



# Monolithic Dual N-Channel JFET General Purpose Amplifier

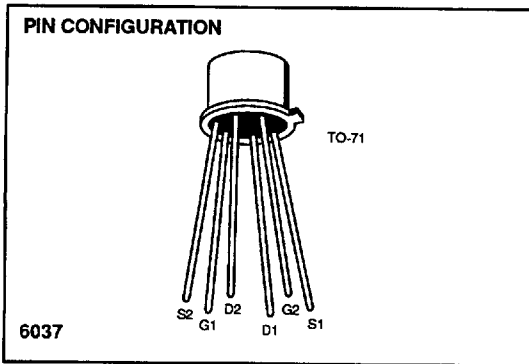
2N3921 / 2N3922

T-27-27

2N3921 / 2N3922

**FEATURES**

- Low Drain Current
- High Output Impedance
- Matched  $V_{GS}$ ,  $\Delta V_{GS}$  and  $g_{fs}$



**ABSOLUTE MAXIMUM RATINGS**

( $T_A = 25^\circ\text{C}$  unless otherwise noted)

|  |       |                 |
|--|-------|-----------------|
| Gate-Source or Gate-Drain Voltage (Note 1) | ..... | -50V            |
| Gate Current (Note 1)                      | ..... | 50mA            |
| Storage Temperature Range                  | ..... | -65°C to +200°C |
| Operating Temperature Range                | ..... | -55°C to +200°C |
| Load Temperature (Soldering, 10sec)        | ..... | +300°C          |
| Total Power Dissipation                    | ..... | 300mW           |
| Derate above 25°C                          | ..... | 1.7mW/°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**

| Part    | Package              | Temperature Range |
|---------|----------------------|-------------------|
| 2N3921  | Hermetic TO-71       | -55°C to +200°C   |
| 2N3922  | Hermetic TO-71       | -55°C to +200°C   |
| X2N3922 | Sorted Chip Carriers | -55°C to +200°C   |



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

| SYMBOL        | PARAMETER   | MIN  | MAX  | UNITS         | TEST CONDITIONS  |
|---------------|---|------|------|---------------|--|
| $I_{GSS}$     | Gate Reverse Current                                |      | -1   | nA            | $V_{GS} = -30V, V_{DS} = 0$<br>$T_A = 100^\circ\text{C}$                 |
|               |   |      | -1   | $\mu\text{A}$ |  |
| $BV_{DGO}$    | Drain-Gate Breakdown Voltage                        | 50   |      | V             | $I_D = 1\mu\text{A}, I_S = 0$  |
| $V_{GS(off)}$ | Gate-Source Cutoff Voltage                          |      | -3   | V             | $V_{DS} = 10V, I_D = 1\text{nA}$   |
| $V_{GS}$      | Gate-Source Voltage                                 | -0.2 | -2.7 | V             | $V_{DS} = 10V, I_D = 100\mu\text{A}$                                     |
| $I_G$         | Gate Operating Current                              |      | -250 | pA            | $V_{DG} = 10V, I_D = 700\mu\text{A}$<br>$T_A = 100^\circ\text{C}$        |
|               |   |      | -25  | nA            |  |
| $I_{DSS}$     | Saturation Drain Current (Note 1)                   | 1    | 10   | mA            | $V_{DS} = 10V, V_{GS} = 0$   |
| $g_{fs}$      | Common-Source Forward Transconductance (Note 2)     | 1500 | 7500 | $\mu\text{S}$ | $V_{DS} = 10V, V_{GS} = 0$<br>$f = 1\text{kHz}$                          |
| $g_{os}$      | Common-Source Output Conductance                    |      | 35   |               |  |
| $C_{iss}$     | Common-Source Input Capacitance (Note 3)            |      | 18   | pF            | $f = 1\text{MHz}$  |
| $C_{riss}$    | Common-Source Reverse Transfer Capacitance (Note 3) |      | 6    |               |  |
| $g_{fs}$      | Common-Source Forward Transconductance              | 1500 |      | $\mu\text{S}$ | $V_{DG} = 10V, I_D = 700\mu\text{A}$<br>$f = 1\text{kHz}$                |
| $g_{oss}$     | Common-Source Output Conductance                    |      | 20   |               |  |
| NF            | Spot Noise Figure (Note 3)                          |      | 2    | dB            | $V_{DS} = 10V, V_{GS} = 0$<br>$f = 1\text{kHz}, R_G = 1\text{meg}\Omega$ |

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*T-27-27*

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

| SYMBOL  | PARAMETER  | 2N3921 |     | 2N3922 |     | UNITS                        | TEST CONDITIONS                                 |  |
|---|--|--------|-----|--------|-----|------------------------------|---|--|
|   |  | MIN    | MAX | MIN    | MAX |                              |   |  |
| $ V_{GS1} - V_{GS2} $                         | Differential Gate-Source Voltage                         |        | 5   |        | 5   | mV                           | $V_{DG} = 10\text{V}$<br>$I_D = 700\mu\text{A}$ |  |
| $\frac{\Delta  V_{GS1} - V_{GS2} }{\Delta T}$ | Gate-Source Differential Voltage Change with Temperature |        | 10  |        | 25  | $\mu\text{V}/^\circ\text{C}$ |   | $T_A = 0^\circ\text{C}$<br>$T_B = 100^\circ\text{C}$ |
| $g_{fs1}/g_{fs2}$                             | Transconductance Ratio                                   | 0.95   | 1.0 | 0.95   | 1.0 |                              |   | $f = 1\text{kHz}$                                    |

- NOTES:**
1. Per transistor.
  2. Pulse test duration = 2 ms.
  3. For design reference only, not 100% tested.