# 2SK3391

## Silicon N-Channel MOS FET
## UHF Power Amplifier

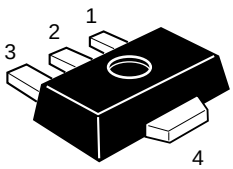
REJ03G0209-0300
Rev.3.00
Nov 08, 2007

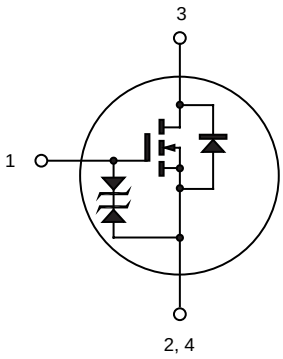
### Features

- High power output, High gain, High efficiency
  PG = 18 dB, Pout = 1.6 W, ηadd = 58% min. (f = 836 MHz)
- Compact package capable of surface mounting

### Outline

RENESAS Package code: PLZZ0004CA-A
(Package Name : UPAK®)




1. Gate
2. Source
3. Drain
4. Source

Note: Marking is “JX”.

*UPAK is a trademark of Renesas Technology Corp.

### Absolute Maximum Ratings

(Ta = 25°C)

| Item | Symbol | Ratings | Unit |
|---|---|---|---|
| Drain to source voltage | $V_{DSS}$ | 17 | V |
| Gate to source voltage | $V_{GSS}$ | ±10 | V |
| Drain current | $I_D$ | 0.3 | A |
| Drain peak current | $I_D$(pulse) Note1 | 0.75 | A |
| Channel dissipation | Pch Note2 | 5 | W |
| Channel temperature | Tch | 150 | °C |
| Storage temperature | Tstg | –45 to +150 | °C |

Notes: 1. PW < 1sec, Tch < 150°C
2. Value at Tc = 25°C

This device is sensitive to electro static discharge. An adequate careful handling procedure is requested.

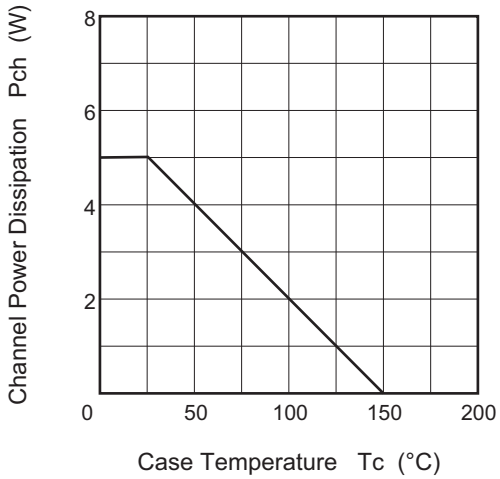
## Electrical Characteristics

(Ta = 25°C)

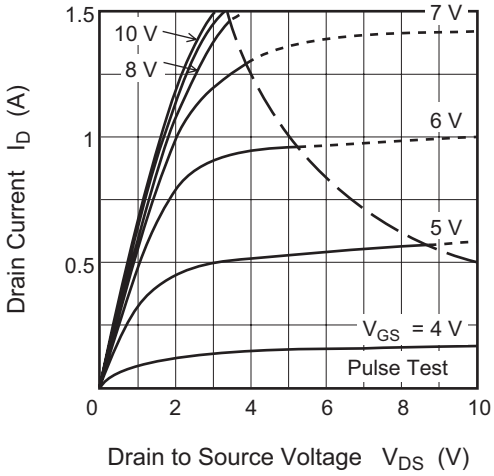
| Item | Symbol | Min. | Typ | Max. | Unit | Test Conditions |
|---|---|---|---|---|---|---|
| Zero gate voltage drain current | $I_{DSS}$ | — | — | 10 | µA | $V_{DS}$ = 13.7 V, $V_{GS}$ = 0 |
| Gate to source leak current | $I_{GSS}$ | — | — | ±5 | µA | $V_{GS}$ = ±10 V, $V_{DS}$ = 0 |
| Gate to source cutoff voltage | $V_{GS(off)}$ | 2.3 | — | 3.1 | V | $V_{DS}$ = 13.7 V, $I_D$ = 1 mA |
| Input capacitance | Ciss | — | 10 | — | pF | $V_{GS}$ = 5 V, $V_{DS}$ = 0, f = 1 MHz |
| Output capacitance | Coss | — | 3.5 | — | pF | $V_{DS}$ = 13.7 V, $V_{GS}$ = 0, f = 1 MHz |
| Output Power | Pout | 1.6 | — | — | W | $V_{DS}$ = 13.7 V, $I_{DQ}$ = 150 mA |
| Added Efficiency | ηadd | 58 | — | — | % | f = 836 MHz, Pin = 25.1 mW |

