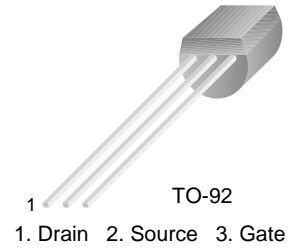**FAIRCHILD**

SEMICONDUCTOR®

April 2008

# U1897
# N-Channel JFET Switch

## Features

- This device is designed for low level analog switching, sample and hold circuits and chopper stabalized amplifiers.
- Sourced from Process 51.
- See J111 for characteristics.

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1. Drain  2. Source  3. Gate

## Absolute Maximum Ratings * $T_a$=25°C unless otherwise noted

| Symbol | Parameter | Value | Units |
|--------|-----------|-------|-------|
| $V_{DG}$ | Drain-Gate Voltage | 40 | V |
| $V_{GS}$ | Gate-Source Voltage | -40 | V |
| $I_{GF}$ | Forward Gate Current | 50 | mA |
| $T_J$, $T_{STG}$ | Operating and Storage Junction Temperature Range | -55 ~ 150 | °C |

* These ratings are limiting values above which the serviceability of any semiconductor device may be impaired.
**NOTES:**
1) These ratings are based on a maximum junction temperature of 150°C.
2) These are steady state limits. The factory should be consulted on applications involving pulsed or low duty cycle operations.

## Thermal Characteristics* $T_a$=25°C unless otherwise noted

| Symbol | Parameter | Value | Units |
|--------|-----------|-------|-------|
| $P_D$ | Total Device Dissipation<br>Derate above 25°C | 625<br>5.0 | mW<br>mW/°C |
| $R_{\theta JC}$ | Thermal Resistance, Junction to Case | 125 | °C/W |
| $R_{\theta JA}$ | Thermal Resistance, Junction to Ambient | 357 | °C/W |

* Device mounted on FR-4 PCB 1.6" × 1.6" × 0.06"

## Electrical Characteristics * $T_C$ = 25°C unless otherwise noted

| Symbol | Parameter | Conditions | Min. | Max | Units |
|---|---|---|---|---|---|
| **Off Characteristics** | | | | | |
| $V_{(BR)GS}$ | Gate-Source Breakdown Voltage | $I_G$ = -1.0 μA, $V_{DS}$ = 0 | -40 | | V |
| $V_{GS(off)}$ | Gate-Source Cutoff Voltage | $V_{DS}$ = 20 V, $I_D$ = 1.0 nA | -5.0 | -10 | V |
| $I_{DGO}$ | Drain-Gate Leakage Current | $V_{DG}$ = 20 V, $I_S$ = 0 | | -200 | pA |
| **On Characteristics** | | | | | |
| $I_{DSS}$ | Zero-Gate Voltage Drain Current * | $V_{DS}$ = 20 V, $V_{GS}$ = 0 | 30 | | mA |
| $r_{DS(on)}$ | Static Drain-Source On Resistance | $I_D$ = 1.0 mA, $V_{GS}$ = 0 | | 30 | Ω |
| **Small Signal Characteristics** | | | | | |
| $r_{ds(on)}$ | Drain-Source On Resistance | $V_{DS}$ = $V_{GS}$ = 0, f= 1.0 kHz | | 30 | Ω |
| $C_{iss}$ | Input Capacitance | $V_{DS}$ = 20, $V_{GS}$ = 0, f = 1.0 MHz | | 16 | pF |
| $C_{rss}$ | Reverse Transfer Capacitance | $V_{GS}$ = -20 V, f = 1.0 MHz | | 3.5 | pF |
| **Switching Characteristics** | | | | | |
| $t_{on}$ | Turn-On Time | $I_{D(on)}$ = 6.6 mA | | 25 | ns |
| $t_{off}$ | Turn-Off Time | $V_{GS(off)}$ = 12.0 V | | 40 | ns |

* Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2.0%

**NOTES:**
1. These ratings are limiting values above which the serviceability of any semiconductor device may be impaired.
2. These are steady state limits. The factory should be consulted on applications involving pulsed or low duty cycle operations.
3. These ratings are based on a maximum junction temperature of 150degrees C.

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