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# NSVF3007SG3

## RF Transistor for Low Noise Amplifier

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 :  $NF = 1.2 \text{ dB typ. (} f = 1 \text{ GHz)}$
- High cut-off frequency :  $f_T = 8 \text{ GHz typ. (} V_{CE} = 5 \text{ V)}$
- High gain :  $|S_{21e}|^2 = 12 \text{ dB typ. (} f = 1 \text{ GHz)}$
- AEC-Q101 qualified and PPAP capable
- MCPH3 package is pin-compatible with SC-70FL
- Pb-Free, Halogen Free and RoHS compliance

### Typical Applications

- Low Noise Amplifier for FM Radio
- Low Noise Amplifier for RKE
- RF Amplifier for ADAS

### SPECIFICATIONS

#### ABSOLUTE MAXIMUM RATING at $T_a = 25^\circ\text{C}$ (Note 1)

| Parameter                                  | 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                          | $I_C$          | 30          | mA               |
| Collector Dissipation                      | $P_C$          | 350         | mW               |
| Operating Junction and Storage Temperature | $T_j, T_{stg}$ | -55 to +150 | $^\circ\text{C}$ |

Note 1 : 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.

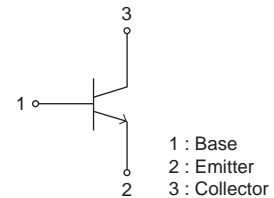


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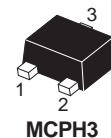
www.onsemi.com

12 V, 30 mA  
 $f_T = 8 \text{ GHz typ.}$   
RF Transistor

### ELECTRICAL CONNECTION NPN



### MARKING



MCPH3



### ORDERING INFORMATION

See detailed ordering and shipping information on page 10 of this data sheet.

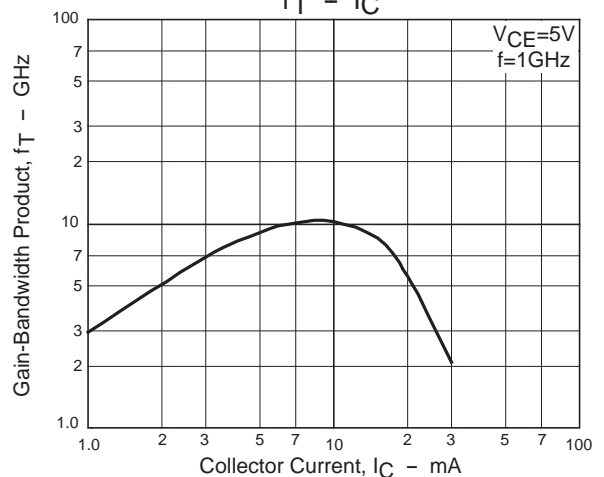
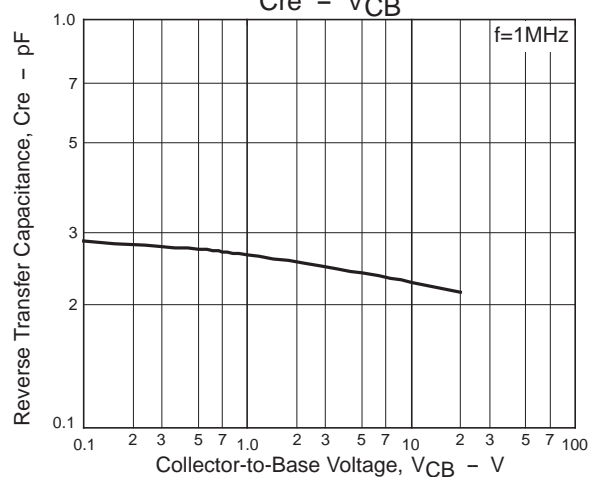
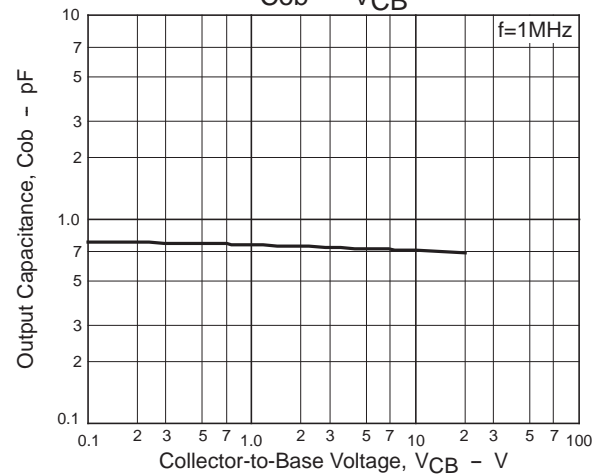
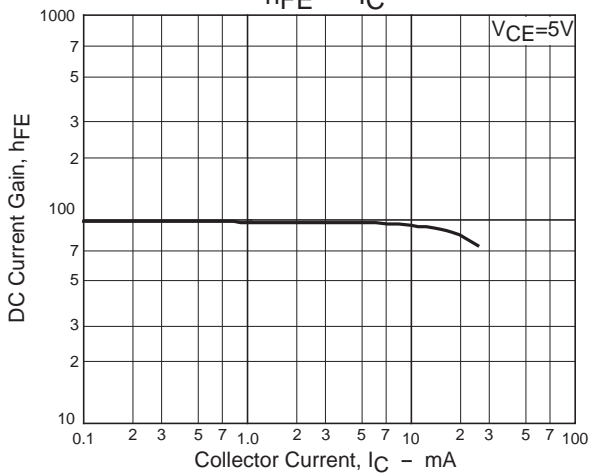
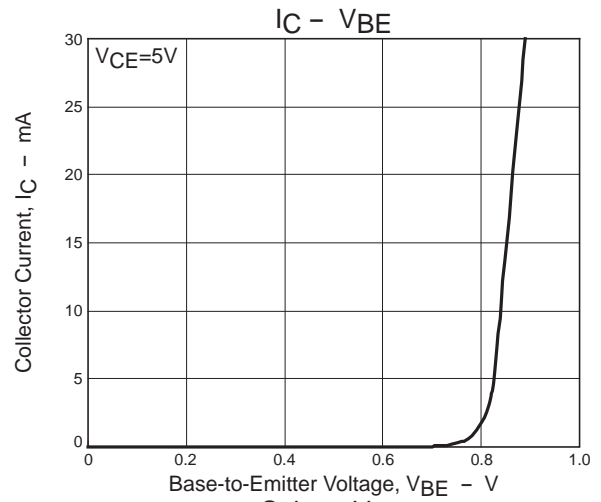
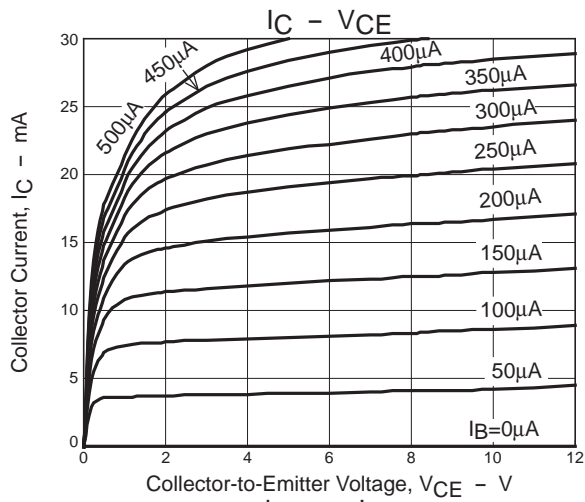
# NSVF3007SG3