## Main Characteristics

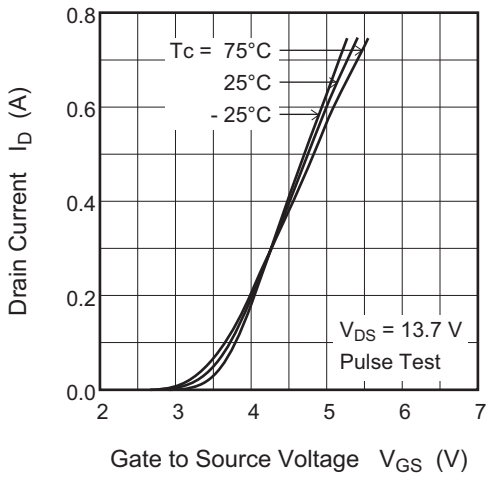
Maximum Channel Power Dissipation Curve



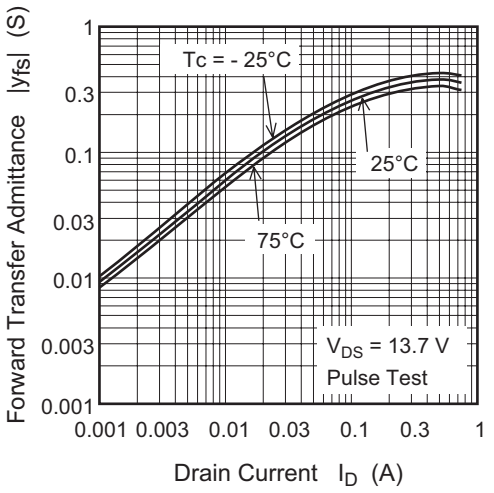

Typical Output Characteristics



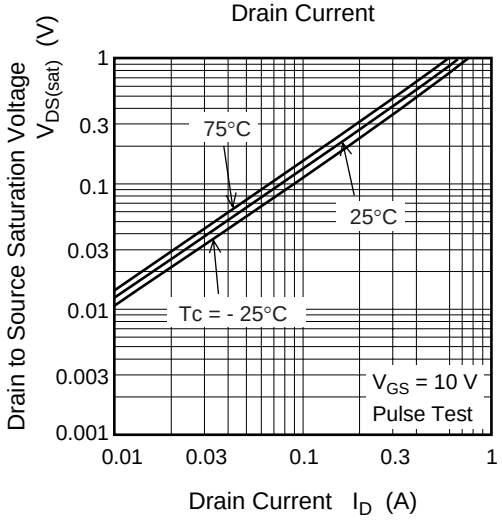

Typical Transfer Characteristics



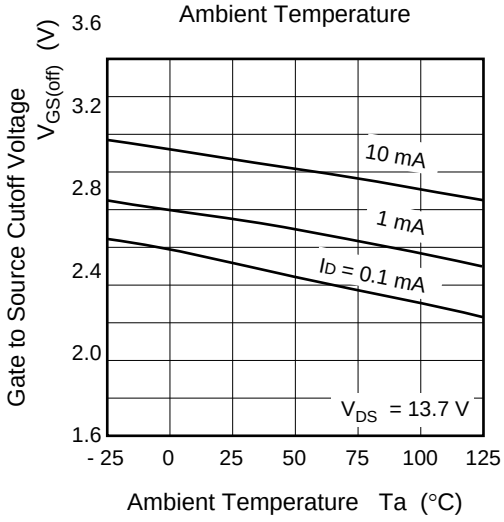

Forward Transfer Admittance vs. Drain Current



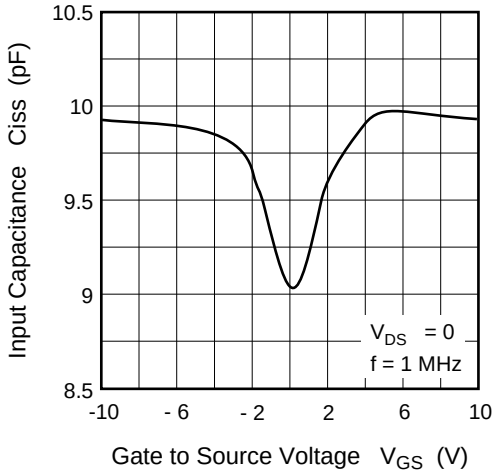
Drain to Source Saturatioin Voltage vs. Drain Current



