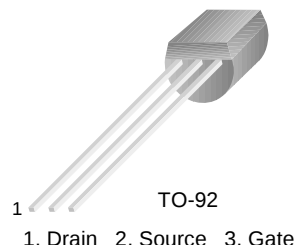


# PN4117A

PN4117A

## N-Channel Switch

- This device is designed for low current DC and audio application. These devices provide excellent performance as input stages for sub-picoamp instrumentation or any high impedance signal sources.
- Sourced from process 53.



## Absolute Maximum Ratings \* $T_A=25^\circ\text{C}$ 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               |
| $T_{STG}$ | Operating and storage Temperature Range | - 55 ~ 150 | $^\circ\text{C}$ |

\* These ratings are limiting values above which the serviceability of any semiconductor device may be impaired

### NOTES:

- These ratings are based on a maximum junction temperature of 150degrees C.
- These are steady state limits. The factory should be consulted on applications involving pulsed or low duty cycle operations

## Electrical Characteristics $T_A=25^\circ\text{C}$ unless otherwise noted

| Symbol                              | Parameter                              | Test Condition                                           | Min. | Typ. | Max. | Units         |
|-------------------------------------|----------------------------------------|----------------------------------------------------------|------|------|------|---------------|
| <b>Off Characteristics</b>          |                                        |                                                          |      |      |      |               |
| $V_{(BR)GSS}$                       | Gate-Source Breakdown Voltage          | $V_{DS} = 0, I_G = -1\mu\text{A}$                        | -40  |      |      | V             |
| $V_{GS(off)}$                       | Gate-Source Cutoff Voltage             | $V_{DS} = -10\text{V}, I_D = 1.0\text{nA}$               | -0.6 |      | -1.8 | V             |
| $I_{GSS}$                           | Gate Reverse Current                   | $V_{DS} = 0\text{V}, V_{GS} = -20\text{V}$               |      |      | -1.0 | pA            |
| <b>On Characteristics</b>           |                                        |                                                          |      |      |      |               |
| $I_{DSS}$                           | Zero-Gate Voltage Drain Current *      | $V_{DS} = 10\text{V}, V_{GS} = 0$                        | 30   |      | 90   | $\mu\text{A}$ |
| <b>Small Signal Characteristics</b> |                                        |                                                          |      |      |      |               |
| $g_{fs}$                            | Common Source Forward Transconductance | $V_{DS} = 10\text{V}, V_{GS} = 0$<br>$f = 1.0\text{KHz}$ | 70   |      | 210  | mmhos         |
| $g_{OSS}$                           | Common Source Output Conductance       | $V_{DS} = 10\text{V}, V_{GS} = 0$<br>$f = 1\text{KHz}$   |      |      | 3.0  | mmhos         |
| $R_{E(YFS)}$                        | Common Source Forward Conductance      | $V_{DS} = 10\text{V}, V_{GS} = 0$<br>$f = 30\text{MHz}$  | 60   |      |      | mmhos         |
| $C_{iss}$                           | Input Capacitance                      | $V_{DS} = 10\text{V}, V_{GS} = 0$<br>$f = 1.0\text{KHz}$ |      |      | 3.0  | pF            |
| $C_{rss}$                           | Reverse Transfer Capacitance           | $V_{DS} = 10\text{V}, V_{GS} = 0$<br>$f = 1.0\text{MHz}$ |      |      | 1.5  | pF            |

\* Pulse Test: Pulse Width  $\leq 300\mu\text{s}$ , Duty Cycle  $\leq 1.0\%$

## Thermal Characteristics $T_A=25^\circ\text{C}$ unless otherwise noted

| Symbol          | Parameter                                                   | Max.       | Units                      |
|-----------------|-------------------------------------------------------------|------------|----------------------------|
| $P_D$           | Total Device Dissipation<br>Derate above $25^\circ\text{C}$ | 350<br>2.8 | mW<br>mW/ $^\circ\text{C}$ |
| $R_{\theta JC}$ | Thermal Resistance, Junction to Case                        | 125        | $^\circ\text{C/W}$         |
| $R_{\theta JA}$ | Thermal Resistance, Junction to Ambient                     | 357        | $^\circ\text{C/W}$         |

# Package Dimensions

## TO-92



Dimensions in Millimeters

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