 | 52.2 | 0.108 | 65.8 | 0.302 | -117.3 |
| 2600 | 0.640 | 150.2 | 2.684 | 49.0 | 0.117 | 65.2 | 0.312 | -119.5 |
| 2800 | 0.642 | 146.9 | 2.499 | 45.9 | 0.125 | 64.3 | 0.324 | -121.6 |
| 3000 | 0.640 | 143.6 | 2.337 | 42.8 | 0.134 | 63.6 | 0.337 | -123.8 |

V$_{CE}$=3V, I$_{C}$=50mA

| Freq(MHz) | \|S11\| | ∠S11 | \|S21\| | ∠S21 | \|S12\| | ∠S12 | \|S22\| | ∠S22 |
|---|---|---|---|---|---|---|---|---|
| 100 | 0.514 | -110.3 | 43.067 | 133.3 | 0.011 | 59.0 | 0.700 | -40.9 |
| 200 | 0.607 | -141.4 | 29.221 | 112.3 | 0.016 | 53.1 | 0.495 | -58.9 |
| 300 | 0.642 | -154.9 | 20.818 | 101.0 | 0.019 | 55.3 | 0.417 | -68.7 |
| 400 | 0.657 | -162.5 | 15.865 | 94.1 | 0.023 | 58.5 | 0.376 | -75.5 |
| 500 | 0.660 | -165.8 | 13.033 | 88.9 | 0.027 | 61.4 | 0.360 | -75.7 |
| 600 | 0.659 | -170.3 | 10.812 | 85.3 | 0.030 | 64.0 | 0.330 | -78.7 |
| 700 | 0.658 | -174.3 | 9.213 | 82.3 | 0.034 | 66.1 | 0.307 | -81.5 |
| 800 | 0.660 | -177.8 | 7.995 | 79.5 | 0.038 | 67.8 | 0.291 | -84.5 |
| 900 | 0.663 | 179.2 | 7.097 | 77.1 | 0.042 | 68.6 | 0.284 | -87.1 |
| 1000 | 0.662 | 176.6 | 6.333 | 74.8 | 0.046 | 69.6 | 0.277 | -89.7 |
| 1200 | 0.666 | 172.0 | 5.247 | 70.8 | 0.055 | 70.9 | 0.268 | -93.7 |
| 1400 | 0.670 | 167.9 | 4.475 | 67.0 | 0.063 | 71.3 | 0.269 | -97.1 |
| 1600 | 0.673 | 164.1 | 3.897 | 63.4 | 0.072 | 71.5 | 0.270 | -100.2 |
| 1800 | 0.676 | 160.6 | 3.469 | 59.9 | 0.080 | 71.4 | 0.275 | -103.3 |
| 2000 | 0.678 | 157.5 | 3.113 | 56.5 | 0.089 | 71.0 | 0.284 | -106.5 |
| 2200 | 0.679 | 154.1 | 2.836 | 53.1 | 0.098 | 70.4 | 0.293 | -109.3 |
| 2400 | 0.681 | 150.9 | 2.598 | 49.8 | 0.107 | 69.8 | 0.304 | -111.9 |
| 2600 | 0.682 | 147.8 | 2.404 | 46.6 | 0.116 | 68.9 | 0.316 | -114.4 |
| 2800 | 0.683 | 144.6 | 2.241 | 43.4 | 0.125 | 67.8 | 0.330 | -117.0 |
| 3000 | 0.682 | 141.3 | 2.094 | 40.3 | 0.135 | 66.8 | 0.346 | -119.6 |