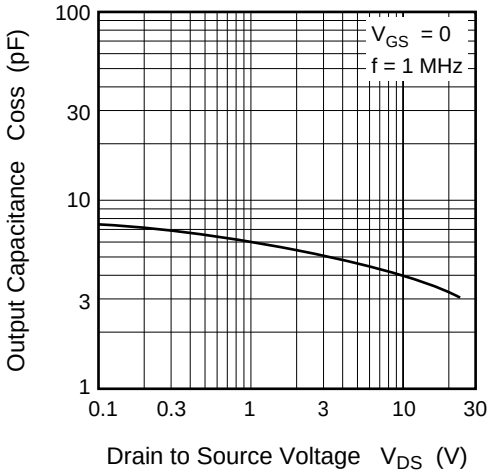

Gate to Source Cutoff Voltage vs. Ambient Temperature



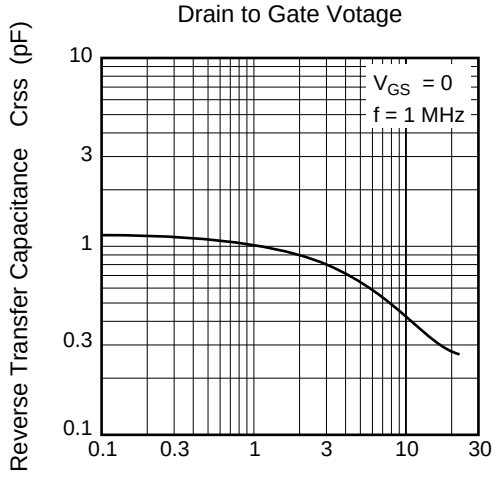

Input Capacitance vs. Gate to Source Voltage



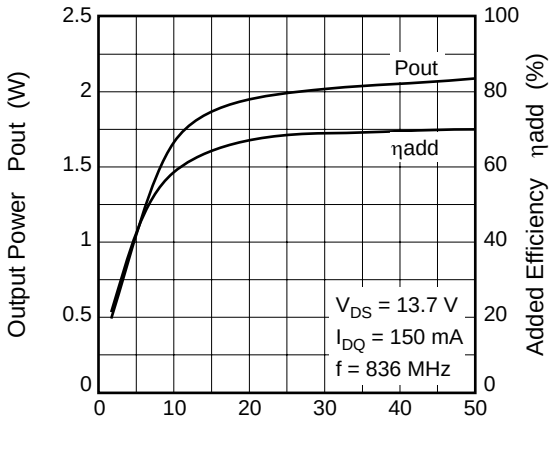

Output Capacitance vs. Drain to Source Voltage



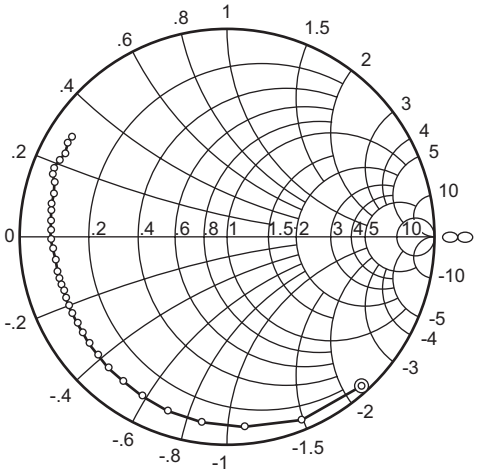

Reverse Transfer Capacitance vs. Drain to Gate Votage




Output Power, Added Efficiency vs. Input Power



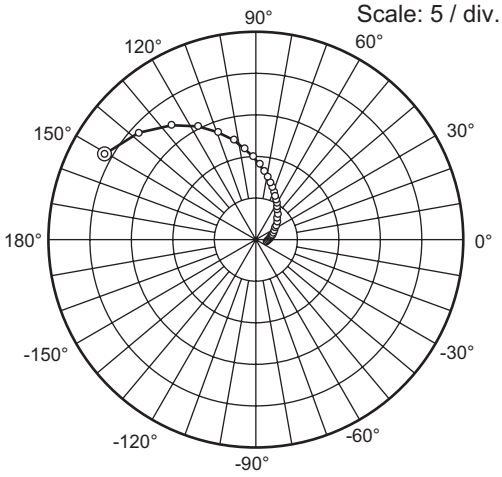
$S_{11}$ Parameter vs. Frequency




Condition: $V_{DS}$ = 13.7 V, $I_{DQ}$ = 150 mA, Zo = 50 Ω
100 to 1000 MHz (50 MHz Step)
1000 to 2500 MHz (100 MHz Step)

$S_{21}$ Parameter vs. Frequency

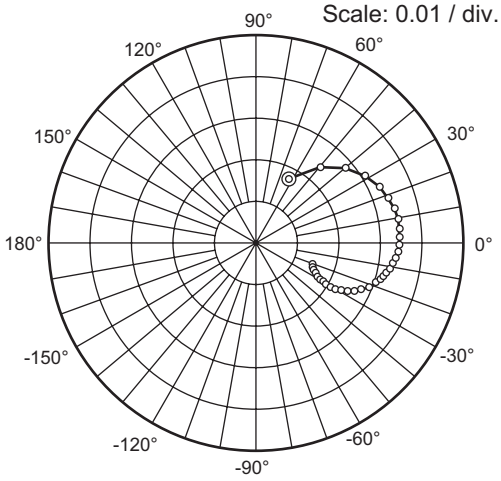
Scale: 5 / div.




Condition: $V_{DS}$ = 13.7 V, $I_{DQ}$ = 150 mA, Zo = 50 Ω
100 to 1000 MHz (50 MHz Step)
1000 to 2500 MHz (100 MHz Step)

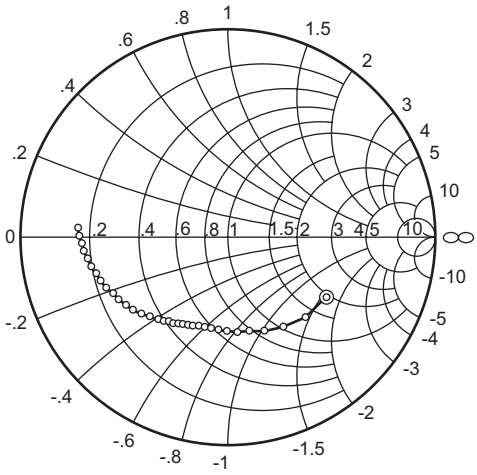
$S_{12}$ Parameter vs. Frequency

Scale: 0.01 / div.




Condition: $V_{DS}$ = 13.7 V, $I_{DQ}$ = 150 mA, Zo = 50 Ω
100 to 1000 MHz (50 MHz Step)
1000 to 2500 MHz (100 MHz Step)

$S_{22}$ Parameter vs. Frequency




Condition: $V_{DS}$ = 13.7 V, $I_{DQ}$ = 150 mA, Zo = 50 Ω
100 to 1000 MHz (50 MHz Step)
1000 to 2500 MHz (100 MHz Step)

## S Parameter

($V_{DS}$ = 4.5 V, $I_{DQ}$ = 150 mA, Zo = 50 Ω)