## ELECTRICAL CHARACTERISTICS at Ta = 25°C (Note 2)

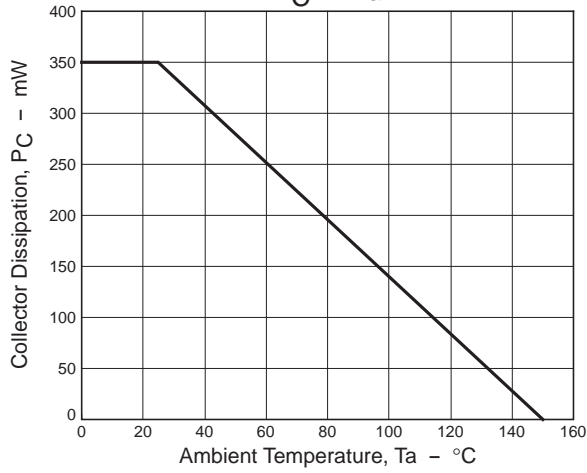
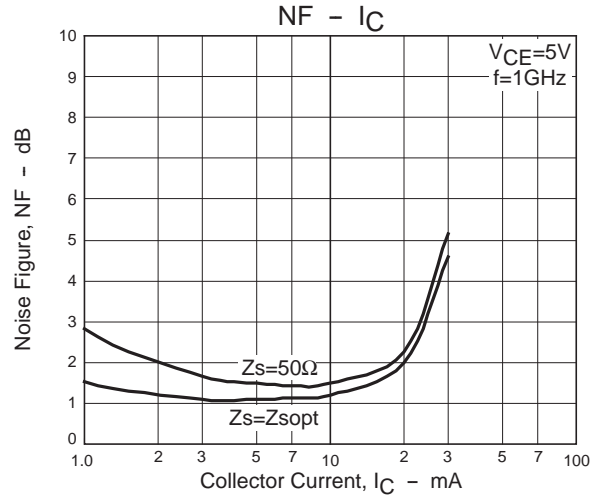
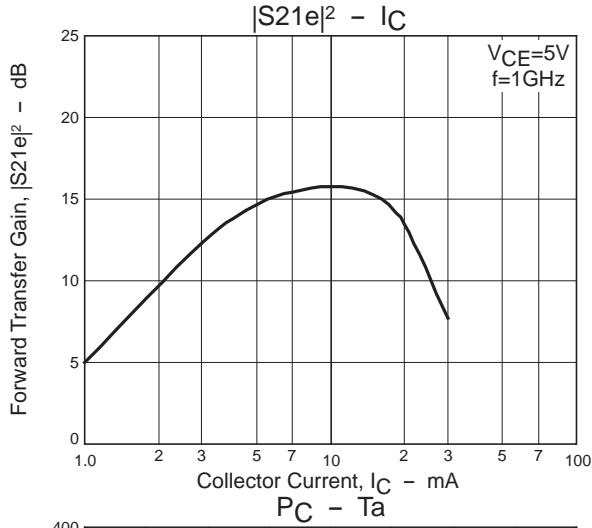
| Parameter                | Symbol                          | Conditions   | Value |     |     | Unit |
|--------------------------|---------------------------------|--|-------|-----|-----|------|
|                          |                                 |  | min   | typ | max |      |
| Collector Cutoff Current | ICBO                            | V <sub>CB</sub> = 5 V, I <sub>E</sub> = 0 A              |       |     | 1.0 | μA   |
| Emitter Cutoff Current   | IEBO                            | V <sub>EB</sub> = 1 V, I <sub>C</sub> = 0 A              |       |     | 1.0 | μA   |
| DC Current Gain          | h <sub>FE</sub>                 | V <sub>CE</sub> = 5 V, I <sub>C</sub> = 5 mA             | 60    |     | 150 |      |
| Gain-Bandwidth Product   | f <sub>T</sub>                  | V <sub>CE</sub> = 5 V, I <sub>C</sub> = 10 mA            | 6     | 8   |     | GHz  |
| Forward Transfer Gain    | S <sub>21e</sub>   <sup>2</sup> | V <sub>CE</sub> = 5 V, I <sub>C</sub> = 10 mA, f = 1 GHz | 9     | 12  |     | dB   |
| Noise Figure             | NF                              | V <sub>CE</sub> = 5 V, I <sub>C</sub> = 10 mA, f = 1 GHz |       | 1.2 | 1.8 | dB   |

Note 2 : 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.

Note 3 : Pay attention to handling since it is liable to be affected by static electricity due to the high-frequency process adopted.



