

PN4391  
PN4392  
PN4393

N-CHANNEL  
SILICON JFET



TO-92 CASE

#### DESCRIPTION:

PN4391 series types are N-Channel silicon JFETs designed for analog switching and chopper applications.

#### MARKING: FULL PART NUMBER

#### MAXIMUM RATINGS: ( $T_A=25^\circ\text{C}$ )

Gate-Drain Voltage  
Gate-Source Voltage  
Gate Current  
Power Dissipation  
Operating and Storage Junction Temperature

#### SYMBOL

$V_{GD}$  40  
 $V_{GS}$  40  
 $I_G$  50  
 $P_D$  625  
 $T_J, T_{stg}$  -65 to +150

#### UNITS

V  
V  
mA  
mW  
 $^\circ\text{C}$

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

| SYMBOL        | TEST CONDITIONS                                                | PN4391 |     | PN4392 |     | PN4393 |     | UNITS         |
|---------------|----------------------------------------------------------------|--------|-----|--------|-----|--------|-----|---------------|
|               |                                                                | MIN    | MAX | MIN    | MAX | MIN    | MAX |               |
| $I_{GSS}$     | $V_{GS}=20\text{V}$                                            | -      | 0.1 | -      | 0.1 | -      | 0.1 | nA            |
| $I_{GSS}$     | $V_{GS}=20\text{V}, T_A=100^\circ\text{C}$                     | -      | 0.2 | -      | 0.2 | -      | 0.2 | $\mu\text{A}$ |
| $I_{DSS}$     | $V_{DS}=20\text{V}$                                            | 50     | 150 | 25     | 75  | 5.0    | 30  | mA            |
| $I_{D(OFF)}$  | $V_{DS}=20\text{V}, V_{GS}=12\text{V}$                         | -      | 0.1 | -      | -   | -      | -   | nA            |
| $I_{D(OFF)}$  | $V_{DS}=20\text{V}, V_{GS}=7.0\text{V}$                        | -      | -   | -      | 0.1 | -      | -   | nA            |
| $I_{D(OFF)}$  | $V_{DS}=20\text{V}, V_{GS}=5.0\text{V}$                        | -      | -   | -      | -   | -      | 0.1 | nA            |
| $I_{D(OFF)}$  | $V_{DS}=20\text{V}, V_{GS}=12\text{V}, T_A=100^\circ\text{C}$  | -      | 0.2 | -      | -   | -      | -   | $\mu\text{A}$ |
| $I_{D(OFF)}$  | $V_{DS}=20\text{V}, V_{GS}=7.0\text{V}, T_A=100^\circ\text{C}$ | -      | -   | -      | 0.2 | -      | -   | $\mu\text{A}$ |
| $I_{D(OFF)}$  | $V_{DS}=20\text{V}, V_{GS}=5.0\text{V}, T_A=100^\circ\text{C}$ | -      | -   | -      | -   | -      | 0.2 | $\mu\text{A}$ |
| $BV_{GSS}$    | $I_G=1.0\mu\text{A}$                                           | 40     | -   | 40     | -   | 40     | -   | V             |
| $V_{GS(OFF)}$ | $V_{DS}=20\text{V}, I_D=1.0\text{nA}$                          | 4.0    | 10  | 2.0    | 5.0 | 0.5    | 3.0 | V             |
| $V_{GS(f)}$   | $V_{DS}=0, I_G=1.0\text{mA}$                                   | -      | 1.0 | -      | 1.0 | -      | 1.0 | V             |
| $V_{DS(ON)}$  | $I_D=12\text{mA}$                                              | -      | 0.4 | -      | -   | -      | -   | V             |
| $V_{DS(ON)}$  | $I_D=6.0\text{mA}$                                             | -      | -   | -      | 0.4 | -      | -   | V             |
| $V_{DS(ON)}$  | $I_D=3.0\text{mA}$                                             | -      | -   | -      | -   | -      | 0.4 | V             |
| $r_{DS(ON)}$  | $I_D=1.0\text{mA}, V_{GS}=0$                                   | -      | 30  | -      | 60  | -      | 100 | $\Omega$      |
| $r_{ds(on)}$  | $V_{GS}=0, I_D=0, f=1.0\text{kHz}$                             | -      | 30  | -      | 60  | -      | 100 | $\Omega$      |
| $C_{rss}$     | $V_{GS}=12\text{V}, V_{DS}=0, f=1.0\text{MHz}$                 | -      | 3.5 | -      | -   | -      | -   | pF            |
| $C_{rss}$     | $V_{GS}=7.0\text{V}, V_{DS}=0, f=1.0\text{MHz}$                | -      | -   | -      | 3.5 | -      | -   | pF            |
| $C_{rss}$     | $V_{GS}=5.0\text{V}, V_{DS}=0, f=1.0\text{MHz}$                | -      | -   | -      | -   | -      | 3.5 | pF            |
| $C_{iss}$     | $V_{DS}=20\text{V}, V_{GS}=0, f=1.0\text{MHz}$                 | -      | 14  | -      | 14  | -      | 14  | pF            |