| f (MHz) | S11 | | S21 | | S12 | | S22 | |
|---|---|---|---|---|---|---|---|---|
| | MAG | ANG (deg.) | MAG | ANG (deg.) | MAG | ANG (deg.) | MAG | ANG (deg.) |
| 100 | 0.942 | -62.0 | 12.61 | 141.7 | 0.036 | 52.5 | 0.426 | -76.6 |
| 150 | 0.920 | -85.7 | 11.22 | 128.5 | 0.045 | 38.2 | 0.455 | -99.8 |
| 200 | 0.885 | -105.8 | 10.04 | 116.4 | 0.050 | 28.2 | 0.473 | -115.6 |
| 250 | 0.854 | -120.3 | 9.15 | 107.5 | 0.053 | 20.8 | 0.484 | -126.7 |
| 300 | 0.836 | -130.3 | 8.11 | 100.8 | 0.054 | 15.1 | 0.503 | -134.5 |
| 350 | 0.814 | -138.2 | 7.32 | 95.3 | 0.055 | 10.3 | 0.509 | -140.5 |
| 400 | 0.809 | -144.2 | 6.64 | 90.6 | 0.056 | 6.2 | 0.517 | -145.0 |
| 450 | 0.806 | -148.9 | 6.04 | 86.7 | 0.056 | 2.3 | 0.520 | -148.5 |
| 500 | 0.802 | -152.9 | 5.54 | 82.9 | 0.056 | -0.7 | 0.526 | -151.5 |
| 550 | 0.796 | -156.2 | 5.10 | 79.5 | 0.056 | -3.6 | 0.530 | -154.1 |
| 600 | 0.795 | -159.2 | 4.71 | 76.4 | 0.055 | -6.4 | 0.535 | -156.2 |
| 650 | 0.795 | -162.0 | 4.37 | 73.2 | 0.055 | -8.8 | 0.540 | -158.1 |
| 700 | 0.795 | -164.5 | 4.06 | 70.3 | 0.055 | -11.1 | 0.544 | -159.8 |
| 750 | 0.796 | -166.8 | 3.79 | 67.5 | 0.054 | -13.1 | 0.550 | -161.5 |
| 800 | 0.795 | -168.7 | 3.53 | 64.6 | 0.053 | -15.4 | 0.556 | -162.9 |
| 850 | 0.796 | -170.6 | 3.33 | 62.1 | 0.053 | -17.2 | 0.561 | -164.3 |
| 900 | 0.799 | -172.6 | 3.15 | 59.5 | 0.052 | -19.0 | 0.567 | -165.6 |
| 950 | 0.802 | -174.5 | 2.97 | 57.0 | 0.052 | -20.7 | 0.574 | -166.7 |
| 1000 | 0.802 | -175.9 | 2.80 | 54.8 | 0.051 | -22.6 | 0.580 | -168.0 |
| 1050 | 0.802 | -177.5 | 2.65 | 52.3 | 0.050 | -24.4 | 0.586 | -169.2 |
| 1100 | 0.803 | -179.3 | 2.51 | 50.1 | 0.050 | -26.0 | 0.592 | -170.4 |
| 1150 | 0.807 | 179.3 | 2.39 | 47.9 | 0.049 | -27.4 | 0.597 | -171.4 |
| 1200 | 0.809 | 177.6 | 2.27 | 45.4 | 0.048 | -28.8 | 0.602 | -172.5 |
| 1250 | 0.813 | 176.3 | 2.16 | 43.1 | 0.047 | -30.2 | 0.606 | -173.8 |
| 1300 | 0.818 | 175.1 | 2.06 | 41.0 | 0.047 | -31.6 | 0.612 | -174.7 |
| 1350 | 0.818 | 173.9 | 1.97 | 38.8 | 0.046 | -33.0 | 0.617 | -175.7 |
| 1400 | 0.820 | 172.8 | 1.88 | 36.7 | 0.045 | -34.1 | 0.620 | -176.7 |
| 1450 | 0.817 | 171.6 | 1.80 | 34.8 | 0.044 | -35.4 | 0.625 | -177.9 |
| 1500 | 0.821 | 170.1 | 1.72 | 32.9 | 0.043 | -36.5 | 0.630 | -178.9 |
| 1550 | 0.825 | 168.7 | 1.64 | 30.9 | 0.043 | -37.7 | 0.635 | 179.9 |
| 1600 | 0.830 | 167.5 | 1.57 | 28.9 | 0.042 | -38.9 | 0.639 | 178.6 |
| 1650 | 0.832 | 166.6 | 1.51 | 26.9 | 0.041 | -40.0 | 0.646 | 177.6 |
| 1700 | 0.833 | 165.5 | 1.45 | 24.9 | 0.040 | -41.0 | 0.649 | 176.5 |
| 1750 | 0.831 | 164.0 | 1.41 | 22.9 | 0.039 | -42.1 | 0.654 | 175.3 |
| 1800 | 0.833 | 162.4 | 1.36 | 21.0 | 0.039 | -42.7 | 0.660 | 174.2 |
| 1850 | 0.836 | 160.8 | 1.32 | 19.5 | 0.038 | -43.6 | 0.664 | 173.0 |
| 1900 | 0.842 | 159.3 | 1.28 | 17.9 | 0.037 | -44.3 | 0.670 | 171.9 |
| 1950 | 0.854 | 157.9 | 1.23 | 16.4 | 0.037 | -45.5 | 0.675 | 170.7 |
| 2000 | 0.869 | 156.9 | 1.19 | 14.9 | 0.036 | -46.4 | 0.682 | 169.6 |
| 2050 | 0.871 | 156.4 | 1.15 | 13.3 | 0.035 | -47.2 | 0.684 | 168.5 |
| 2100 | 0.870 | 155.7 | 1.11 | 11.4 | 0.034 | -48.2 | 0.689 | 167.3 |
| 2150 | 0.864 | 154.5 | 1.07 | 9.3 | 0.034 | -48.6 | 0.696 | 166.2 |
| 2200 | 0.860 | 153.1 | 1.04 | 7.2 | 0.033 | -49.4 | 0.699 | 165.2 |
| 2250 | 0.858 | 151.9 | 1.01 | 5.5 | 0.032 | -50.1 | 0.702 | 164.1 |
| 2300 | 0.855 | 150.3 | 0.98 | 3.8 | 0.032 | -50.8 | 0.706 | 162.8 |
| 2350 | 0.860 | 149.1 | 0.95 | 2.5 | 0.031 | -51.5 | 0.713 | 161.7 |
| 2400 | 0.868 | 147.7 | 0.92 | 0.5 | 0.031 | -51.9 | 0.714 | 160.7 |
| 2450 | 0.868 | 146.7 | 0.89 | -1.1 | 0.030 | -52.4 | 0.716 | 159.6 |
| 2500 | 0.865 | 145.2 | 0.86 | -3.2 | 0.029 | -53.1 | 0.720 | 158.3 |