**S Parameters (Common emitter)**

$V_{CE}$=3V, $I_C$=80mA

| Freq(MHz) | \|S11\| | ∠S11 | \|S21\| | ∠S21 | \|S12\| | ∠S12 | \|S22\| | ∠S22 |
|---|---|---|---|---|---|---|---|---|
| 100 | 0.662 | -146.8 | 29.622 | 120.5 | 0.011 | 47.5 | 0.455 | -44.8 |
| 200 | 0.751 | -164.0 | 16.762 | 102.8 | 0.014 | 46.9 | 0.315 | -52.9 |
| 300 | 0.774 | -171.2 | 11.369 | 94.2 | 0.017 | 52.5 | 0.288 | -57.1 |
| 400 | 0.783 | -175.6 | 8.549 | 88.9 | 0.019 | 58.6 | 0.279 | -61.3 |
| 500 | 0.778 | -178.0 | 6.977 | 84.2 | 0.023 | 62.0 | 0.283 | -61.0 |
| 600 | 0.778 | 179.0 | 5.801 | 81.0 | 0.027 | 66.0 | 0.272 | -62.9 |
| 700 | 0.778 | 176.3 | 4.965 | 78.3 | 0.030 | 68.6 | 0.265 | -65.2 |
| 800 | 0.780 | 173.9 | 4.316 | 75.7 | 0.034 | 70.2 | 0.260 | -68.0 |
| 900 | 0.782 | 171.6 | 3.846 | 73.3 | 0.038 | 71.9 | 0.263 | -70.7 |
| 1000 | 0.782 | 169.6 | 3.439 | 71.0 | 0.042 | 73.0 | 0.263 | -73.7 |
| 1200 | 0.787 | 166.0 | 2.860 | 66.6 | 0.051 | 74.5 | 0.268 | -78.5 |
| 1400 | 0.789 | 162.5 | 2.454 | 62.4 | 0.059 | 75.3 | 0.278 | -83.1 |
| 1600 | 0.792 | 159.2 | 2.139 | 58.4 | 0.068 | 75.7 | 0.288 | -87.5 |
| 1800 | 0.796 | 156.0 | 1.912 | 54.5 | 0.077 | 75.7 | 0.300 | -91.7 |
| 2000 | 0.797 | 153.1 | 1.721 | 50.8 | 0.086 | 75.4 | 0.314 | -96.1 |
| 2200 | 0.797 | 149.9 | 1.569 | 47.1 | 0.095 | 75.0 | 0.328 | -100.0 |
| 2400 | 0.799 | 146.8 | 1.436 | 43.4 | 0.105 | 74.1 | 0.343 | -103.8 |
| 2600 | 0.800 | 143.8 | 1.331 | 39.9 | 0.115 | 73.4 | 0.359 | -107.4 |
| 2800 | 0.801 | 140.6 | 1.238 | 36.5 | 0.125 | 72.2 | 0.377 | -110.9 |
| 3000 | 0.799 | 137.4 | 1.157 | 33.3 | 0.135 | 71.1 | 0.394 | -114.4 |

