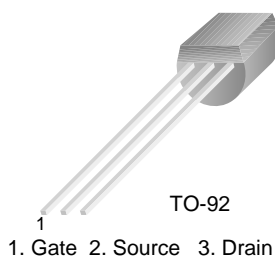


2N5953

N-Channel RF Amplifier

- This device is designed primarily for electronic switching applications such as low on resistance analog switching.
- Sourced from process 50.



Absolute Maximum Ratings* $T_a=25^\circ\text{C}$ unless otherwise noted

| Symbol | Parameter | Value | Units |
|----------------|--|-----------|------------------|
| V_{DG} | Drain-Gate Voltage | 30 | V |
| V_{GS} | Gate-Source Voltage | -30 | V |
| I_{GF} | Forward Gate Current | 10 | mA |
| T_J, T_{STG} | Operating and Storage Junction Temperature Range | -55 ~ 150 | $^\circ\text{C}$ |

* This ratings are limiting values above which the serviceability of any semiconductor device may be impaired.

NOTES:

- 1) These rating are based on a maximum junction temperature of 150 degrees C.
- 2) These are steady limits. The factory should be consulted on applications involving pulsed or low duty cycle operations.

Thermal Characteristics $T_a=25^\circ\text{C}$ unless otherwise noted

| Symbol | Parameter | Max. | Units |
|-----------------|---|------|----------------------------|
| P_D | Total Device Dissipation | 350 | mW |
| | Derate above 25°C | 2.8 | $\text{mW}/^\circ\text{C}$ |
| $R_{\theta JC}$ | Thermal Resistance, Junction to Case | 125 | $^\circ\text{C}/\text{W}$ |
| $R_{\theta JA}$ | Thermal Resistance, Junction to Ambient | 357 | $^\circ\text{C}/\text{W}$ |

Electrical Characteristics* $T_a=25^\circ\text{C}$ unless otherwise noted

| Symbol | Parameter | Test Condition | Min. | Max. | Units |
|--------|-----------|----------------|------|------|-------|
|--------|-----------|----------------|------|------|-------|

Off Characteristics

| | | | | | |
|---------------|-------------------------------|--|------|--------------|----|
| $V_{(BR)GSS}$ | Gate-Source Breakdown Voltage | $I_G = 1.0\mu\text{A}, V_{DS} = 0$ | -30 | | V |
| I_{GSS} | Gate Reverse Current | $V_{GS} = 15\text{V}, V_{DS} = 0, T = 25^\circ\text{C}$ $T = 100^\circ\text{C}$ | | -1.0 -200 | nA |
| $V_{GS(off)}$ | Gate-Source Cut-off Voltage | $V_{DS} = 15\text{V}, I_D = 100\text{nA}$ | -0.8 | -3.0 | V |
| V_{GS} | Gate-Source Forward Voltage | $V_{DS} = 15\text{V}, I_D = 250\mu\text{A}$ | -0.5 | -2.5 | V |

On Characteristics

| | | | | | |
|--------------|-----------------------------------|-----------------------------------|-----|-----|----|
| I_{DSS} | Zero-Gate Voltage Drain Current * | $V_{DS} = 15\text{V}, V_{GS} = 0$ | 2.5 | 5 | mA |
| $V_{DS(on)}$ | Drain-Source On Voltage | $I_D = 267\mu\text{A}$ | | 0.1 | V |

Small Signal Characteristics


| | | | | | |
|-----------|--|--|------|--------|-------------|
| g_{fs} | Forward Transferconductance | $V_{DS} = 15\text{V}, V_{GS} = 0\text{V}, f = 100\text{MHz}$ | 1000 | 6500 | $\mu\Omega$ |
| g_{oss} | Common- Source Output Conductance | $V_{DS} = 15\text{V}, V_{GS} = 0\text{V}, f = 1.0\text{kHz}$ | | 50 | $\mu\Omega$ |
| g_{os} | Output Conductance | $V_{DS} = 15\text{V}, V_{GS} = 0\text{V}, f = 100\text{MHz}$ | | 50 | $\mu\Omega$ |
| g_{is} | Input Conductance | $V_{DS} = 15\text{V}, V_{GS} = 0\text{V}, f = 100\text{MHz}$ | | 250 | $\mu\Omega$ |
| C_{iss} | Input Capacitance | $V_{DS} = 15\text{V}, V_{GS} = 0\text{V}, f = 1.0\text{MHz}$ | | 6 | pF |
| C_{rss} | Reverse Transfer Capacitance | $V_{DS} = 15\text{V}, V_{GS} = 0\text{V}, f = 1.0\text{MHz}$ | | 2 | pF |
| e_n | Equivalent Short-Circuit Input Noise Voltage | $V_{DS} = 15\text{V}, V_{GS} = 0\text{V}, f = 1.0\text{kHz}$ | | 100 | nV |
| NF | Noise Figure | $V_{DS} = 15\text{V}, V_{GS} = 0\text{V},$ $R_G = 1.0\text{m}\Omega, f = 1.0\text{kHz}$ $R_G = 1.0\text{k}\Omega, f = 100\text{MHz}$ | | 2 5 | dB |

* Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle = 2%



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