## S Parameter

($V_{DS}$ = 6 V, $I_{DQ}$ = 150 mA, Zo = 50 Ω)

| f (MHz) | S11 | | S21 | | S12 | | S22 | |
|---|---|---|---|---|---|---|---|---|
| | MAG | ANG (deg.) | MAG | ANG (deg.) | MAG | ANG (deg.) | MAG | ANG (deg.) |
| 100 | 0.941 | -60.5 | 15.47 | 142.1 | 0.030 | 53.5 | 0.476 | -61.7 |
| 150 | 0.916 | -83.6 | 13.68 | 129.2 | 0.040 | 40.8 | 0.471 | -83.8 |
| 200 | 0.886 | -102.5 | 12.16 | 117.5 | 0.044 | 30.8 | 0.468 | -100.1 |
| 250 | 0.856 | -115.8 | 11.01 | 109.0 | 0.047 | 23.1 | 0.465 | -112.0 |
| 300 | 0.838 | -125.6 | 9.74 | 102.6 | 0.049 | 17.0 | 0.475 | -120.8 |
| 350 | 0.824 | -133.4 | 8.74 | 96.9 | 0.050 | 11.9 | 0.475 | -127.9 |
| 400 | 0.816 | -139.4 | 7.89 | 92.0 | 0.050 | 7.5 | 0.479 | -133.1 |
| 450 | 0.812 | -144.5 | 7.17 | 87.8 | 0.051 | 3.6 | 0.482 | -137.2 |
| 500 | 0.807 | -148.8 | 6.50 | 83.7 | 0.051 | 0.2 | 0.485 | -140.7 |
| 550 | 0.804 | -152.6 | 5.99 | 80.2 | 0.051 | -2.6 | 0.489 | -143.7 |
| 600 | 0.800 | -155.8 | 5.50 | 76.9 | 0.050 | -5.6 | 0.495 | -146.1 |
| 650 | 0.797 | -158.7 | 5.09 | 73.9 | 0.050 | -8.2 | 0.500 | -148.3 |
| 700 | 0.800 | -161.7 | 4.73 | 70.5 | 0.049 | -10.6 | 0.506 | -150.3 |
| 750 | 0.800 | -164.1 | 4.40 | 67.6 | 0.049 | -12.6 | 0.513 | -152.2 |
| 800 | 0.801 | -166.2 | 4.11 | 64.7 | 0.048 | -15.1 | 0.520 | -153.9 |
| 850 | 0.802 | -168.3 | 3.87 | 62.0 | 0.048 | -16.7 | 0.526 | -155.3 |
| 900 | 0.802 | -170.3 | 3.65 | 59.4 | 0.047 | -18.6 | 0.535 | -156.9 |
| 950 | 0.803 | -171.9 | 3.44 | 56.9 | 0.046 | -20.4 | 0.543 | -158.3 |
| 1000 | 0.807 | -173.7 | 3.24 | 54.5 | 0.046 | -22.2 | 0.551 | -159.7 |
| 1050 | 0.806 | -175.5 | 3.08 | 51.9 | 0.045 | -24.0 | 0.559 | -161.1 |
| 1100 | 0.808 | -177.2 | 2.91 | 49.8 | 0.044 | -25.7 | 0.566 | -162.5 |
| 1150 | 0.811 | -178.9 | 2.77 | 47.2 | 0.043 | -27.1 | 0.574 | -163.7 |
| 1200 | 0.815 | 179.6 | 2.63 | 44.9 | 0.043 | -28.5 | 0.580 | -165.0 |
| 1250 | 0.818 | 178.1 | 2.50 | 42.5 | 0.042 | -29.9 | 0.586 | -166.4 |
| 1300 | 0.824 | 176.8 | 2.39 | 40.2 | 0.041 | -31.2 | 0.594 | -167.6 |
| 1350 | 0.824 | 175.8 | 2.28 | 38.0 | 0.040 | -32.6 | 0.600 | -168.7 |
| 1400 | 0.827 | 174.4 | 2.17 | 36.1 | 0.040 | -33.6 | 0.605 | -169.9 |
| 1450 | 0.825 | 173.1 | 2.07 | 33.9 | 0.039 | -34.9 | 0.611 | -171.2 |
| 1500 | 0.827 | 171.6 | 1.98 | 31.9 | 0.038 | -36.0 | 0.617 | -172.5 |
| 1550 | 0.832 | 170.3 | 1.89 | 30.1 | 0.037 | -37.1 | 0.622 | -173.8 |
| 1600 | 0.838 | 168.9 | 1.81 | 27.9 | 0.036 | -38.2 | 0.628 | -175.2 |
| 1650 | 0.842 | 168.0 | 1.74 | 25.9 | 0.036 | -39.2 | 0.636 | -176.4 |
| 1700 | 0.840 | 166.8 | 1.68 | 23.6 | 0.035 | -40.2 | 0.640 | -177.6 |
| 1750 | 0.838 | 165.3 | 1.62 | 21.6 | 0.034 | -41.1 | 0.646 | -179.0 |
| 1800 | 0.840 | 163.7 | 1.57 | 19.9 | 0.033 | -41.5 | 0.652 | 179.8 |
| 1850 | 0.843 | 162.0 | 1.51 | 18.1 | 0.033 | -42.3 | 0.658 | 178.5 |
| 1900 | 0.852 | 160.4 | 1.47 | 16.7 | 0.032 | -42.9 | 0.664 | 177.2 |
| 1950 | 0.860 | 159.1 | 1.41 | 15.2 | 0.031 | -43.9 | 0.670 | 175.9 |
| 2000 | 0.873 | 158.1 | 1.36 | 13.6 | 0.031 | -44.6 | 0.677 | 174.7 |
| 2050 | 0.879 | 157.4 | 1.31 | 12.0 | 0.030 | -45.4 | 0.680 | 173.5 |
| 2100 | 0.877 | 156.7 | 1.26 | 10.1 | 0.029 | -46.1 | 0.686 | 172.1 |
| 2150 | 0.871 | 155.4 | 1.22 | 8.0 | 0.029 | -46.3 | 0.693 | 171.0 |
| 2200 | 0.869 | 154.2 | 1.19 | 6.0 | 0.028 | -46.9 | 0.697 | 169.8 |
| 2250 | 0.865 | 152.8 | 1.15 | 4.1 | 0.027 | -47.4 | 0.701 | 168.7 |
| 2300 | 0.863 | 151.2 | 1.12 | 2.4 | 0.027 | -47.7 | 0.705 | 167.3 |
| 2350 | 0.868 | 149.6 | 1.08 | 0.8 | 0.026 | -48.2 | 0.712 | 166.2 |
| 2400 | 0.875 | 148.6 | 1.05 | -0.9 | 0.026 | -48.2 | 0.713 | 165.1 |
| 2450 | 0.876 | 147.4 | 1.01 | -2.7 | 0.025 | -48.7 | 0.716 | 163.9 |
| 2500 | 0.872 | 146.1 | 0.98 | -4.6 | 0.025 | -49.0 | 0.720 | 162.4 |