R1 (30-January 2012)

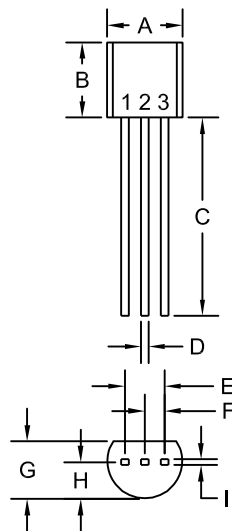
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**ELECTRICAL CHARACTERISTICS - Continued:** ( $T_A=25^{\circ}\text{C}$  unless otherwise noted)

| SYMBOL    | TEST CONDITIONS           | PN4391 |     | PN4392 |     | PN4393 |     | UNITS |
|-----------|---------------------------|--------|-----|--------|-----|--------|-----|-------|
|           |                           | MIN    | MAX | MIN    | MAX | MIN    | MAX |       |
| $t_r$     | $I_{D(ON)}=12\text{mA}$   | -      | 5.0 | -      | -   | -      | -   | ns    |
| $t_r$     | $I_{D(ON)}=6.0\text{mA}$  | -      | -   | -      | 5.0 | -      | -   | ns    |
| $t_r$     | $I_{D(ON)}=3.0\text{mA}$  | -      | -   | -      | -   | -      | 5.0 | ns    |
| $t_f$     | $V_{GS(OFF)}=12\text{V}$  | -      | 15  | -      | -   | -      | -   | ns    |
| $t_f$     | $V_{GS(OFF)}=7.0\text{V}$ | -      | -   | -      | 20  | -      | -   | ns    |
| $t_f$     | $V_{GS(OFF)}=5.0\text{V}$ | -      | -   | -      | -   | -      | 30  | ns    |
| $t_{on}$  | $I_{D(ON)}=12\text{mA}$   | -      | 15  | -      | -   | -      | -   | ns    |
| $t_{on}$  | $I_{D(ON)}=6.0\text{mA}$  | -      | -   | -      | 15  | -      | -   | ns    |
| $t_{on}$  | $I_{D(ON)}=3.0\text{mA}$  | -      | -   | -      | -   | -      | 15  | ns    |
| $t_{off}$ | $V_{GS(OFF)}=12\text{V}$  | -      | 20  | -      | -   | -      | -   | ns    |
| $t_{off}$ | $V_{GS(OFF)}=7.0\text{V}$ | -      | -   | -      | 35  | -      | -   | ns    |
| $t_{off}$ | $V_{GS(OFF)}=5.0\text{V}$ | -      | -   | -      | -   | -      | 50  | ns    |

**TO-92 CASE - MECHANICAL OUTLINE**



| DIMENSIONS |        |       |             |      |
|------------|--------|-------|-------------|------|
| SYMBOL     | INCHES |       | MILLIMETERS |      |
|            | MIN    | MAX   | MIN         | MAX  |
| A (DIA)    | 0.175  | 0.205 | 4.45        | 5.21 |
| B          | 0.170  | 0.210 | 4.32        | 5.33 |
| C          | 0.500  | -     | 12.70       | -    |
| D          | 0.016  | 0.022 | 0.41        | 0.56 |
| E          | 0.100  |       | 2.54        |      |
| F          | 0.050  |       | 1.27        |      |
| G          | 0.125  | 0.165 | 3.18        | 4.19 |
| H          | 0.080  | 0.105 | 2.03        | 2.67 |
| I          | 0.015  |       | 0.38        |      |

TO-92 (REV: R1)

**LEAD CODE:**

- 1) Drain
- 2) Source
- 3) Gate

**MARKING: FULL PART NUMBER**

R1