$V_{CE}$=5V, $I_C$=10mA

| Freq(MHz) | \|S11\| | ∠S11 | \|S21\| | ∠S21 | \|S12\| | ∠S12 | \|S22\| | ∠S22 |
|---|---|---|---|---|---|---|---|---|
| 100 | 0.771 | -35.8 | 23.180 | 156.3 | 0.016 | 72.7 | 0.933 | -20.3 |
| 200 | 0.741 | -68.2 | 20.484 | 137.3 | 0.028 | 60.4 | 0.820 | -36.2 |
| 300 | 0.706 | -94.4 | 17.503 | 122.8 | 0.035 | 53.0 | 0.722 | -48.5 |
| 400 | 0.691 | -112.7 | 14.633 | 111.9 | 0.040 | 48.5 | 0.656 | -57.3 |
| 500 | 0.701 | -123.8 | 12.817 | 104.7 | 0.044 | 47.2 | 0.622 | -61.7 |
| 600 | 0.677 | -133.9 | 10.891 | 98.4 | 0.047 | 46.0 | 0.560 | -66.0 |
| 700 | 0.659 | -142.2 | 9.349 | 93.5 | 0.049 | 45.5 | 0.513 | -68.9 |
| 800 | 0.646 | -149.5 | 8.209 | 89.1 | 0.051 | 45.7 | 0.474 | -72.0 |
| 900 | 0.640 | -155.2 | 7.315 | 85.3 | 0.053 | 46.1 | 0.449 | -74.7 |
| 1000 | 0.633 | -160.1 | 6.557 | 82.3 | 0.055 | 46.9 | 0.428 | -77.4 |
| 1200 | 0.628 | -168.2 | 5.459 | 76.8 | 0.060 | 49.0 | 0.399 | -81.4 |
| 1400 | 0.625 | -174.7 | 4.663 | 71.9 | 0.064 | 51.0 | 0.385 | -84.9 |
| 1600 | 0.625 | 179.5 | 4.086 | 67.5 | 0.069 | 53.3 | 0.373 | -88.4 |
| 1800 | 0.627 | 174.7 | 3.616 | 63.5 | 0.075 | 54.8 | 0.372 | -91.5 |
| 2000 | 0.628 | 170.5 | 3.260 | 59.5 | 0.080 | 56.6 | 0.372 | -94.9 |
| 2200 | 0.628 | 166.2 | 2.960 | 55.7 | 0.086 | 57.9 | 0.376 | -98.0 |
| 2400 | 0.630 | 162.2 | 2.715 | 52.0 | 0.093 | 58.9 | 0.383 | -101.1 |
| 2600 | 0.631 | 158.5 | 2.517 | 48.5 | 0.100 | 59.8 | 0.391 | -104.3 |
| 2800 | 0.634 | 154.8 | 2.337 | 44.9 | 0.107 | 60.4 | 0.402 | -107.0 |
| 3000 | 0.633 | 151.1 | 2.180 | 41.5 | 0.115 | 60.6 | 0.416 | -109.9 |

## NSVF4017SG4

S Parameters (Common emitter)

$V_{CE}=5V$, $I_C=30mA$

| Freq(MHz) | \|S11\| | ∠S11 | \|S21\| | ∠S21 | \|S12\| | ∠S12 | \|S22\| | ∠S22 |
|---|---|---|---|---|---|---|---|---|
| 100 | 0.542 | -70.6 | 43.013 | 144.3 | 0.012 | 66.3 | 0.826 | -31.8 |
| 200 | 0.577 | -112.5 | 32.303 | 121.4 | 0.018 | 56.3 | 0.636 | -50.4 |
| 300 | 0.599 | -134.2 | 24.068 | 107.8 | 0.022 | 55.0 | 0.539 | -61.6 |
| 400 | 0.611 | -146.5 | 18.636 | 99.4 | 0.025 | 55.5 | 0.478 | -69.3 |
| 500 | 0.620 | -151.9 | 15.457 | 93.6 | 0.029 | 57.7 | 0.454 | -71.4 |
| 600 | 0.614 | -158.6 | 12.813 | 89.2 | 0.033 | 59.6 | 0.410 | -74.7 |
| 700 | 0.611 | -164.1 | 10.898 | 85.6 | 0.036 | 61.5 | 0.376 | -77.5 |
| 800 | 0.610 | -168.7 | 9.470 | 82.5 | 0.039 | 62.9 | 0.351 | -80.5 |
| 900 | 0.611 | -172.7 | 8.381 | 79.8 | 0.043 | 64.1 | 0.337 | -83.2 |
| 1000 | 0.610 | -176.0 | 7.487 | 77.5 | 0.047 | 65.3 | 0.324 | -85.8 |
| 1200 | 0.612 | 178.3 | 6.186 | 73.2 | 0.054 | 66.8 | 0.306 | -89.7 |
| 1400 | 0.615 | 173.4 | 5.277 | 69.2 | 0.062 | 67.7 | 0.299 | -93.1 |
| 1600 | 0.617 | 169.0 | 4.596 | 65.6 | 0.070 | 68.2 | 0.296 | -96.3 |
| 1800 | 0.620 | 165.1 | 4.085 | 62.0 | 0.078 | 68.6 | 0.297 | -99.3 |
| 2000 | 0.622 | 161.6 | 3.669 | 58.7 | 0.086 | 68.4 | 0.301 | -102.5 |
| 2200 | 0.622 | 158.0 | 3.344 | 55.5 | 0.095 | 68.3 | 0.307 | -105.1 |
| 2400 | 0.625 | 154.6 | 3.065 | 52.1 | 0.103 | 67.8 | 0.316 | -107.9 |
| 2600 | 0.625 | 151.3 | 2.835 | 48.8 | 0.112 | 67.2 | 0.326 | -110.5 |
| 2800 | 0.628 | 148.0 | 2.638 | 45.7 | 0.120 | 66.5 | 0.339 | -113.0 |
| 3000 | 0.626 | 144.6 | 2.464 | 42.6 | 0.129 | 65.6 | 0.352 | -115.5 |