## S Parameter

($V_{DS}$ = 7.5 V, $I_{DQ}$ = 150 mA, Zo = 50 Ω)

| f (MHz) | S11 | | S21 | | S12 | | S22 | |
|---|---|---|---|---|---|---|---|---|
| | MAG | ANG (deg.) | MAG | ANG (deg.) | MAG | ANG (deg.) | MAG | ANG (deg.) |
| 100 | 0.946 | -58.3 | 17.64 | 143.8 | 0.027 | 55.8 | 0.500 | -52.7 |
| 150 | 0.920 | -80.2 | 15.56 | 130.9 | 0.036 | 42.9 | 0.483 | -73.1 |
| 200 | 0.889 | -98.1 | 13.78 | 119.7 | 0.040 | 32.7 | 0.470 | -88.9 |
| 250 | 0.867 | -110.4 | 12.44 | 111.4 | 0.043 | 25.1 | 0.460 | -101.0 |
| 300 | 0.844 | -120.8 | 10.97 | 104.3 | 0.045 | 18.8 | 0.453 | -110.0 |
| 350 | 0.832 | -129.0 | 9.80 | 98.4 | 0.046 | 13.5 | 0.458 | -117.7 |
| 400 | 0.821 | -135.6 | 8.80 | 93.3 | 0.047 | 8.9 | 0.461 | -123.3 |
| 450 | 0.819 | -141.1 | 7.96 | 88.8 | 0.047 | 4.8 | 0.463 | -127.8 |
| 500 | 0.816 | -145.8 | 7.25 | 84.6 | 0.047 | 1.2 | 0.466 | -131.6 |
| 550 | 0.809 | -149.8 | 6.64 | 80.7 | 0.047 | -1.8 | 0.469 | -135.0 |
| 600 | 0.807 | -153.2 | 6.09 | 77.4 | 0.046 | -4.7 | 0.475 | -137.7 |
| 650 | 0.804 | -156.5 | 5.63 | 74.1 | 0.046 | -7.3 | 0.481 | -140.0 |
| 700 | 0.806 | -159.3 | 5.22 | 70.7 | 0.046 | -9.8 | 0.488 | -142.4 |
| 750 | 0.806 | -161.9 | 4.86 | 67.7 | 0.045 | -12.1 | 0.494 | -144.5 |
| 800 | 0.806 | -164.2 | 4.54 | 64.7 | 0.044 | -14.3 | 0.502 | -146.3 |
| 850 | 0.807 | -166.3 | 4.26 | 62.0 | 0.044 | -16.3 | 0.510 | -148.2 |
| 900 | 0.808 | -168.6 | 4.02 | 59.3 | 0.043 | -18.0 | 0.519 | -149.9 |
| 950 | 0.811 | -170.4 | 3.79 | 56.8 | 0.043 | -19.9 | 0.528 | -151.5 |
| 1000 | 0.812 | -172.2 | 3.57 | 54.3 | 0.042 | -21.8 | 0.537 | -153.1 |
| 1050 | 0.816 | -174.0 | 3.38 | 51.8 | 0.041 | -23.4 | 0.546 | -154.6 |
| 1100 | 0.814 | -175.8 | 3.21 | 49.3 | 0.041 | -25.2 | 0.555 | -156.1 |
| 1150 | 0.818 | -177.5 | 3.05 | 47.0 | 0.040 | -26.5 | 0.563 | -157.6 |
| 1200 | 0.820 | -179.1 | 2.89 | 44.5 | 0.039 | -28.0 | 0.569 | -159.1 |
| 1250 | 0.826 | 179.4 | 2.75 | 42.1 | 0.038 | -29.3 | 0.578 | -160.6 |
| 1300 | 0.829 | 178.0 | 2.62 | 39.8 | 0.037 | -30.7 | 0.585 | -161.9 |
| 1350 | 0.831 | 176.8 | 2.50 | 37.5 | 0.037 | -31.9 | 0.592 | -163.2 |
| 1400 | 0.832 | 175.5 | 2.38 | 35.4 | 0.036 | -33.1 | 0.597 | -164.6 |
| 1450 | 0.830 | 174.1 | 2.28 | 33.2 | 0.035 | -34.0 | 0.605 | -166.0 |
| 1500 | 0.835 | 172.6 | 2.17 | 31.3 | 0.034 | -35.1 | 0.611 | -167.4 |
| 1550 | 0.835 | 171.2 | 2.07 | 29.2 | 0.034 | -36.2 | 0.618 | -168.8 |
| 1600 | 0.843 | 169.7 | 1.98 | 27.1 | 0.033 | -37.2 | 0.624 | -170.4 |
| 1650 | 0.846 | 168.8 | 1.90 | 25.1 | 0.032 | -38.1 | 0.632 | -171.6 |
| 1700 | 0.845 | 167.4 | 1.83 | 22.9 | 0.031 | -38.9 | 0.636 | -173.0 |
| 1750 | 0.845 | 166.1 | 1.77 | 21.1 | 0.030 | -39.8 | 0.642 | -174.5 |
| 1800 | 0.845 | 164.5 | 1.71 | 19.1 | 0.030 | -40.0 | 0.649 | -175.9 |
| 1850 | 0.848 | 162.7 | 1.65 | 17.2 | 0.029 | -40.8 | 0.656 | -177.2 |
| 1900 | 0.855 | 161.2 | 1.60 | 15.7 | 0.028 | -41.3 | 0.661 | -178.6 |
| 1950 | 0.867 | 159.9 | 1.54 | 14.3 | 0.028 | -42.0 | 0.668 | -180.0 |
| 2000 | 0.880 | 158.8 | 1.49 | 12.6 | 0.027 | -42.5 | 0.676 | 178.7 |
| 2050 | 0.883 | 158.1 | 1.43 | 10.9 | 0.026 | -43.0 | 0.679 | 177.4 |
| 2100 | 0.882 | 157.2 | 1.37 | 9.1 | 0.026 | -43.5 | 0.685 | 176.0 |
| 2150 | 0.876 | 156.1 | 1.33 | 7.0 | 0.025 | -43.5 | 0.692 | 174.7 |
| 2200 | 0.873 | 154.6 | 1.29 | 4.8 | 0.025 | -43.9 | 0.697 | 173.5 |
| 2250 | 0.871 | 153.3 | 1.25 | 3.1 | 0.024 | -44.0 | 0.701 | 172.2 |
| 2300 | 0.869 | 151.8 | 1.21 | 1.5 | 0.023 | -44.2 | 0.705 | 170.7 |
| 2350 | 0.873 | 150.3 | 1.17 | -0.1 | 0.023 | -44.5 | 0.712 | 169.7 |
| 2400 | 0.880 | 149.0 | 1.14 | -2.2 | 0.022 | -44.4 | 0.714 | 168.4 |
| 2450 | 0.881 | 147.7 | 1.10 | -3.7 | 0.022 | -44.4 | 0.717 | 167.1 |
| 2500 | 0.878 | 146.5 | 1.06 | -5.5 | 0.021 | -44.6 | 0.721 | 165.6 |

