

MITSUBISHI RF POWER MOS FET
2SK2975

DESCRIPTION

2SK2975 is a MOS FET type transistor specifically designed for VHF/UHF power amplifiers applications.

FEATURES

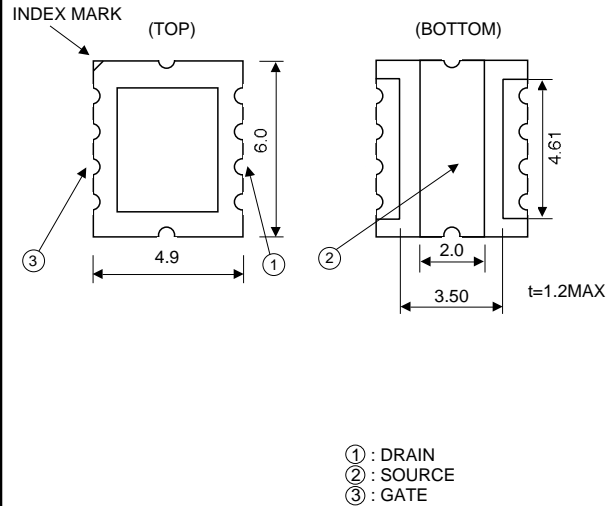
- High power gain: G_{pe} 8.4dB
 @ V_{DD}=9.6V, f=450MHz, P_{in}=30dBm
- High efficiency: 55% typ.
- Source case type ceramic package
 (connected internally to source)

APPLICATION

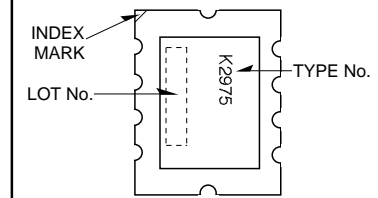
For drive stage and output stage of power amplifiers in VHF/UHF band portable radio sets.

OUTLINE DRAWING

Dimensions in mm



MARKING



ABSOLUTE MAXIMUM RATINGS (T_c=25°C, unless otherwise noted)

| Symbol | Parameter | Conditions | Ratings | Unit |
|------------------|-------------------------|------------------------------|-------------|------|
| V _{bss} | Drain to source voltage | | 30 | V |
| V _{gss} | Gate to source voltage | | ±20 | V |
| P _{ch} | Channel dissipation | T _c =25°C (Note2) | 10 | W |
| T _j | Junction temperature | | 175 | °C |
| T _{stg} | Storage temperature | | -40 to +110 | °C |

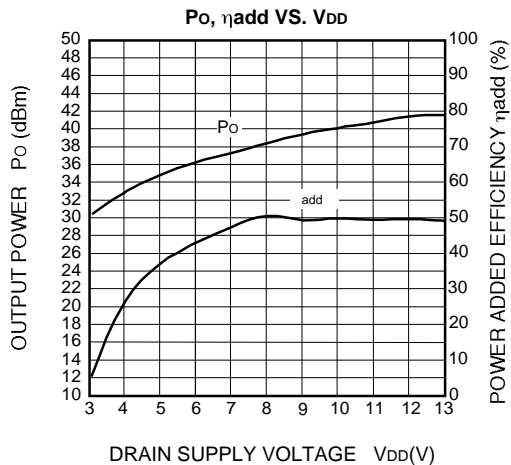
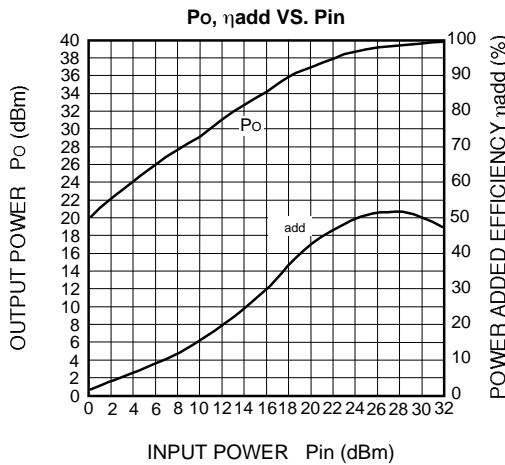
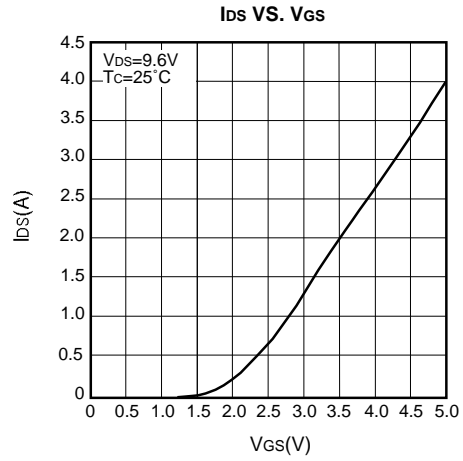
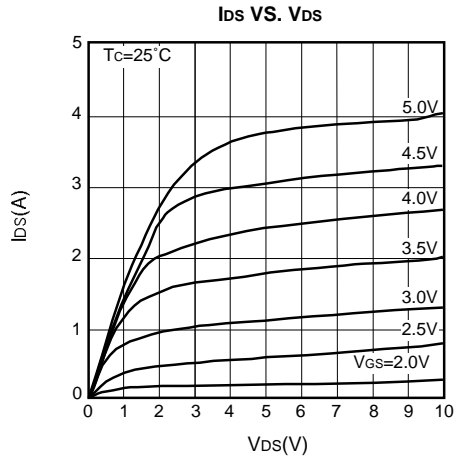
Note1: Above parameters are guaranteed independently.
 2: Solder source pad on Copper Block(14×2.8×2mm)