$V_{CE}=5V$, $I_C=50mA$

| Freq(MHz) | \|S11\| | ∠S11 | \|S21\| | ∠S21 | \|S12\| | ∠S12 | \|S22\| | ∠S22 |
|---|---|---|---|---|---|---|---|---|
| 100 | 0.479 | -97.2 | 42.927 | 137.2 | 0.010 | 63.4 | 0.761 | -35.0 |
| 200 | 0.566 | -132.9 | 32.978 | 115.4 | 0.015 | 56.7 | 0.560 | -51.6 |
| 300 | 0.603 | -148.8 | 23.718 | 103.2 | 0.018 | 58.0 | 0.485 | -60.6 |
| 400 | 0.620 | -157.8 | 18.120 | 95.7 | 0.021 | 60.4 | 0.427 | -66.9 |
| 500 | 0.625 | -161.4 | 14.893 | 90.4 | 0.025 | 63.7 | 0.410 | -68.0 |
| 600 | 0.624 | -166.7 | 12.324 | 86.4 | 0.029 | 66.0 | 0.375 | -70.7 |
| 700 | 0.624 | -171.0 | 10.482 | 83.2 | 0.032 | 68.0 | 0.348 | -73.2 |
| 800 | 0.626 | -174.8 | 9.088 | 80.4 | 0.036 | 69.2 | 0.328 | -75.9 |
| 900 | 0.628 | -178.1 | 8.053 | 77.9 | 0.040 | 70.4 | 0.317 | -78.4 |
| 1000 | 0.628 | 179.1 | 7.184 | 75.6 | 0.044 | 70.9 | 0.308 | -80.9 |
| 1200 | 0.633 | 174.2 | 5.943 | 71.5 | 0.052 | 72.2 | 0.295 | -84.6 |
| 1400 | 0.636 | 169.8 | 5.061 | 67.7 | 0.060 | 72.7 | 0.292 | -88.2 |
| 1600 | 0.640 | 165.9 | 4.407 | 64.1 | 0.069 | 72.7 | 0.292 | -91.5 |
| 1800 | 0.643 | 162.3 | 3.917 | 60.6 | 0.077 | 72.6 | 0.295 | -94.7 |
| 2000 | 0.645 | 159.1 | 3.518 | 57.2 | 0.086 | 72.3 | 0.301 | -98.1 |
| 2200 | 0.646 | 155.6 | 3.202 | 54.0 | 0.094 | 71.8 | 0.309 | -101.1 |
| 2400 | 0.648 | 152.4 | 2.931 | 50.6 | 0.103 | 71.1 | 0.319 | -104.0 |
| 2600 | 0.650 | 149.3 | 2.708 | 47.3 | 0.112 | 70.3 | 0.331 | -106.8 |
| 2800 | 0.652 | 146.0 | 2.520 | 44.2 | 0.121 | 69.3 | 0.344 | -109.6 |
| 3000 | 0.650 | 142.7 | 2.353 | 41.1 | 0.130 | 68.2 | 0.358 | -112.5 |

S Parameters (Common emitter)