# NSVF3007SG3



## S Parameters (Common emitter)

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

| Freq(MHz) | S11   | $\angle S_{11}$ | S21   | $\angle S_{21}$ | S12   | $\angle S_{12}$ | S22   | $\angle S_{22}$ |
|-----------|-------|-----------------|-------|-----------------|-------|-----------------|-------|-----------------|
| 100       | 0.889 | -11.8           | 9.020 | 164.0           | 0.011 | 87.1            | 0.978 | -9.1            |
| 200       | 0.872 | -18.1           | 8.560 | 151.7           | 0.026 | 81.8            | 0.945 | -17.9           |
| 300       | 0.802 | -32.2           | 8.281 | 142.9           | 0.037 | 77.5            | 0.892 | -25.3           |
| 400       | 0.784 | -37.9           | 7.883 | 136.4           | 0.046 | 74.5            | 0.843 | -32.1           |
| 500       | 0.687 | -55.5           | 7.588 | 125.7           | 0.057 | 71.6            | 0.771 | -39.3           |
| 600       | 0.651 | -64.3           | 7.221 | 119.3           | 0.065 | 70.4            | 0.724 | -43.5           |
| 700       | 0.591 | -76.2           | 6.686 | 111.7           | 0.073 | 69.0            | 0.675 | -48.4           |
| 800       | 0.535 | -85.9           | 6.254 | 105.1           | 0.080 | 68.2            | 0.632 | -52.3           |
| 900       | 0.498 | 266.2           | 5.783 | 100.0           | 0.086 | 67.7            | 0.598 | -55.7           |
| 1000      | 0.450 | 258.0           | 5.404 | 94.8            | 0.093 | 67.9            | 0.562 | -58.4           |
| 1200      | 0.389 | 244.7           | 4.684 | 86.9            | 0.105 | 68.1            | 0.514 | -63.0           |
| 1400      | 0.352 | 234.1           | 4.101 | 80.8            | 0.118 | 68.7            | 0.482 | -66.0           |
| 1600      | 0.322 | 224.9           | 3.651 | 75.6            | 0.131 | 69.4            | 0.463 | -68.3           |
| 1800      | 0.300 | 216.6           | 3.291 | 70.9            | 0.146 | 70.1            | 0.447 | -70.1           |
| 2000      | 0.282 | 208.5           | 3.004 | 66.6            | 0.161 | 70.5            | 0.437 | -71.9           |
| 2200      | 0.266 | 200.9           | 2.776 | 62.6            | 0.177 | 70.7            | 0.435 | -73.7           |
| 2400      | 0.258 | 193.5           | 2.586 | 58.5            | 0.194 | 70.6            | 0.433 | -76.6           |
| 2600      | 0.246 | 186.5           | 2.415 | 55.0            | 0.211 | 70.5            | 0.428 | -78.6           |
| 2800      | 0.243 | 180.9           | 2.292 | 51.7            | 0.231 | 70.4            | 0.435 | -80.0           |
| 3000      | 0.250 | 174.2           | 2.191 | 47.7            | 0.252 | 69.3            | 0.450 | -83.4           |

# NSVF3007SG3

## S Parameters (Common emitter)

V<sub>CE</sub>=3V, I<sub>C</sub>=10mA, Z<sub>O</sub>=50Ω

| Freq(MHz) | S11   | ∠S11  | S21    | ∠S21  | S12   | ∠S12 | S22   | ∠S22  |
|-----------|-------|-------|--------|-------|-------|------|-------|-------|
| 100       | 0.772 | -19.6 | 14.343 | 158.2 | 0.013 | 80.2 | 0.952 | -12.0 |
| 200       | 0.726 | -30.9 | 13.500 | 143.9 | 0.022 | 77.5 | 0.880 | -22.0 |
| 300       | 0.614 | -53.6 | 12.251 | 130.6 | 0.031 | 75.2 | 0.798 | -28.8 |
| 400       | 0.570 | -64.5 | 11.116 | 122.3 | 0.038 | 74.7 | 0.734 | -34.3 |
| 500       | 0.471 | -86.8 | 9.957  | 110.0 | 0.046 | 74.0 | 0.660 | -40.2 |
| 600       | 0.440 | 262.6 | 8.696  | 103.7 | 0.053 | 74.4 | 0.616 | -43.1 |
| 700       | 0.404 | 251.3 | 7.844  | 97.4  | 0.061 | 74.8 | 0.577 | -46.7 |
| 800       | 0.380 | 242.5 | 6.991  | 92.7  | 0.068 | 75.3 | 0.543 | -49.6 |
| 900       | 0.362 | 235.0 | 6.325  | 88.6  | 0.075 | 75.7 | 0.519 | -52.1 |
| 1000      | 0.344 | 228.3 | 5.731  | 85.1  | 0.083 | 76.0 | 0.492 | -54.3 |
| 1200      | 0.321 | 216.8 | 4.838  | 79.0  | 0.098 | 76.7 | 0.461 | -58.0 |
| 1400      | 0.308 | 207.2 | 4.189  | 74.0  | 0.113 | 77.0 | 0.443 | -60.4 |
| 1600      | 0.296 | 199.1 | 3.703  | 69.6  | 0.129 | 77.2 | 0.434 | -62.6 |
| 1800      | 0.287 | 191.6 | 3.324  | 65.5  | 0.146 | 77.2 | 0.428 | -64.4 |
| 2000      | 0.282 | 184.3 | 3.023  | 61.6  | 0.164 | 76.9 | 0.425 | -66.3 |
| 2200      | 0.275 | 177.4 | 2.784  | 57.9  | 0.182 | 76.5 | 0.429 | -68.5 |
| 2400      | 0.274 | 171.5 | 2.591  | 54.2  | 0.201 | 75.7 | 0.432 | -71.7 |
| 2600      | 0.269 | 165.4 | 2.413  | 50.8  | 0.220 | 75.1 | 0.432 | -74.0 |
| 2800      | 0.270 | 160.9 | 2.285  | 47.8  | 0.242 | 74.3 | 0.442 | -75.8 |
| 3000      | 0.281 | 155.9 | 2.182  | 44.0  | 0.266 | 72.7 | 0.460 | -79.7 |