## S Parameter

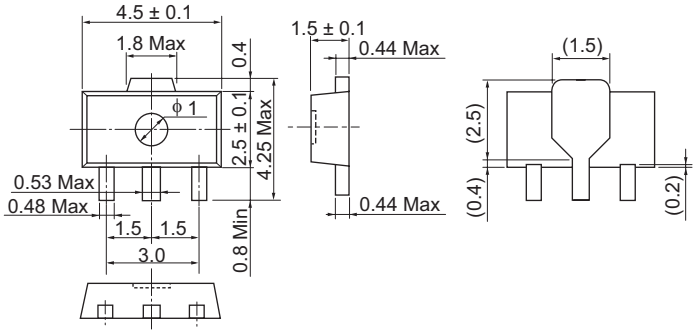
($V_{DS}$ = 13.7 V, $I_{DQ}$ = 150 mA, Zo = 50 Ω)

| f (MHz) | S11 | | S21 | | S12 | | S22 | |
|---|---|---|---|---|---|---|---|---|
| | MAG | ANG (deg.) | MAG | ANG (deg.) | MAG | ANG (deg.) | MAG | ANG (deg.) |
| 100 | 0.968 | -47.9 | 20.87 | 150.6 | 0.017 | 63.3 | 0.557 | -31.9 |
| 150 | 0.951 | -67.8 | 19.11 | 137.9 | 0.024 | 49.8 | 0.536 | -46.4 |
| 200 | 0.918 | -85.0 | 17.04 | 126.4 | 0.028 | 39.6 | 0.512 | -58.9 |
| 250 | 0.897 | -98.0 | 15.32 | 117.2 | 0.031 | 31.5 | 0.488 | -69.3 |
| 300 | 0.882 | -109.0 | 13.72 | 109.6 | 0.033 | 24.6 | 0.466 | -77.5 |
| 350 | 0.870 | -118.4 | 12.29 | 102.7 | 0.034 | 18.8 | 0.460 | -85.1 |
| 400 | 0.855 | -125.9 | 11.02 | 97.1 | 0.034 | 13.9 | 0.454 | -91.3 |
| 450 | 0.852 | -132.2 | 10.01 | 92.3 | 0.035 | 9.5 | 0.451 | -96.3 |
| 500 | 0.846 | -137.6 | 9.12 | 87.8 | 0.035 | 5.7 | 0.451 | -100.7 |
| 550 | 0.841 | -142.4 | 8.37 | 83.3 | 0.035 | 2.3 | 0.451 | -104.8 |
| 600 | 0.835 | -146.5 | 7.69 | 79.6 | 0.035 | -0.8 | 0.456 | -108.3 |
| 650 | 0.833 | -150.2 | 7.11 | 75.8 | 0.034 | -3.5 | 0.464 | -111.6 |
| 700 | 0.833 | -153.6 | 6.58 | 72.4 | 0.034 | -6.4 | 0.469 | -114.7 |
| 750 | 0.836 | -156.5 | 6.14 | 68.9 | 0.033 | -8.5 | 0.477 | -117.7 |
| 800 | 0.833 | -159.2 | 5.72 | 65.9 | 0.033 | -11.0 | 0.486 | -120.4 |
| 850 | 0.832 | -161.8 | 5.37 | 62.8 | 0.032 | -12.8 | 0.494 | -122.9 |
| 900 | 0.834 | -164.1 | 5.05 | 59.9 | 0.032 | -14.7 | 0.503 | -125.4 |
| 950 | 0.834 | -166.1 | 4.75 | 57.1 | 0.031 | -16.4 | 0.514 | -127.8 |
| 1000 | 0.836 | -168.2 | 4.50 | 54.6 | 0.031 | -18.3 | 0.525 | -130.2 |
| 1050 | 0.837 | -170.3 | 4.24 | 51.8 | 0.030 | -19.8 | 0.535 | -132.5 |
| 1100 | 0.838 | -172.3 | 4.03 | 49.1 | 0.029 | -21.4 | 0.544 | -134.7 |
| 1150 | 0.839 | -174.5 | 3.83 | 46.3 | 0.029 | -22.7 | 0.554 | -136.8 |
| 1200 | 0.843 | -176.0 | 3.63 | 44.0 | 0.028 | -23.9 | 0.563 | -138.8 |
| 1250 | 0.848 | -177.7 | 3.46 | 41.6 | 0.027 | -24.9 | 0.571 | -140.9 |
| 1300 | 0.851 | -179.3 | 3.29 | 39.1 | 0.026 | -25.9 | 0.580 | -142.8 |
| 1350 | 0.851 | 179.5 | 3.13 | 36.8 | 0.026 | -27.0 | 0.588 | -144.7 |
| 1400 | 0.852 | 177.9 | 2.98 | 34.4 | 0.025 | -27.6 | 0.594 | -146.5 |