$V_{CE}=5V, I_C=80mA$

| Freq(MHz) | \|S11\| | ∠S11 | \|S21\| | ∠S21 | \|S12\| | ∠S12 | \|S22\| | ∠S22 |
|---|---|---|---|---|---|---|---|---|
| 100 | 0.558 | -133.0 | 39.014 | 127.8 | 0.009 | 54.5 | 0.618 | -33.7 |
| 200 | 0.671 | -155.6 | 23.364 | 107.6 | 0.012 | 52.6 | 0.457 | -41.5 |
| 300 | 0.704 | -165.1 | 16.107 | 97.6 | 0.014 | 57.5 | 0.415 | -45.4 |
| 400 | 0.718 | -170.7 | 12.150 | 91.5 | 0.017 | 62.9 | 0.395 | -49.0 |
| 500 | 0.716 | -173.4 | 9.907 | 86.7 | 0.021 | 66.8 | 0.385 | -50.4 |
| 600 | 0.717 | -177.0 | 8.214 | 83.3 | 0.024 | 69.5 | 0.378 | -52.4 |
| 700 | 0.718 | 179.9 | 7.015 | 80.4 | 0.028 | 72.5 | 0.364 | -54.4 |
| 800 | 0.720 | 177.1 | 6.091 | 77.8 | 0.031 | 73.9 | 0.354 | -57.0 |
| 900 | 0.723 | 174.5 | 5.413 | 75.3 | 0.035 | 75.7 | 0.351 | -59.7 |
| 1000 | 0.723 | 172.3 | 4.829 | 72.9 | 0.039 | 76.8 | 0.346 | -62.4 |
| 1200 | 0.728 | 168.3 | 4.009 | 68.8 | 0.047 | 78.1 | 0.343 | -67.0 |
| 1400 | 0.731 | 164.7 | 3.423 | 64.7 | 0.055 | 78.9 | 0.347 | -71.8 |
| 1600 | 0.735 | 161.2 | 2.987 | 60.8 | 0.063 | 78.9 | 0.352 | -76.2 |
| 1800 | 0.738 | 157.9 | 2.662 | 57.1 | 0.072 | 79.1 | 0.359 | -80.6 |
| 2000 | 0.740 | 155.0 | 2.393 | 53.5 | 0.081 | 78.7 | 0.369 | -85.3 |
| 2200 | 0.741 | 151.7 | 2.179 | 50.0 | 0.090 | 78.2 | 0.379 | -89.5 |
| 2400 | 0.743 | 148.6 | 1.993 | 46.4 | 0.099 | 77.4 | 0.391 | -93.5 |
| 2600 | 0.744 | 145.6 | 1.843 | 43.0 | 0.109 | 76.5 | 0.404 | -97.4 |
| 2800 | 0.746 | 142.4 | 1.716 | 39.6 | 0.119 | 75.4 | 0.418 | -101.3 |
| 3000 | 0.744 | 139.2 | 1.601 | 36.3 | 0.129 | 74.2 | 0.433 | -105.1 |