V<sub>CE</sub>=3V, I<sub>C</sub>=15mA, Z<sub>O</sub>=50Ω

| Freq(MHz) | S11   | ∠S11  | S21    | ∠S21  | S12   | ∠S12 | S22   | ∠S22  |
|-----------|-------|-------|--------|-------|-------|------|-------|-------|
| 100       | 0.655 | -30.6 | 16.942 | 153.3 | 0.011 | 76.6 | 0.912 | -13.3 |
| 200       | 0.578 | -51.1 | 14.095 | 136.7 | 0.020 | 73.6 | 0.814 | -22.0 |
| 300       | 0.473 | -82.5 | 12.741 | 120.1 | 0.026 | 73.3 | 0.735 | -26.7 |
| 400       | 0.432 | 260.6 | 11.464 | 110.2 | 0.033 | 74.3 | 0.682 | -30.1 |
| 500       | 0.403 | 240.3 | 9.665  | 100.5 | 0.039 | 75.4 | 0.624 | -34.4 |
| 600       | 0.395 | 230.3 | 7.746  | 94.9  | 0.045 | 77.1 | 0.595 | -36.4 |
| 700       | 0.390 | 220.9 | 6.764  | 89.7  | 0.052 | 79.1 | 0.570 | -39.3 |
| 800       | 0.387 | 213.3 | 5.958  | 85.7  | 0.059 | 80.2 | 0.547 | -41.8 |
| 900       | 0.386 | 207.3 | 5.331  | 81.9  | 0.067 | 81.4 | 0.533 | -44.0 |
| 1000      | 0.381 | 201.6 | 4.798  | 78.8  | 0.074 | 82.1 | 0.515 | -46.2 |
| 1200      | 0.379 | 192.3 | 4.009  | 73.0  | 0.090 | 83.1 | 0.498 | -50.2 |
| 1400      | 0.380 | 184.7 | 3.460  | 68.0  | 0.106 | 83.8 | 0.491 | -53.3 |
| 1600      | 0.378 | 178.1 | 3.047  | 63.5  | 0.124 | 84.1 | 0.491 | -56.3 |
| 1800      | 0.378 | 171.9 | 2.733  | 59.3  | 0.143 | 83.9 | 0.491 | -59.2 |
| 2000      | 0.380 | 165.9 | 2.482  | 55.2  | 0.162 | 83.7 | 0.493 | -62.2 |
| 2200      | 0.379 | 160.0 | 2.282  | 51.4  | 0.183 | 83.0 | 0.502 | -65.4 |
| 2400      | 0.383 | 155.1 | 2.118  | 47.5  | 0.205 | 82.0 | 0.508 | -69.5 |
| 2600      | 0.383 | 149.7 | 1.968  | 44.0  | 0.227 | 81.0 | 0.510 | -72.8 |
| 2800      | 0.386 | 145.4 | 1.860  | 40.8  | 0.253 | 79.8 | 0.523 | -75.6 |
| 3000      | 0.398 | 141.2 | 1.771  | 36.9  | 0.280 | 77.7 | 0.544 | -80.4 |

# NSVF3007SG3

## S Parameters (Common emitter)

$V_{CE}=3V$ ,  $I_C=20mA$ ,  $Z_O=50\Omega$

| Freq(MHz) | S11   | $\angle S11$ | S21    | $\angle S21$ | S12   | $\angle S12$ | S22   | $\angle S22$ |
|-----------|-------|--------------|--------|--------------|-------|--------------|-------|--------------|
| 100       | 0.542 | -48.6        | 17.664 | 147.6        | 0.011 | 72.1         | 0.855 | -13.7        |
| 200       | 0.472 | -85.2        | 13.659 | 127.1        | 0.018 | 65.7         | 0.759 | -19.6        |
| 300       | 0.442 | 241.9        | 10.775 | 110.5        | 0.023 | 68.0         | 0.699 | -22.4        |
| 400       | 0.437 | 225.3        | 8.448  | 101.0        | 0.028 | 72.9         | 0.667 | -24.8        |
| 500       | 0.458 | 210.5        | 6.847  | 92.9         | 0.033 | 76.5         | 0.628 | -28.3        |
| 600       | 0.464 | 203.4        | 5.771  | 87.9         | 0.039 | 80.6         | 0.611 | -30.2        |
| 700       | 0.475 | 196.8        | 4.937  | 83.2         | 0.046 | 82.9         | 0.597 | -33.1        |
| 800       | 0.480 | 191.5        | 4.332  | 79.4         | 0.053 | 84.9         | 0.584 | -35.8        |
| 900       | 0.486 | 187.1        | 3.842  | 75.8         | 0.060 | 86.7         | 0.576 | -38.3        |
| 1000      | 0.487 | 183.0        | 3.458  | 72.6         | 0.068 | 87.8         | 0.565 | -40.9        |
| 1200      | 0.492 | 176.0        | 2.876  | 66.7         | 0.084 | 89.4         | 0.557 | -45.7        |
| 1400      | 0.497 | 170.0        | 2.478  | 61.7         | 0.102 | 90.4         | 0.556 | -49.9        |
| 1600      | 0.500 | 164.4        | 2.179  | 56.9         | 0.121 | 90.6         | 0.561 | -53.9        |
| 1800      | 0.503 | 159.0        | 1.952  | 52.4         | 0.142 | 90.4         | 0.565 | -57.9        |
| 2000      | 0.508 | 153.8        | 1.771  | 48.2         | 0.165 | 89.7         | 0.569 | -61.9        |
| 2200      | 0.510 | 148.4        | 1.625  | 44.3         | 0.189 | 88.6         | 0.579 | -66.1        |
| 2400      | 0.515 | 143.7        | 1.503  | 40.3         | 0.214 | 87.2         | 0.587 | -71.0        |
| 2600      | 0.517 | 138.5        | 1.392  | 36.8         | 0.240 | 85.6         | 0.588 | -75.3        |
| 2800      | 0.520 | 134.0        | 1.311  | 33.8         | 0.270 | 83.8         | 0.600 | -78.9        |
| 3000      | 0.529 | 129.8        | 1.243  | 30.0         | 0.301 | 81.0         | 0.622 | -84.4        |

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

| Freq(MHz) | S11   | $\angle S11$ | S21   | $\angle S21$ | S12   | $\angle S12$ | S22   | $\angle S22$ |
|-----------|-------|--------------|-------|--------------|-------|--------------|-------|--------------|
| 100       | 0.893 | -11.5        | 9.065 | 164.4        | 0.013 | 88.3         | 0.978 | -8.8         |
| 200       | 0.878 | -17.5        | 8.626 | 152.2        | 0.025 | 80.9         | 0.949 | -17.3        |
| 300       | 0.809 | -31.3        | 8.332 | 143.4        | 0.036 | 79.1         | 0.898 | -24.4        |
| 400       | 0.792 | -36.9        | 7.943 | 137.0        | 0.045 | 75.9         | 0.852 | -31.1        |
| 500       | 0.696 | -54.2        | 7.444 | 126.3        | 0.055 | 72.7         | 0.782 | -38.2        |
| 600       | 0.659 | -62.9        | 6.985 | 119.8        | 0.063 | 71.1         | 0.736 | -42.3        |
| 700       | 0.599 | -74.6        | 6.740 | 112.3        | 0.071 | 69.9         | 0.687 | -47.1        |
| 800       | 0.542 | -84.3        | 6.322 | 105.6        | 0.078 | 69.2         | 0.644 | -51.0        |
| 900       | 0.504 | 268.0        | 5.839 | 100.6        | 0.084 | 68.6         | 0.610 | -54.3        |
| 1000      | 0.455 | 259.8        | 5.465 | 95.2         | 0.090 | 68.4         | 0.573 | -57.1        |
| 1200      | 0.392 | 246.7        | 4.739 | 87.3         | 0.103 | 68.8         | 0.526 | -61.6        |
| 1400      | 0.353 | 236.1        | 4.152 | 81.2         | 0.116 | 69.6         | 0.495 | -64.5        |
| 1600      | 0.323 | 227.1        | 3.696 | 75.9         | 0.129 | 70.3         | 0.475 | -66.7        |
| 1800      | 0.299 | 218.7        | 3.332 | 71.2         | 0.143 | 70.8         | 0.460 | -68.5        |
| 2000      | 0.281 | 210.6        | 3.040 | 66.9         | 0.158 | 71.4         | 0.450 | -70.3        |
| 2200      | 0.263 | 203.0        | 2.809 | 62.9         | 0.174 | 71.7         | 0.447 | -72.2        |
| 2400      | 0.255 | 195.6        | 2.618 | 58.8         | 0.191 | 71.6         | 0.446 | -75.1        |
| 2600      | 0.242 | 188.7        | 2.444 | 55.2         | 0.208 | 71.5         | 0.442 | -77.1        |
| 2800      | 0.239 | 183.0        | 2.320 | 51.9         | 0.228 | 71.4         | 0.449 | -78.4        |
| 3000      | 0.246 | 176.1        | 2.218 | 47.9         | 0.250 | 70.3         | 0.464 | -81.9        |