ELECTRICAL CHARACTERISTICS (T_c=25°C, unless otherwise noted)

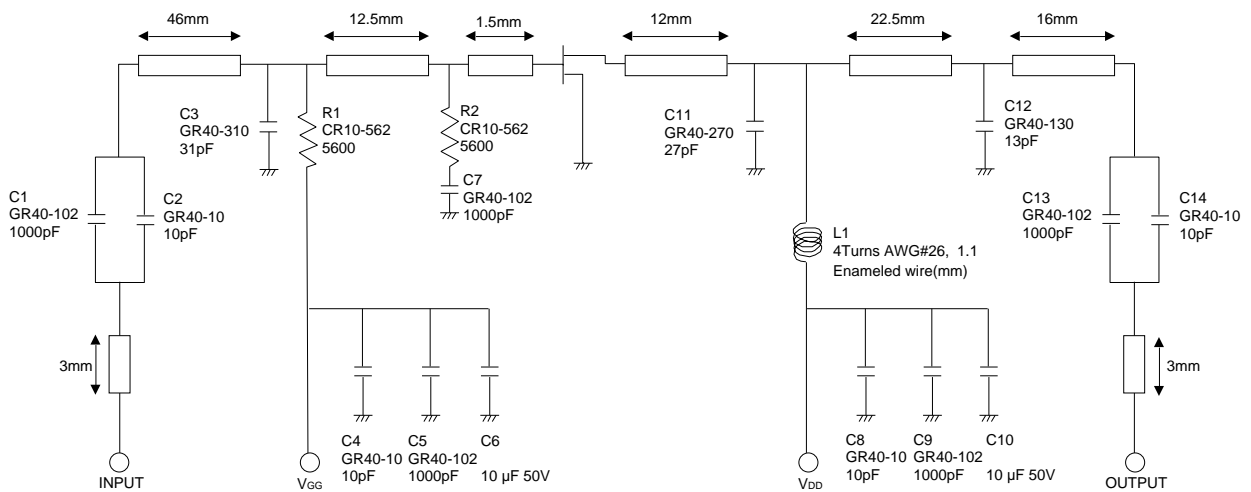
| Symbol | Parameter | Test conditions | Limits | | | Unit |
|------------------|-------------------|--|--------|-----|-----|------|
| | | | Min | Typ | Max | |
| I _{bss} | | V _{Ds} =17V, V _{Gs} =0V | — | — | 10 | μA |
| I _{gss} | | V _{Gs} =10V, V _{Ds} =0V | — | — | 1 | μA |
| V _{TH} | Threshold voltage | V _{Ds} =7V, I _{Ds} =1mA | 1.0 | — | 1.7 | V |
| C _{iss} | | V _{Gs} =10V, V _{Ds} =0V, f=1MHz | — | 45 | — | pF |
| C _{oss} | | V _{Ds} =10V, V _{Gs} =0V, f=1MHz | — | 80 | — | pF |
| P _{out} | | V _{Ds} =9.6V, P _{in} =1W, f=450MHz | 7 | 8 | — | W |
| hd | | | 50 | 55 | — | % |

Note: Above parameters, ratings, limits and conditions are subject to change.

