

The 2N5906 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).

### 2N5906 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<br>@ 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                   | 5     | µV/°C | $V_{DG}=10V, I_D=30\mu A$<br>$T_A=-55^{\circ}C$ to $+125^{\circ}C$ |
| $ V_{GS1-2} $ max.  | OFFSET VOLTAGE                          | 5     | mV    | $V_{DG}=10V, I_D=30\mu A$  |

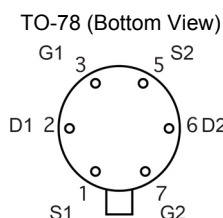
### ELECTRICAL CHARACTERISTICS @ 25°C (unless otherwise noted)

| 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     | $V_{DS}=10V$ $V_{GS}=0V$ $R_G=10M\Omega$<br>$f=100Hz$ $NBW=6Hz$ |
| $e_n$                  | 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:

2N5906 in TO-78  
2N5906 available as bare die  
Please contact [Micross](http://www.micross.com) for full package and die dimensions



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