

The 2N5909 is a high-performance monolithic dual JFET featuring tight matching and low drift over temperature specifications, and is targeted for use in a wide range of precision instrumentation applications where tight tracking is required.

The hermetically sealed TO-78 package is well suited for hi-reliability and harsh environment applications.

(See Packaging Information).

2N5909 Benefits:

- Tight Tracking
- Good matching
- Ultra Low Leakage
- Low Drift

| FEATURES | | | | |
|---|---|-------|-------|--|
| LOW DRIFT | $ V_{GS1-2}/T = 5\mu V/^{\circ}C$ TYP. | | | |
| ULTRA LOW LEAKAGE | $I_G = 150fA$ TYP. | | | |
| LOW PINCHOFF | $V_p = 2V$ TYP. | | | |
| ABSOLUTE MAXIMUM RATINGS @ 25°C (unless otherwise noted) | | | | |
| Maximum Temperatures | | | | |
| Storage Temperature | -65°C to +150°C | | | |
| Operating Junction Temperature | +150°C | | | |
| Maximum Voltage and Current for Each Transistor – Note 1 | | | | |
| $-V_{GSS}$ | Gate Voltage to Drain or Source | 40V | | |
| $-V_{DSO}$ | Drain to Source Voltage | 40V | | |
| $-I_{G(f)}$ | Gate Forward Current | 10mA | | |
| $-I_G$ | Gate Reverse Current | 10µA | | |
| Maximum Power Dissipation | | | | |
| Device Dissipation @ Free Air – Total | 40mW @ +125°C | | | |
| MATCHING CHARACTERISTICS @ 25°C UNLESS OTHERWISE NOTED | | | | |
| SYMBOL | CHARACTERISTICS | VALUE | UNITS | CONDITIONS |
| $ V_{GS1-2}/T $ max. | DRIFT VS. TEMPERATURE | 40 | µV/°C | $V_{DG}=10V, I_D=30\mu A$ $T_A=-55^{\circ}C$ to $+125^{\circ}C$ |
| $ V_{GS1-2} $ max. | OFFSET VOLTAGE | 15 | mV | $V_{DG}=10V, I_D=30\mu A$ |

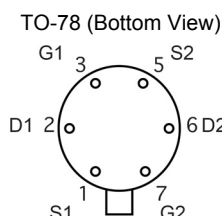
ELECTRICAL CHARACTERISTICS @ 25°C (unless otherwise noted)

| SYMBOL | CHARACTERISTICS | MIN. | TYP. | MAX. | UNITS | CONDITIONS |
|------------------------------|---|------|------|------|--------|---|
| BV_{GSS} | Breakdown Voltage | 40 | 60 | -- | V | $V_{DS} = 0$ $I_D=1nA$ |
| BV_{GGO} | Gate-To-Gate Breakdown | 40 | -- | -- | V | $I_G = 1nA$ $I_D = 0$ $I_S = 0$ |
| TRANSCONDUCTANCE | | | | | | |
| Y_{fSS} | Full Conduction | 70 | 300 | 500 | µmho | $V_{DG}=10V$ $V_{GS}=0V$ $f=1kHz$ |
| Y_{fS} | Typical Operation | 50 | 100 | 200 | µmho | $V_{DG}=10V$ $I_D=30\mu A$ $f=1kHz$ |
| $ Y_{fS1-2}/Y_{fS} $ | Mismatch | -- | 1 | 5 | % | |
| DRAIN CURRENT | | | | | | |
| I_{DSS} | Full Conduction | 60 | 400 | 1000 | µA | $V_{DG}=10V$ $V_{GS}=0V$ |
| $ I_{DSS1-2}/I_{DSS} $ | Mismatch at Full Conduction | -- | 2 | 5 | % | |
| GATE VOLTAGE | | | | | | |
| $V_{GS(off)}$ or V_p | Pinchoff voltage | 0.6 | 2 | 4.5 | V | $V_{DS}=10V$ $I_D=1nA$ |
| $V_{GS(on)}$ | Operating Range | -- | -- | 4 | V | $V_{DS}=10V$ $I_D=30\mu A$ |
| GATE CURRENT | | | | | | |
| $-I_{Gmax.}$ | Operating | -- | -- | 1 | pA | $V_{DG}=10V$ $I_D=30\mu A$ |
| $-I_{Gmax.}$ | High Temperature | -- | -- | 1 | nA | $T_A=+125^{\circ}C$ |
| $-I_{GSSmax.}$ | At Full Conduction | -- | -- | 2 | pA | $V_{DS}=0V$ $V_{GS}=20V$ |
| $-I_{GSSmax.}$ | High Temperature | -- | -- | 5 | nA | $T_A=+125^{\circ}C$ |
| I_{GGO} | Gate-to-Gate Leakage | -- | 1 | -- | pA | $V_{GG}=20V$ |
| OUTPUT CONDUCTANCE | | | | | | |
| Y_{OSS} | Full Conduction | -- | -- | 5 | µmho | $V_{DG}=10V$ $V_{GS}=0V$ |
| Y_{OS} | Operating | -- | 0.1 | 0.1 | µmho | $V_{DG}=10V$ $I_D=30\mu A$ |
| $ Y_{OS1-2} $ | Differential | -- | 0.01 | 0.1 | µmho | |
| COMMON MODE REJECTION | | | | | | |
| CMR | $-20 \log \Delta V_{GS1-2}/\Delta V_{DS} $ | -- | 90 | -- | dB | $\Delta V_{DS} = 10$ to $20V$ $I_D=30\mu A$ |
| CMR | $-20 \log \Delta V_{GS1-2}/\Delta V_{DS} $ | -- | 90 | -- | dB | $\Delta V_{DS} = 5$ to $10V$ $I_D=30\mu A$ |
| NOISE | | | | | | |
| NF | Figure | -- | -- | 1 | dB | $V_{DS}=10V$ $V_{GS}=0V$ $R_G=10M\Omega$ $f=100Hz$ $NBW=6Hz$ |
| e_n | Voltage | -- | 20 | 70 | nV/√Hz | $V_{DG}=10V$ $I_D=30\mu A$ $f=10Hz$ $NBW=1Hz$ |
| CAPACITANCE | | | | | | |
| C_{ISS} | Input | -- | -- | 3 | pF | $V_{DS}=10V$ $V_{GS}=0V$ $f=1MHz$ |
| C_{RSS} | Reverse Transfer | -- | -- | 1.5 | pF | |
| C_{DD} | Drain-to-Drain | -- | -- | 0.1 | pF | $V_{DG}=20V$ $I_D=30\mu A$ |

Note 1 – These ratings are limiting values above which the serviceability of any semiconductor may be impaired

Available Packages:

2N5909 in TO-78
2N5909 available as bare die
Please contact [Micross](http://www.micross.com) for full package and die dimensions



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