TYPICAL PERFORMANCE DATA



EQUIVALENT CIRCUIT



Note: Board material-glass epoxy substrate
 micro strip line width=2.8mm, r :4.8,t=1.6mm

MITSUBISHI RF POWER MOS FET
2SK2975

S-PARAMETER DATA(TYPICAL)

V_D=9.6V, P_{in}=10dBm

| FREQ. (MHz) | S ₁₁ | | S ₁₂ | | S ₂₁ | | S ₂₂ | |
|----------------|-----------------|----------|-----------------|----------|-----------------|----------|-----------------|----------|
| | Real | Imag | Real | Imag | Real | Imag | Real | Imag |
| 50 | 0.836 | -115.463 | 0.021 | 11.967 | 19.136 | 97.418 | 0.559 | -143.723 |
| 100 | 0.807 | -141.825 | 0.021 | -16.870 | 10.141 | 65.065 | 0.636 | -154.490 |
| 150 | 0.819 | -151.724 | 0.020 | -37.649 | 6.556 | 40.799 | 0.680 | -158.082 |
| 200 | 0.835 | -156.464 | 0.018 | -50.731 | 4.625 | 20.767 | 0.720 | -159.659 |
| 250 | 0.858 | -159.472 | 0.016 | -62.227 | 3.475 | 2.085 | 0.759 | -160.702 |
| 300 | 0.872 | -161.678 | 0.014 | -72.477 | 2.709 | -14.865 | 0.778 | -161.884 |
| 350 | 0.886 | -163.630 | 0.012 | -77.156 | 2.175 | -30.984 | 0.807 | -163.331 |
| 400 | 0.899 | -165.272 | 0.010 | -82.951 | 1.788 | -46.429 | 0.830 | -164.014 |
| 450 | 0.909 | -166.371 | 0.010 | -79.763 | 1.501 | -61.362 | 0.839 | -164.860 |
| 500 | 0.915 | -167.628 | 0.010 | -77.947 | 1.279 | -75.599 | 0.858 | -165.663 |
| 550 | 0.924 | -168.601 | 0.010 | -77.893 | 1.107 | -89.665 | 0.869 | -166.475 |
| 600 | 0.930 | -169.541 | 0.011 | -76.571 | 0.969 | -103.303 | 0.874 | -166.923 |
| 650 | 0.933 | -170.535 | 0.013 | -82.268 | 0.855 | -116.569 | 0.885 | -167.633 |
| 700 | 0.935 | -171.602 | 0.015 | -88.668 | 0.759 | -130.173 | 0.891 | -168.317 |
| 750 | 0.944 | -172.164 | 0.017 | -93.156 | 0.690 | -143.380 | 0.893 | -168.904 |
| 800 | 0.946 | -173.164 | 0.019 | -103.513 | 0.625 | -156.123 | 0.905 | -169.826 |
| 850 | 0.948 | -173.673 | 0.021 | -113.867 | 0.570 | -169.394 | 0.908 | -170.437 |
| 900 | 0.949 | -174.773 | 0.024 | -124.065 | 0.525 | 177.293 | 0.909 | -171.046 |
| 950 | 0.951 | -175.444 | 0.026 | -134.453 | 0.487 | 165.298 | 0.915 | -171.892 |
| 1000 | 0.956 | -175.951 | 0.028 | -144.025 | 0.446 | 152.305 | 0.915 | -172.318 |
| 1050 | 0.957 | -177.019 | 0.031 | -157.299 | 0.411 | 139.706 | 0.915 | -173.122 |
| 1100 | 0.954 | -177.922 | 0.033 | -169.332 | 0.386 | 127.148 | 0.924 | -174.349 |
| 1150 | 0.953 | -178.800 | 0.035 | 179.717 | 0.368 | 115.532 | 0.926 | -174.354 |
| 1200 | 0.954 | -179.511 | 0.038 | 167.673 | 0.337 | 102.465 | 0.925 | -174.989 |
| 1250 | 0.956 | 179.625 | 0.040 | 155.999 | 0.323 | 90.520 | 0.930 | -175.742 |
| 1300 | 0.954 | 178.904 | 0.042 | 144.195 | 0.303 | 78.449 | 0.927 | -176.300 |
| 1350 | 0.954 | 177.726 | 0.045 | 132.079 | 0.287 | 66.533 | 0.929 | -177.658 |
| 1400 | 0.950 | 176.753 | 0.046 | 119.508 | 0.270 | 53.720 | 0.927 | -178.157 |
| 1450 | 0.950 | 175.847 | 0.049 | 107.540 | 0.260 | 41.671 | 0.931 | -178.520 |
| 1500 | 0.950 | 174.793 | 0.051 | 95.929 | 0.244 | 29.932 | 0.927 | -179.724 |