# NSVF3007SG3

## S Parameters (Common emitter)

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

| Freq(MHz) | S11   | $\angle S11$ | S21    | $\angle S21$ | S12   | $\angle S12$ | S22   | $\angle S22$ |
|-----------|-------|--------------|--------|--------------|-------|--------------|-------|--------------|
| 100       | 0.792 | -17.6        | 14.870 | 159.5        | 0.013 | 88.0         | 0.957 | -11.5        |
| 200       | 0.754 | -27.7        | 13.544 | 145.4        | 0.022 | 77.9         | 0.892 | -21.2        |
| 300       | 0.642 | -48.6        | 12.776 | 132.5        | 0.030 | 77.7         | 0.815 | -28.1        |
| 400       | 0.601 | -58.2        | 11.567 | 124.3        | 0.037 | 75.8         | 0.751 | -33.7        |
| 500       | 0.489 | -79.8        | 10.460 | 111.9        | 0.045 | 75.0         | 0.677 | -39.6        |
| 600       | 0.452 | 269.8        | 9.468  | 105.4        | 0.053 | 75.3         | 0.632 | -42.7        |
| 700       | 0.410 | 258.3        | 8.253  | 98.9         | 0.060 | 75.7         | 0.592 | -46.4        |
| 800       | 0.380 | 249.3        | 7.358  | 94.0         | 0.067 | 76.0         | 0.556 | -49.3        |
| 900       | 0.359 | 241.6        | 6.641  | 89.8         | 0.075 | 76.4         | 0.530 | -51.8        |
| 1000      | 0.338 | 234.7        | 6.018  | 86.3         | 0.082 | 76.6         | 0.503 | -54.1        |
| 1200      | 0.310 | 222.9        | 5.069  | 80.2         | 0.097 | 77.1         | 0.470 | -57.7        |
| 1400      | 0.294 | 213.1        | 4.384  | 75.2         | 0.112 | 77.4         | 0.450 | -60.0        |
| 1600      | 0.280 | 204.7        | 3.871  | 70.7         | 0.129 | 77.5         | 0.441 | -62.1        |
| 1800      | 0.270 | 196.8        | 3.472  | 66.6         | 0.145 | 77.4         | 0.433 | -63.8        |
| 2000      | 0.262 | 189.2        | 3.157  | 62.8         | 0.162 | 77.1         | 0.429 | -65.6        |
| 2200      | 0.254 | 182.2        | 2.905  | 59.2         | 0.181 | 76.8         | 0.432 | -67.6        |
| 2400      | 0.253 | 176.0        | 2.700  | 55.5         | 0.199 | 75.9         | 0.435 | -70.7        |
| 2600      | 0.246 | 169.6        | 2.514  | 52.1         | 0.218 | 75.2         | 0.435 | -72.9        |
| 2800      | 0.247 | 165.1        | 2.381  | 49.1         | 0.239 | 74.5         | 0.445 | -74.5        |
| 3000      | 0.258 | 159.8        | 2.273  | 45.3         | 0.263 | 72.9         | 0.462 | -78.3        |

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

| Freq(MHz) | S11   | $\angle S11$ | S21    | $\angle S21$ | S12   | $\angle S12$ | S22   | $\angle S22$ |
|-----------|-------|--------------|--------|--------------|-------|--------------|-------|--------------|
| 100       | 0.691 | -25.3        | 18.098 | 155.5        | 0.011 | 81.7         | 0.936 | -12.7        |
| 200       | 0.628 | -41.7        | 16.001 | 139.7        | 0.020 | 76.6         | 0.847 | -22.0        |
| 300       | 0.505 | -68.7        | 14.151 | 123.7        | 0.027 | 76.2         | 0.766 | -27.6        |
| 400       | 0.452 | -83.3        | 12.511 | 114.0        | 0.033 | 77.5         | 0.706 | -31.7        |
| 500       | 0.394 | 256.4        | 10.390 | 103.8        | 0.040 | 77.5         | 0.640 | -36.6        |
| 600       | 0.376 | 245.9        | 9.124  | 98.0         | 0.047 | 78.9         | 0.604 | -38.8        |
| 700       | 0.360 | 235.9        | 7.856  | 92.7         | 0.054 | 79.7         | 0.573 | -41.9        |
| 800       | 0.350 | 227.5        | 6.939  | 88.5         | 0.062 | 80.6         | 0.545 | -44.5        |
| 900       | 0.342 | 220.8        | 6.231  | 84.9         | 0.069 | 81.0         | 0.526 | -46.7        |
| 1000      | 0.333 | 214.6        | 5.620  | 81.6         | 0.077 | 81.4         | 0.504 | -48.7        |
| 1200      | 0.322 | 204.2        | 4.714  | 76.0         | 0.092 | 82.0         | 0.481 | -52.4        |
| 1400      | 0.318 | 195.8        | 4.071  | 71.3         | 0.109 | 82.3         | 0.469 | -55.0        |
| 1600      | 0.312 | 188.4        | 3.591  | 67.0         | 0.125 | 82.2         | 0.466 | -57.4        |
| 1800      | 0.308 | 181.5        | 3.219  | 62.9         | 0.143 | 82.0         | 0.463 | -59.6        |
| 2000      | 0.307 | 175.0        | 2.925  | 59.1         | 0.162 | 81.6         | 0.463 | -62.0        |
| 2200      | 0.304 | 168.7        | 2.690  | 55.4         | 0.181 | 81.0         | 0.469 | -64.6        |
| 2400      | 0.306 | 163.5        | 2.501  | 51.7         | 0.202 | 80.0         | 0.475 | -68.2        |
| 2600      | 0.302 | 157.8        | 2.327  | 48.3         | 0.222 | 79.1         | 0.477 | -70.9        |
| 2800      | 0.305 | 153.6        | 2.202  | 45.2         | 0.245 | 78.2         | 0.488 | -73.1        |
| 3000      | 0.317 | 149.2        | 2.101  | 41.4         | 0.271 | 76.3         | 0.508 | -77.4        |