| 1450 | 0.851 | 176.4 | 2.85 | 32.3 | 0.024 | -28.4 | 0.602 | -148.4 |
| 1500 | 0.853 | 175.0 | 2.72 | 30.0 | 0.023 | -29.1 | 0.609 | -150.3 |
| 1550 | 0.857 | 173.3 | 2.59 | 27.8 | 0.023 | -29.5 | 0.616 | -152.1 |
| 1600 | 0.861 | 171.8 | 2.48 | 25.6 | 0.022 | -30.2 | 0.623 | -154.0 |
| 1650 | 0.864 | 170.8 | 2.37 | 23.5 | 0.022 | -30.3 | 0.631 | -155.7 |
| 1700 | 0.862 | 169.4 | 2.29 | 21.2 | 0.021 | -30.7 | 0.637 | -157.5 |
| 1750 | 0.860 | 167.9 | 2.20 | 19.4 | 0.020 | -30.7 | 0.643 | -159.3 |
| 1800 | 0.861 | 166.2 | 2.13 | 17.3 | 0.020 | -30.4 | 0.651 | -161.0 |
| 1850 | 0.866 | 164.3 | 2.05 | 15.5 | 0.019 | -30.1 | 0.657 | -162.7 |
| 1900 | 0.873 | 162.6 | 1.98 | 13.9 | 0.019 | -29.7 | 0.664 | -164.5 |
| 1950 | 0.884 | 161.3 | 1.90 | 12.2 | 0.018 | -29.7 | 0.671 | -166.2 |
| 2000 | 0.895 | 160.4 | 1.83 | 10.6 | 0.018 | -29.5 | 0.679 | -167.9 |
| 2050 | 0.901 | 159.5 | 1.77 | 8.5 | 0.017 | -28.9 | 0.683 | -169.4 |
| 2100 | 0.898 | 158.7 | 1.70 | 6.7 | 0.017 | -28.5 | 0.689 | -171.1 |
| 2150 | 0.891 | 157.4 | 1.65 | 4.6 | 0.016 | -27.4 | 0.697 | -172.8 |
| 2200 | 0.887 | 155.9 | 1.60 | 2.5 | 0.016 | -26.8 | 0.702 | -174.2 |
| 2250 | 0.882 | 154.5 | 1.54 | 0.7 | 0.016 | -26.2 | 0.705 | -175.7 |
| 2300 | 0.880 | 153.0 | 1.49 | -0.9 | 0.015 | -24.9 | 0.709 | -177.4 |
| 2350 | 0.887 | 151.4 | 1.45 | -2.8 | 0.015 | -24.2 | 0.718 | -178.9 |
| 2400 | 0.892 | 149.9 | 1.40 | -4.7 | 0.015 | -22.7 | 0.720 | 179.7 |
| 2450 | 0.894 | 148.7 | 1.35 | -6.4 | 0.015 | -21.7 | 0.724 | 178.3 |
| 2500 | 0.890 | 147.5 | 1.31 | -8.5 | 0.015 | -20.7 | 0.727 | 176.6 |

## Package Dimensions

| Package Name | JEITA Package Code | RENESAS Code | Previous Code | MASS[Typ.] |
|---|---|---|---|---|
| UPAK | SC-62 | PLZZ0004CA-A | UPAK / UPAKV | 0.050g |

Unit: mm




## Ordering Information

| Part Name | Quantity | Shipping Container |
|---|---|---|
| 2SK3391JXTL-E | 1000 pcs. | φ178 mm Reel, 12 mm Emboss Taping |

Note: For some grades, production may be terminated. Please contact the Renesas sales office to check the state of production before ordering the product.

Renesas Technology Corp. Sales Strategic Planning Div. Nippon Bldg., 2-6-2, Ohte-machi, Chiyoda-ku, Tokyo 100-0004, Japan

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