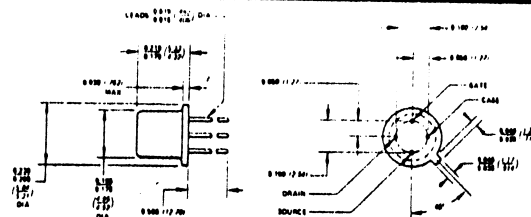


## N-CHANNEL SILICON JUNCTION FIELD-EFFECT TRANSISTORS

FOR VERY LOW INPUT CURRENT DC AMPLIFIERS

- $I_{GSS} < 1 \text{ pA}$  (2N4117A Series)
- $I_{GSS} < 10 \text{ pA}$  (2N4117 Series)



### PRODUCT CONDITIONING

Units receive the following treatment before final electrical tests:

High Temp Storage: 24 Hours at 150°C    25,000g Acceleration/Impact in the Y<sub>1</sub> Plane  
Thermal Shock: +100 to 0°C for 5 Cycles    Helium and/or Gross Leak Tests for Hermeticity

### \*ABSOLUTE MAXIMUM RATINGS (25°C)

Gate-Drain or Gate-Source Voltage (Note 1) ..... -40 V  
Gate-Current ..... 50 mA  
Total Device Dissipation (Derate 2 mW/°C to 175°C) ..... 300 mW  
Storage Temperature Range ..... -65 to +175°C  
Lead Temperature 1/16" from Case for 10 sec ..... 255°C

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

| Characteristic                                           | Test Conditions                                        | 2N4117<br>2N4117A |      | 2N4118<br>2N4118A |      | 2N4119<br>2N4119A |      | Unit            |
|----------------------------------------------------------|--------------------------------------------------------|-------------------|------|-------------------|------|-------------------|------|-----------------|
|                                                          |                                                        | Min               | Max  | Min               | Max  | Min               | Max  |                 |
| $I_{GSS}$ Gate Reverse Current<br>2N4117 Series Only     | $V_{GS} = -20 \text{ V}, V_{DS} = 0$                   |                   |      |                   |      |                   |      |                 |
|                                                          | 25°C                                                   |                   | -10  |                   | -10  |                   | -10  | pA              |
|                                                          | 150°C                                                  |                   | -25  |                   | -25  |                   | -25  | nA              |
| $I_{GSS}$ Gate Reverse Current<br>2N4117A Series Only    | $V_{GS} = -20 \text{ V}, V_{DS} = 0$                   |                   |      |                   |      |                   |      |                 |
|                                                          | 25°C                                                   |                   | -1   |                   | -1   |                   | -1   | pA              |
|                                                          | 150°C                                                  |                   | -2.5 |                   | -2.5 |                   | -2.5 | nA              |
| $BV_{GSS}$ Gate-Source Breakdown Voltage                 | $I_G = -1 \mu\text{A}, V_{DS} = 0$                     | -40               |      | -40               |      | -40               |      | V               |
| $V_p$ Gate-Source Pinch-Off Voltage                      | $V_{DS} = 10 \text{ V}, I_D = 1 \text{ nA}$            | -0.6              | -1.8 | -1                | -3   | -2                | -6   | V               |
| $I_{DSS}$ Drain Current at Zero Gate Voltage (Note 2)    | $V_{DS} = 10 \text{ V}, V_{GS} = 0$                    | 0.03              | 0.09 | 0.08              | 0.24 | 0.20              | 0.60 | mA              |
| $g_{fs}$ Common-Source Forward Transconductance (Note 2) | $V_{DS} = 10 \text{ V}, V_{GS} = 0, f = 1 \text{ kHz}$ | 70                | 210  | 80                | 250  | 100               | 330  | $\mu\text{mho}$ |
| $g_{oss}$ Common-Source Output Conductance               | $V_{DS} = 10 \text{ V}, V_{GS} = 0, f = 1 \text{ kHz}$ |                   | 3    |                   | 5    |                   | 10   | $\mu\text{mho}$ |
| $C_{iss}$ Common-Source Input Capacitance                | $V_{DS} = 10 \text{ V}, V_{GS} = 0, f = 1 \text{ MHz}$ |                   | 3    |                   | 3    |                   | 3    | pF              |
| $C_{rss}$ Common-Source Reverse Transfer Capacitance     | $V_{DS} = 10 \text{ V}, V_{GS} = 0, f = 1 \text{ MHz}$ |                   | 1.5  |                   | 1.5  |                   | 1.5  | pF              |

#### NOTES:

1. Due to symmetrical geometry, these units may be operated with source and drain leads interchanged.
2. This parameter is measured during a 2 ms interval 100 ms after power is applied. (Not a JEDEC condition.)

\*JEDEC registered data.



NJ Semi-Conductors reserves the right to change test conditions, parameter limits and package dimensions without notice. Information furnished by NJ Semi-Conductors is believed to be both accurate and reliable at the time of going to press. However NJ Semi-Conductors assumes no responsibility for any errors or omissions discovered in its use. NJ Semi-Conductors encourages customers to verify that datasheets are current before placing orders.