

1-24-27



2N5902-2N5909

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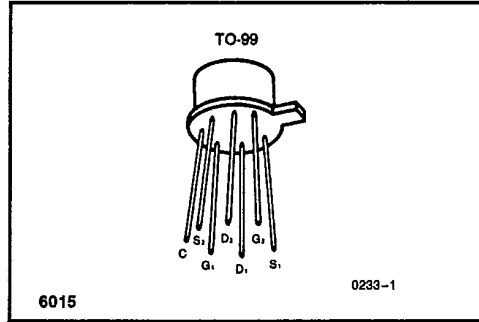
Monolithic Dual N-Channel JFET

General Purpose Amplifier

FEATURES

- Tight Tracking
- Good Matching

PIN CONFIGURATION



ABSOLUTE MAXIMUM RATINGS

($T_A = 25^\circ\text{C}$ unless otherwise specified)
 Gate-Drain or Gate-Source Voltage (Note 1) -40V
 Gate Current (Note 1) 10mA
 Storage Temperature Range -65°C to $+200^\circ\text{C}$
 Operating Temperature Range -55°C to $+150^\circ\text{C}$
 Lead Temperature (Soldering, 10sec) $+300^\circ\text{C}$

| | One Side | Both Sides |
|---------------------------------|-----------------------|-----------------------|
| Power Dissipation | 367mW | 500mW |
| Derate above 25°C | 3mW/ $^\circ\text{C}$ | 4mW/ $^\circ\text{C}$ |

NOTE: Stresses above those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only and functional operation of the device at these or any other conditions above those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

ORDERING INFORMATION

| TO-99 |
|--------|
| 2N5902 |
| 2N5903 |
| 2N5904 |
| 2N5905 |
| 2N5906 |
| 2N5907 |
| 2N5908 |
| 2N5909 |

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise specified)

| Symbol | Parameter | Test Conditions | 2N5902-6 | | 2N5903-7 | | 2N5904-8 | | 2N5905-9 | | Units | |
|--|--|--|---|-----|----------|-----|----------|-----|----------|-----|---------------|------------------------------|
| | | | Min | Max | Min | Max | Min | Max | Min | Max | | |
| $ I_{G1} - I_{G2} $ | Differential Gate Current | $V_{DG} = 10V, I_D = 30\mu A, T_A = 125^\circ\text{C}$ | 2N5902-5 | | 2.0 | | 2.0 | | 2.0 | | nA | |
| | | | 2N5906-9 | | 0.2 | | 0.2 | | 0.2 | | | |
| I_{DSS1} I_{DSS2} | Saturation Drain Current Ratio | $V_{DS} = 10V, V_{GS} = 0$ | 0.95 | 1 | 0.95 | 1 | 0.95 | 1 | 0.95 | 1 | | |
| g_{fs1} g_{fs2} | Transconductance Ratio | $f = 1\text{kHz}$ | 0.97 | 1 | 0.97 | 1 | 0.95 | 1 | 0.95 | 1 | | |
| $ V_{GS1} - V_{GS2} $ | Differential Gate-Source Voltage | | | 5 | | 5 | | 10 | | 15 | mV | |
| $\Delta V_{GS1} - V_{GS2} $ ΔT | Gate-Source Voltage Differential Drift (Measured at end points T_A and T_B) | $V_{DG} = 10V, I_D = 30\mu A$ | $T_A = 25^\circ\text{C}$ $T_B = 125^\circ\text{C}$ | | 5 | | 10 | | 20 | | 40 | $\mu\text{V}/^\circ\text{C}$ |
| | | | $T_A = -55^\circ\text{C}$ $T_B = 25^\circ\text{C}$ | | 5 | | 10 | | 20 | | 40 | |
| $ g_{os1} - g_{os2} $ | Differential Output Conductance | $f = 1\text{kHz}$ | | 0.2 | | 0.2 | | 0.2 | | 0.2 | μS | |

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NOTE: All typical values have been characterized but are not tested.

2N5902-2N5909

INTERNATIONAL

T-29-27

2N5902-2N5909

ELECTRICAL CHARACTERISTICS (Continued) ($T_A = 25^\circ\text{C}$ unless otherwise specified)

| Symbol | Parameter | Test Conditions | 2N5902-5 | | 2N5906-9 | | Units | |
|---------------|---|--|--------------------------------|----------------------------|----------|------|-------|---------------|
| | | | Min | Max | Min | Max | | |
| I_{GSS} | Gate Reverse Current | $V_{GS} = -20V, V_{DS} = 0$ $T_A = 125^\circ\text{C}$ | | -5 | | -2 | pA | |
| | | | | -10 | | -5 | nA | |
| BV_{GSS} | Gate-Source Breakdown Voltage | $I_G = -1\mu\text{A}, V_{DS} = 0$ | -40 | | -40 | | V | |
| $V_{GS(off)}$ | Gate-Source Cutoff Voltage | $V_{DS} = 10V, I_D = 1\text{nA}$ | -0.6 | -4.5 | -0.6 | -4.5 | | |
| V_{GS} | Gate Source Voltage | $V_{DG} = 10V, I_D = 30\mu\text{A}$ | | -4 | | -4 | | |
| I_G | Gate Operating Current | $T_A = 125^\circ\text{C}$ | | -3 | | -1 | pA | |
| | | | | -3 | | -1 | nA | |
| I_{DSS} | Saturation Drain Current | $V_{DS} = 10V, V_{GS} = 0$ | f = 1kHz | 30 | 500 | 30 | 500 | μA |
| g_{fs} | Common-Source Forward Transconductance | | | 70 | 250 | 70 | 250 | μS |
| g_{os} | Common-Source Output Conductance | | | | 5 | | 5 | |
| C_{iss} | Common-Source Input Capacitance | $V_{DS} = 10V, V_{GS} = 0$ (Note 1) | f = 1MHz | | 3 | | 3 | pF |
| C_{rss} | Common-Source Reverse Transfer Capacitance | | | | 1.5 | | 1.5 | |
| g_{fs} | Common-Source Forward Transconductance | $V_{DG} = 10V, I_D = 30\mu\text{A}$ | f = 1kHz | 50 | 150 | 50 | 150 | μS |
| g_{os} | Common-Source Output Conductance | | | | 1 | | 1 | |
| \bar{e}_n | Equivalent Short Circuit Input Noise Voltage (Note 1) | | | $V_{DS} = 10V, V_{GS} = 0$ | | 0.2 | | 0.1 |
| NF | Spot Noise Figure (Note 1) | | f = 100Hz $R_G = 10M\Omega$ | | 3 | | 1 | dB |

NOTE 1: For design reference only, not 100% tested.

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NOTE: All typical values have been characterized but are not tested.