$V_{CE}=8V, I_C=10mA$

| Freq(MHz) | \|S11\| | ∠S11 | \|S21\| | ∠S21 | \|S12\| | ∠S12 | \|S22\| | ∠S22 |
|---|---|---|---|---|---|---|---|---|
| 100 | 0.784 | -33.9 | 22.973 | 157.1 | 0.014 | 73.5 | 0.941 | -18.1 |
| 200 | 0.754 | -64.8 | 20.491 | 138.6 | 0.025 | 62.4 | 0.839 | -32.6 |
| 300 | 0.715 | -90.5 | 17.690 | 124.1 | 0.032 | 55.0 | 0.739 | -44.1 |
| 400 | 0.697 | -109.0 | 14.905 | 113.1 | 0.037 | 50.3 | 0.685 | -52.2 |
| 500 | 0.704 | -120.4 | 13.108 | 105.8 | 0.041 | 49.3 | 0.652 | -56.5 |
| 600 | 0.678 | -130.9 | 11.176 | 99.3 | 0.044 | 47.7 | 0.591 | -60.6 |
| 700 | 0.659 | -139.5 | 9.599 | 94.2 | 0.046 | 47.3 | 0.544 | -63.3 |
| 800 | 0.645 | -146.9 | 8.439 | 89.7 | 0.048 | 47.3 | 0.504 | -66.1 |
| 900 | 0.638 | -152.9 | 7.523 | 85.8 | 0.050 | 47.5 | 0.478 | -68.7 |
| 1000 | 0.629 | -158.0 | 6.746 | 82.7 | 0.052 | 48.6 | 0.457 | -71.2 |
| 1200 | 0.623 | -166.3 | 5.618 | 77.1 | 0.056 | 50.5 | 0.427 | -75.0 |
| 1400 | 0.621 | -173.1 | 4.797 | 72.1 | 0.060 | 52.6 | 0.411 | -78.5 |
| 1600 | 0.620 | -179.0 | 4.199 | 67.5 | 0.065 | 55.0 | 0.399 | -81.8 |
| 1800 | 0.622 | 176.1 | 3.717 | 63.4 | 0.071 | 56.9 | 0.398 | -85.2 |
| 2000 | 0.623 | 171.8 | 3.348 | 59.4 | 0.076 | 58.6 | 0.397 | -88.5 |
| 2200 | 0.623 | 167.4 | 3.039 | 55.5 | 0.082 | 60.1 | 0.401 | -91.7 |
| 2400 | 0.625 | 163.5 | 2.786 | 51.8 | 0.089 | 61.4 | 0.407 | -95.0 |
| 2600 | 0.626 | 159.6 | 2.581 | 48.2 | 0.096 | 62.2 | 0.415 | -98.3 |
| 2800 | 0.629 | 155.9 | 2.395 | 44.6 | 0.103 | 62.8 | 0.426 | -101.3 |
| 3000 | 0.629 | 152.2 | 2.233 | 41.1 | 0.111 | 63.0 | 0.439 | -104.4 |

S Parameters (Common emitter)

$V_{CE}$=8V, $I_C$=30mA

| Freq(MHz) | \|S11\| | ∠S11 | \|S21\| | ∠S21 | \|S12\| | ∠S12 | \|S22\| | ∠S22 |
|---|---|---|---|---|---|---|---|---|
| 100 | 0.556 | -65.2 | 43.179 | 145.8 | 0.011 | 67.8 | 0.846 | -28.0 |
| 200 | 0.578 | -106.8 | 32.894 | 123.0 | 0.017 | 57.9 | 0.669 | -44.6 |
| 300 | 0.594 | -129.7 | 24.775 | 109.1 | 0.021 | 56.2 | 0.584 | -54.7 |
| 400 | 0.604 | -142.8 | 19.256 | 100.3 | 0.024 | 57.0 | 0.512 | -61.6 |
| 500 | 0.614 | -148.7 | 15.997 | 94.4 | 0.028 | 59.0 | 0.488 | -63.9 |
| 600 | 0.606 | -155.8 | 13.266 | 89.8 | 0.031 | 60.8 | 0.443 | -66.9 |
| 700 | 0.603 | -161.6 | 11.285 | 86.1 | 0.034 | 62.5 | 0.409 | -69.3 |
| 800 | 0.602 | -166.5 | 9.802 | 82.9 | 0.037 | 64.2 | 0.382 | -72.0 |
| 900 | 0.602 | -170.7 | 8.672 | 80.0 | 0.041 | 65.4 | 0.366 | -74.3 |
| 1000 | 0.600 | -174.1 | 7.739 | 77.6 | 0.044 | 66.3 | 0.352 | -76.7 |
| 1200 | 0.603 | 179.9 | 6.401 | 73.3 | 0.051 | 68.1 | 0.333 | -80.3 |
| 1400 | 0.605 | 174.9 | 5.453 | 69.2 | 0.059 | 69.2 | 0.325 | -83.7 |
| 1600 | 0.607 | 170.4 | 4.753 | 65.4 | 0.066 | 69.8 | 0.321 | -87.0 |
| 1800 | 0.611 | 166.4 | 4.215 | 61.8 | 0.074 | 70.0 | 0.321 | -90.2 |
| 2000 | 0.613 | 162.9 | 3.791 | 58.4 | 0.082 | 69.9 | 0.325 | -93.4 |
| 2200 | 0.614 | 159.2 | 3.445 | 55.1 | 0.090 | 70.1 | 0.330 | -96.5 |
| 2400 | 0.616 | 155.8 | 3.155 | 51.7 | 0.099 | 69.6 | 0.339 | -99.4 |
| 2600 | 0.617 | 152.4 | 2.916 | 48.4 | 0.107 | 69.1 | 0.349 | -102.4 |
| 2800 | 0.619 | 149.1 | 2.711 | 45.2 | 0.115 | 68.5 | 0.361 | -105.3 |
| 3000 | 0.619 | 145.7 | 2.531 | 42.0 | 0.124 | 67.5 | 0.375 | -108.2 |