# NSVF3007SG3

## S Parameters (Common emitter)

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

| Freq(MHz) | S11   | $\angle S11$ | S21    | $\angle S21$ | S12   | $\angle S12$ | S22   | $\angle S22$ |
|-----------|-------|--------------|--------|--------------|-------|--------------|-------|--------------|
| 100       | 0.591 | -37.1        | 19.539 | 151.2        | 0.010 | 86.0         | 0.904 | -12.7        |
| 200       | 0.508 | -64.2        | 15.394 | 132.6        | 0.017 | 73.2         | 0.808 | -20.0        |
| 300       | 0.425 | 264.1        | 13.138 | 115.7        | 0.023 | 75.0         | 0.740 | -23.8        |
| 400       | 0.396 | 246.9        | 10.561 | 106.1        | 0.028 | 77.4         | 0.696 | -26.6        |
| 500       | 0.393 | 228.4        | 8.791  | 97.4         | 0.034 | 79.7         | 0.648 | -30.4        |
| 600       | 0.393 | 219.4        | 7.452  | 92.2         | 0.041 | 81.8         | 0.625 | -32.3        |
| 700       | 0.398 | 211.1        | 6.426  | 87.4         | 0.047 | 83.9         | 0.605 | -35.1        |
| 800       | 0.400 | 204.4        | 5.644  | 83.5         | 0.054 | 85.1         | 0.586 | -37.6        |
| 900       | 0.403 | 199.0        | 5.020  | 79.9         | 0.062 | 86.4         | 0.574 | -39.9        |
| 1000      | 0.402 | 194.0        | 4.518  | 76.8         | 0.069 | 87.1         | 0.559 | -42.2        |
| 1200      | 0.404 | 185.7        | 3.761  | 71.1         | 0.085 | 88.2         | 0.546 | -46.5        |
| 1400      | 0.408 | 178.9        | 3.240  | 66.2         | 0.102 | 88.9         | 0.541 | -49.9        |
| 1600      | 0.409 | 172.7        | 2.850  | 61.6         | 0.120 | 89.1         | 0.544 | -53.4        |
| 1800      | 0.410 | 166.9        | 2.552  | 57.4         | 0.140 | 88.9         | 0.545 | -56.7        |
| 2000      | 0.414 | 161.3        | 2.316  | 53.3         | 0.161 | 88.2         | 0.548 | -60.1        |
| 2200      | 0.415 | 155.6        | 2.127  | 49.5         | 0.183 | 87.4         | 0.557 | -63.7        |
| 2400      | 0.419 | 150.9        | 1.971  | 45.6         | 0.207 | 86.2         | 0.565 | -68.1        |
| 2600      | 0.420 | 145.6        | 1.830  | 42.1         | 0.230 | 84.9         | 0.567 | -71.8        |
| 2800      | 0.424 | 141.3        | 1.728  | 38.9         | 0.258 | 83.5         | 0.580 | -74.8        |
| 3000      | 0.435 | 137.2        | 1.644  | 35.0         | 0.287 | 81.0         | 0.602 | -79.9        |

$V_{CE}=8V, I_C=5mA, Z_O=50\Omega$

| Freq(MHz) | S11   | $\angle S11$ | S21   | $\angle S21$ | S12   | $\angle S12$ | S22   | $\angle S22$ |
|-----------|-------|--------------|-------|--------------|-------|--------------|-------|--------------|
| 100       | 0.898 | -11.4        | 9.031 | 164.6        | 0.014 | 81.3         | 0.979 | -8.5         |
| 200       | 0.883 | -17.3        | 8.611 | 152.5        | 0.023 | 80.9         | 0.951 | -16.8        |
| 300       | 0.815 | -31.0        | 8.301 | 143.8        | 0.034 | 78.7         | 0.903 | -23.6        |
| 400       | 0.798 | -36.5        | 7.927 | 137.3        | 0.044 | 76.2         | 0.858 | -30.2        |
| 500       | 0.702 | -53.6        | 7.625 | 126.6        | 0.054 | 72.7         | 0.790 | -37.1        |
| 600       | 0.665 | -62.3        | 6.978 | 120.2        | 0.062 | 71.9         | 0.744 | -41.1        |
| 700       | 0.605 | -73.7        | 6.732 | 112.7        | 0.069 | 70.5         | 0.697 | -45.8        |
| 800       | 0.547 | -83.4        | 6.322 | 106.0        | 0.076 | 69.6         | 0.654 | -49.6        |
| 900       | 0.510 | 269.0        | 5.840 | 100.9        | 0.082 | 69.3         | 0.620 | -52.9        |
| 1000      | 0.460 | 260.8        | 5.471 | 95.5         | 0.089 | 69.3         | 0.584 | -55.5        |
| 1200      | 0.396 | 247.8        | 4.746 | 87.5         | 0.101 | 69.6         | 0.537 | -60.0        |
| 1400      | 0.356 | 237.3        | 4.159 | 81.4         | 0.113 | 70.3         | 0.507 | -62.8        |
| 1600      | 0.325 | 228.3        | 3.705 | 76.0         | 0.127 | 71.1         | 0.488 | -65.1        |
| 1800      | 0.301 | 219.9        | 3.339 | 71.3         | 0.141 | 71.8         | 0.473 | -66.8        |
| 2000      | 0.282 | 211.8        | 3.046 | 67.0         | 0.156 | 72.3         | 0.463 | -68.7        |
| 2200      | 0.264 | 204.3        | 2.814 | 62.9         | 0.172 | 72.7         | 0.461 | -70.6        |
| 2400      | 0.256 | 196.9        | 2.622 | 58.8         | 0.188 | 72.7         | 0.460 | -73.5        |
| 2600      | 0.243 | 189.9        | 2.448 | 55.2         | 0.206 | 72.7         | 0.457 | -75.5        |
| 2800      | 0.239 | 184.2        | 2.323 | 51.9         | 0.226 | 72.6         | 0.464 | -76.9        |
| 3000      | 0.246 | 177.3        | 2.222 | 47.9         | 0.248 | 71.4         | 0.480 | -80.5        |



