

# n-channel JFETs designed for . . .



**Performance Curves NC**  
See Section 5

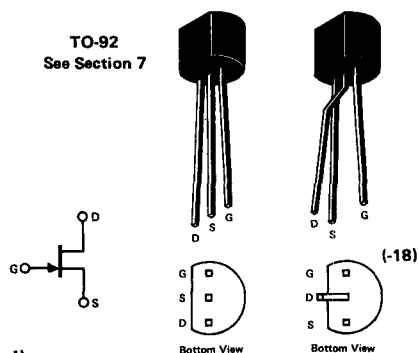
- Analog Switches
- Choppers
- Commutators

## BENEFITS

- Low Insertion Loss  
 $R_{DS(on)} < 30 \Omega$  (U1897E)
- No Error or Offset Voltage Generated by Closed Switch  
Purely Resistive

## ABSOLUTE MAXIMUM RATINGS (25°C)

Gate-Drain or Gate-Source Voltage . . . . . -40V  
Gate Current . . . . . 10 mA  
Total Device Dissipation at 25°C Ambient  
(Derate 3.27 mW/°C) . . . . . 360 mW  
Operating Temperature Range . . . . . -55 to 135°C  
Storage Temperature Range . . . . . -55 to 150°C  
Lead Temperature Range  
(1/16" from case for 10 seconds) . . . . . 300°C



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

| Characteristic |                                                             | U1897 |      | U1898 |      | U1899 |      | Unit     | Test Conditions                                                                            |
|----------------|-------------------------------------------------------------|-------|------|-------|------|-------|------|----------|--------------------------------------------------------------------------------------------|
|                |                                                             | Min   | Max  | Min   | Max  | Min   | Max  |          |                                                                                            |
| 1              | BV <sub>GS</sub> Gate-Source Breakdown Voltage              | -40   |      | -40   |      | -40   |      | V        | $I_G = -1 \mu A, V_{DS} = 0$                                                               |
| 2              | BV <sub>DGO</sub> Drain-Gate Breakdown Voltage              | 40    |      | 40    |      | 40    |      | V        | $I_G = -1 \mu A, I_S = 0$                                                                  |
| 3              | BV <sub>SGO</sub> Source-Gate Breakdown Voltage             | 40    |      | 40    |      | 40    |      | V        | $I_G = -1 \mu A, I_D = 0$                                                                  |
| 4              | I <sub>GSS</sub> Gate Reverse Current                       |       | -400 |       | -400 |       | -400 | pA       | $V_{GS} = -20 V, V_{DS} = 0$                                                               |
| 5              | I <sub>DGO</sub> Drain-Gate Leakage Current                 |       | 200  |       | 200  |       | 200  | pA       | $V_{DG} = 20 V, I_S = 0$                                                                   |
| 6              | I <sub>SGO</sub> Source-Gate Leakage Current                |       | 200  |       | 200  |       | 200  | pA       | $V_{SG} = 20 V, I_D = 0$                                                                   |
| 7              | I <sub>D(off)</sub> Drain Cutoff Current                    |       | 200  |       | 200  |       | 200  | nA       | $V_{DS} = 20 V, V_{GS} = -12 V$ (U1897E)                                                   |
| 8              |                                                             |       | 10   |       | 10   |       | 10   | nA       | $V_{GS} = -8 V$ (U1898E)                                                                   |
| 9              |                                                             |       |      |       |      |       |      | nA       | $V_{GS} = -6 V$ (U1899E) $T_A = 85^\circ C$                                                |
| 10             | V <sub>GS(off)</sub> Gate-Source Cutoff Voltage             | -5.0  | -10  | -2.0  | -7.0 | -1.0  | -5.0 | V        | $V_{DS} = 20 V, I_D = 1 nA$                                                                |
| 11             | I <sub>pss</sub> Saturation Drain Current (Note 1)          | 30    |      | 15    |      | 8.0   |      | mA       | $V_{DS} = 20 V, V_{GS} = 0$                                                                |
| 12             | V <sub>DS(on)</sub> Drain-Source ON Voltage                 |       | 0.2  |       | 0.2  |       | 0.2  | V        | $V_{GS} = 0, I_D = 6.6 mA$ (U1897E)<br>$I_D = 4.0 mA$ (U1898E),<br>$I_D = 2.5 mA$ (U1899E) |
| 13             | r <sub>DS(on)</sub> Static Drain-Source ON Resistance       |       | 30   |       | 50   |       | 80   | $\Omega$ | $I_D = 1 mA, V_{GS} = 0$                                                                   |
| 14             | C <sub>DG</sub> Drain-Gate Capacitance                      |       | 5    |       | 5    |       | 5    | pF       | $V_{DG} = 20 V, I_S = 0$                                                                   |
| 15             | C <sub>SG</sub> Source-Gate Capacitance                     |       | 5    |       | 5    |       | 5    | pF       | $V_{SG} = 20 V, I_D = 0$                                                                   |
| 16             | C <sub>iss</sub> Common-Source Input Capacitance            |       | 16   |       | 16   |       | 16   | pF       | $V_{DS} = 20 V, V_{GS} = 0$                                                                |
| 17             | C <sub>rss</sub> Common-Source Reverse Transfer Capacitance |       | 3.5  |       | 3.5  |       | 3.5  | pF       | $f = 1 MHz$                                                                                |
| 18             | t <sub>d(on)</sub> Turn ON Delay Time                       |       | 15   |       | 15   |       | 20   | ns       | Switching Time Test Conditions                                                             |
| 19             | t <sub>r</sub> Rise Time                                    |       | 10   |       | 20   |       | 40   | ns       | U1897E U1898E U1899E                                                                       |
|                | t <sub>off</sub> Turn-OFF Time                              |       | 40   |       | 60   |       | 80   | ns       | $V_{DD} = 3 V, V_{GS(on)} = 0, V_{GS(off)} = -12 V, R_L = 430 \Omega, I_{D(on)} = 6.6 mA$  |
|                |                                                             |       |      |       |      |       |      | ns       | $V_{GS(on)} = 0, V_{GS(off)} = -8 V, R_L = 700 \Omega, I_{D(on)} = 4 mA$                   |
|                |                                                             |       |      |       |      |       |      | ns       | $V_{GS(on)} = 0, V_{GS(off)} = -6 V, R_L = 1100 \Omega, I_{D(on)} = 2.5 mA$                |

### NOTE:

1. Pulse test pulsewidth = 300  $\mu s$ ; duty cycle  $\leq 3\%$ .

NC

U1897 U1898 U1899  
U1897-18 U1898-18 U1899-18

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Siliconix