$V_{CE}$=8V, $I_C$=50mA

| Freq(MHz) | \|S11\| | ∠S11 | \|S21\| | ∠S21 | \|S12\| | ∠S12 | \|S22\| | ∠S22 |
|---|---|---|---|---|---|---|---|---|
| 100 | 0.477 | -88.8 | 42.926 | 139.6 | 0.009 | 65.5 | 0.793 | -30.4 |
| 200 | 0.554 | -127.0 | 34.154 | 117.2 | 0.014 | 59.2 | 0.603 | -45.1 |
| 300 | 0.589 | -144.5 | 24.758 | 104.4 | 0.017 | 59.1 | 0.529 | -53.1 |
| 400 | 0.606 | -154.4 | 18.954 | 96.6 | 0.020 | 61.9 | 0.478 | -58.7 |
| 500 | 0.613 | -158.4 | 15.585 | 91.2 | 0.024 | 64.8 | 0.453 | -60.2 |
| 600 | 0.611 | -164.1 | 12.888 | 87.0 | 0.027 | 67.3 | 0.416 | -62.6 |
| 700 | 0.611 | -168.8 | 10.954 | 83.7 | 0.031 | 69.1 | 0.388 | -64.8 |
| 800 | 0.613 | -172.8 | 9.503 | 80.7 | 0.034 | 70.4 | 0.366 | -67.2 |
| 900 | 0.616 | -176.3 | 8.407 | 78.1 | 0.038 | 71.5 | 0.355 | -69.5 |
| 1000 | 0.615 | -179.2 | 7.494 | 75.7 | 0.042 | 72.3 | 0.343 | -71.9 |
| 1200 | 0.619 | 175.7 | 6.192 | 71.6 | 0.049 | 73.7 | 0.329 | -75.5 |
| 1400 | 0.623 | 171.2 | 5.272 | 67.7 | 0.057 | 74.1 | 0.324 | -79.0 |
| 1600 | 0.626 | 167.2 | 4.586 | 64.0 | 0.065 | 74.5 | 0.323 | -82.4 |
| 1800 | 0.631 | 163.5 | 4.071 | 60.4 | 0.073 | 74.4 | 0.325 | -85.8 |
| 2000 | 0.633 | 160.2 | 3.658 | 57.0 | 0.081 | 74.0 | 0.331 | -89.4 |
| 2200 | 0.634 | 156.7 | 3.322 | 53.7 | 0.090 | 73.7 | 0.337 | -92.7 |
| 2400 | 0.637 | 153.5 | 3.041 | 50.3 | 0.099 | 73.0 | 0.347 | -95.9 |
| 2600 | 0.638 | 150.3 | 2.809 | 47.0 | 0.107 | 72.2 | 0.358 | -99.1 |
| 2800 | 0.641 | 147.0 | 2.611 | 43.8 | 0.116 | 71.3 | 0.371 | -102.3 |
| 3000 | 0.640 | 143.7 | 2.435 | 40.7 | 0.125 | 70.4 | 0.386 | -105.5 |

# NSVF4017SG4

## PACKAGE DIMENSIONS

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