# NSVF3007SG3

## S Parameters (Common emitter)

V<sub>CE</sub>=8V, I<sub>C</sub>=10mA, Z<sub>O</sub>=50Ω

| Freq(MHz) | S11   | ∠S11  | S21    | ∠S21  | S12   | ∠S12 | S22   | ∠S22  |
|-----------|-------|-------|--------|-------|-------|------|-------|-------|
| 100       | 0.804 | -16.7 | 15.064 | 160.0 | 0.010 | 91.9 | 0.962 | -10.7 |
| 200       | 0.769 | -26.5 | 14.343 | 146.1 | 0.021 | 79.2 | 0.899 | -20.5 |
| 300       | 0.657 | -46.8 | 12.917 | 133.2 | 0.030 | 77.6 | 0.825 | -27.2 |
| 400       | 0.617 | -55.8 | 11.712 | 125.2 | 0.037 | 76.1 | 0.762 | -32.7 |
| 500       | 0.500 | -77.3 | 10.577 | 112.7 | 0.044 | 75.4 | 0.689 | -38.6 |
| 600       | 0.461 | -87.5 | 9.195  | 106.1 | 0.052 | 75.9 | 0.645 | -41.6 |
| 700       | 0.416 | 260.9 | 8.345  | 99.5  | 0.059 | 76.1 | 0.605 | -45.2 |
| 800       | 0.385 | 251.9 | 7.445  | 94.5  | 0.066 | 76.6 | 0.569 | -48.2 |
| 900       | 0.363 | 244.1 | 6.716  | 90.3  | 0.073 | 77.0 | 0.543 | -50.6 |
| 1000      | 0.340 | 237.2 | 6.084  | 86.7  | 0.080 | 77.1 | 0.516 | -52.8 |
| 1200      | 0.310 | 225.3 | 5.122  | 80.6  | 0.095 | 77.7 | 0.482 | -56.5 |
| 1400      | 0.293 | 215.4 | 4.430  | 75.5  | 0.111 | 78.0 | 0.462 | -58.8 |
| 1600      | 0.278 | 206.9 | 3.909  | 71.1  | 0.126 | 78.2 | 0.453 | -60.8 |
| 1800      | 0.267 | 198.9 | 3.505  | 66.9  | 0.143 | 78.1 | 0.445 | -62.5 |
| 2000      | 0.259 | 191.3 | 3.187  | 63.1  | 0.160 | 77.9 | 0.441 | -64.4 |
| 2200      | 0.250 | 184.2 | 2.932  | 59.4  | 0.178 | 77.5 | 0.445 | -66.4 |
| 2400      | 0.248 | 177.9 | 2.724  | 55.7  | 0.197 | 76.8 | 0.447 | -69.5 |
| 2600      | 0.241 | 171.4 | 2.536  | 52.4  | 0.215 | 76.1 | 0.448 | -71.7 |
| 2800      | 0.242 | 166.8 | 2.402  | 49.3  | 0.237 | 75.4 | 0.458 | -73.3 |
| 3000      | 0.253 | 161.3 | 2.293  | 45.6  | 0.260 | 73.9 | 0.476 | -77.1 |

V<sub>CE</sub>=8V, I<sub>C</sub>=15mA, Z<sub>O</sub>=50Ω

| Freq(MHz) | S11   | ∠S11  | S21    | ∠S21  | S12   | ∠S12 | S22   | ∠S22  |
|-----------|-------|-------|--------|-------|-------|------|-------|-------|
| 100       | 0.714 | -23.1 | 18.714 | 156.7 | 0.012 | 82.8 | 0.944 | -12.2 |
| 200       | 0.657 | -37.9 | 16.515 | 141.0 | 0.019 | 77.5 | 0.861 | -21.6 |
| 300       | 0.531 | -62.8 | 14.794 | 125.3 | 0.026 | 76.8 | 0.780 | -27.3 |
| 400       | 0.473 | -75.9 | 12.583 | 115.8 | 0.033 | 77.8 | 0.720 | -31.6 |
| 500       | 0.401 | 264.1 | 10.957 | 105.3 | 0.040 | 78.3 | 0.652 | -36.6 |
| 600       | 0.377 | 253.6 | 9.432  | 99.4  | 0.047 | 79.4 | 0.614 | -39.0 |
| 700       | 0.356 | 243.3 | 8.297  | 94.0  | 0.054 | 80.2 | 0.582 | -42.1 |
| 800       | 0.341 | 234.5 | 7.333  | 89.7  | 0.062 | 80.8 | 0.552 | -44.8 |
| 900       | 0.331 | 227.5 | 6.576  | 86.0  | 0.069 | 81.2 | 0.531 | -47.0 |
| 1000      | 0.319 | 221.1 | 5.934  | 82.8  | 0.076 | 81.5 | 0.508 | -49.0 |
| 1200      | 0.305 | 210.1 | 4.973  | 77.2  | 0.092 | 81.9 | 0.483 | -52.6 |
| 1400      | 0.298 | 201.2 | 4.291  | 72.5  | 0.108 | 82.1 | 0.469 | -55.0 |
| 1600      | 0.290 | 193.5 | 3.781  | 68.2  | 0.125 | 82.1 | 0.465 | -57.3 |
| 1800      | 0.285 | 186.3 | 3.387  | 64.2  | 0.142 | 81.8 | 0.461 | -59.3 |
| 2000      | 0.282 | 179.4 | 3.078  | 60.4  | 0.160 | 81.4 | 0.460 | -61.5 |
| 2200      | 0.278 | 172.9 | 2.829  | 56.8  | 0.179 | 80.7 | 0.466 | -63.9 |
| 2400      | 0.279 | 167.4 | 2.628  | 53.1  | 0.199 | 79.8 | 0.471 | -67.3 |
| 2600      | 0.275 | 161.5 | 2.445  | 49.8  | 0.219 | 79.0 | 0.472 | -69.9 |
| 2800      | 0.277 | 157.3 | 2.313  | 46.8  | 0.242 | 78.1 | 0.484 | -71.8 |
| 3000      | 0.289 | 152.7 | 2.208  | 43.0  | 0.267 | 76.2 | 0.504 | -76.0 |

# NSVF3007SG3

## S Parameters (Common emitter)

V<sub>CE</sub>=8V, I<sub>C</sub>=20mA, Z<sub>O</sub>=50Ω

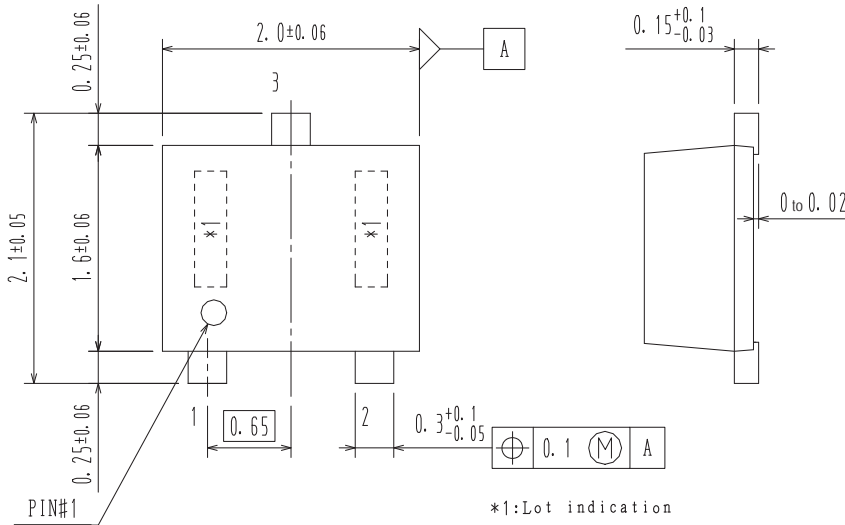
| Freq(MHz) | S11   | ∠S11  | S21    | ∠S21  | S12   | ∠S12 | S22   | ∠S22  |
|-----------|-------|-------|--------|-------|-------|------|-------|-------|
| 100       | 0.625 | -31.7 | 20.496 | 153.2 | 0.010 | 85.3 | 0.924 | -12.4 |
| 200       | 0.547 | -54.4 | 16.242 | 135.3 | 0.018 | 74.6 | 0.832 | -20.6 |
| 300       | 0.441 | -82.8 | 14.433 | 118.7 | 0.023 | 75.1 | 0.757 | -25.0 |
| 400       | 0.396 | 261.2 | 11.734 | 109.0 | 0.029 | 78.6 | 0.708 | -28.2 |
| 500       | 0.371 | 241.9 | 9.955  | 100.1 | 0.035 | 80.3 | 0.652 | -32.3 |
| 600       | 0.363 | 232.1 | 8.478  | 94.7  | 0.042 | 82.4 | 0.623 | -34.3 |
| 700       | 0.360 | 222.8 | 7.373  | 89.9  | 0.049 | 83.6 | 0.599 | -37.1 |
| 800       | 0.357 | 215.2 | 6.487  | 85.9  | 0.056 | 84.8 | 0.576 | -39.6 |
| 900       | 0.356 | 209.3 | 5.797  | 82.4  | 0.064 | 85.5 | 0.561 | -41.8 |
| 1000      | 0.352 | 203.5 | 5.218  | 79.3  | 0.071 | 86.0 | 0.543 | -44.0 |
| 1200      | 0.350 | 194.2 | 4.357  | 73.7  | 0.087 | 86.8 | 0.525 | -47.9 |
| 1400      | 0.350 | 186.7 | 3.757  | 69.0  | 0.103 | 87.1 | 0.518 | -50.9 |
| 1600      | 0.349 | 180.0 | 3.309  | 64.6  | 0.121 | 87.1 | 0.518 | -53.9 |
| 1800      | 0.348 | 173.7 | 2.964  | 60.5  | 0.140 | 86.8 | 0.517 | -56.6 |
| 2000      | 0.350 | 167.7 | 2.691  | 56.6  | 0.159 | 86.3 | 0.519 | -59.6 |
| 2200      | 0.349 | 161.7 | 2.472  | 52.9  | 0.180 | 85.5 | 0.527 | -62.7 |
| 2400      | 0.352 | 156.9 | 2.295  | 49.1  | 0.202 | 84.4 | 0.534 | -66.7 |
| 2600      | 0.351 | 151.4 | 2.132  | 45.7  | 0.224 | 83.2 | 0.536 | -69.9 |
| 2800      | 0.354 | 147.2 | 2.016  | 42.6  | 0.250 | 82.1 | 0.549 | -72.5 |
| 3000      | 0.367 | 143.1 | 1.922  | 38.7  | 0.277 | 79.9 | 0.570 | -77.2 |

# NSVF3007SG3

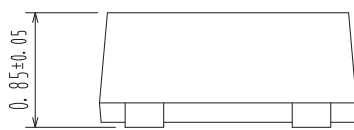
## PACKAGE DIMENSIONS

unit : mm

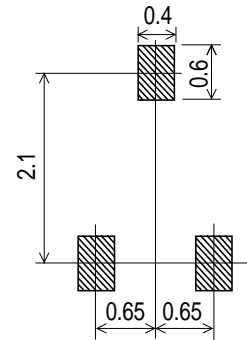
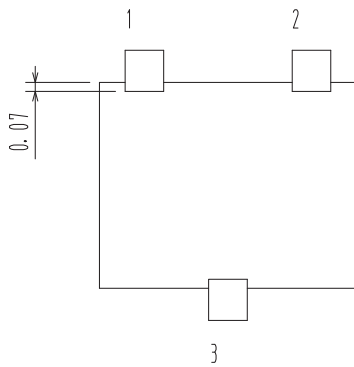
SC-70FL / MCPH3  
CASE 419AQ  
ISSUE O



## RECOMMENDED SOLDERING FOOTPRINT



- 1 : Base
- 2 : Emitter
- 3 : Collector



## ORDERING INFORMATION

| Device         | Marking | Package                                     | Shipping (Qty / Packing) |
|----------------|---------|---|--------------------------|
| NSVF3007SG3T1G | GM      | SC-70FL / MCPH3<br>(Pb-Free / Halogen Free) | 3,000 / Tape & Reel      |

† For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D. [http://www.onsemi.com/pub\\_link/Collateral/BRD8011-D.PDF](http://www.onsemi.com/pub_link/Collateral/BRD8011-D.PDF)

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