

2N7002

**SURFACE MOUNT  
N-CHANNEL  
ENHANCEMENT-MODE  
SILICON MOSFET**



www.centrasemi.com

**DESCRIPTION:**

The CENTRAL SEMICONDUCTOR 2N7002 type is a N-Channel Field Effect Transistor, manufactured by the N-Channel DMOS Process, designed for high speed pulsed amplifier and driver applications.

**MARKING CODE: 702**



**SOT-23 CASE**

**MAXIMUM RATINGS:** (T<sub>A</sub>=25°C)

Drain-Source Voltage  
 Drain-Gate Voltage  
 Gate-Source Voltage  
 Continuous Drain Current (T<sub>C</sub>=25°C)  
 Continuous Drain Current (T<sub>C</sub>=100°C)  
 Continuous Source Current (Body Diode)  
 Maximum Pulsed Drain Current  
 Maximum Pulsed Source Current  
 Power Dissipation  
 Operating and Storage Junction Temperature  
 Thermal Resistance

**SYMBOL**

V<sub>DS</sub> 60  
 V<sub>DG</sub> 60  
 V<sub>GS</sub> 40  
 I<sub>D</sub> 115  
 I<sub>D</sub> 75  
 I<sub>S</sub> 115  
 I<sub>DM</sub> 800  
 I<sub>SM</sub> 800  
 P<sub>D</sub> 350  
 T<sub>J</sub>, T<sub>stg</sub> -65 to +150  
 Θ<sub>JA</sub> 357

**UNITS**

V  
 V  
 V  
 mA  
 mA  
 mA  
 mA  
 mA  
 mW  
 °C  
 °C/W

**ELECTRICAL CHARACTERISTICS:** (T<sub>A</sub>=25°C unless otherwise noted)

| SYMBOL              | TEST CONDITIONS  | MIN | TYP | MAX   | UNITS |
|---------------------|--|-----|-----|-------|-------|
| I <sub>GSSF</sub>   | V <sub>GS</sub> =20V   |     |     | 100   | nA    |
| I <sub>GSSR</sub>   | V <sub>GS</sub> =20V   |     |     | 100   | nA    |
| I <sub>DSS</sub>    | V <sub>DS</sub> =60V, V <sub>GS</sub> =0                           |     |     | 1.0   | μA    |
| I <sub>DSS</sub>    | V <sub>DS</sub> =60V, V <sub>GS</sub> =0, T <sub>A</sub> =125°C    |     |     | 500   | μA    |
| I <sub>D(ON)</sub>  | V <sub>DS</sub> =10V, V <sub>GS</sub> =10V                         | 500 |     |       | mA    |
| BV <sub>DSS</sub>   | I <sub>D</sub> =10μA   | 60  | 105 |       | V     |
| V <sub>GS(th)</sub> | V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA           | 1.0 | 2.1 | 2.5   | V     |
| V <sub>DS(ON)</sub> | V <sub>GS</sub> =10V, I <sub>D</sub> =500mA                        |     |     | 3.75  | V     |
| V <sub>DS(ON)</sub> | V <sub>GS</sub> =5.0V, I <sub>D</sub> =50mA                        |     |     | 0.375 | V     |
| V <sub>SD</sub>     | V <sub>GS</sub> =0, I <sub>S</sub> =11.5mA                         |     |     | 1.5   | V     |
| r <sub>DS(ON)</sub> | V <sub>GS</sub> =10V, I <sub>D</sub> =500mA                        |     | 3.7 | 7.5   | Ω     |
| r <sub>DS(ON)</sub> | V <sub>GS</sub> =10V, I <sub>D</sub> =500mA, T <sub>A</sub> =100°C |     |     | 13.5  | Ω     |
| r <sub>DS(ON)</sub> | V <sub>GS</sub> =5.0V, I <sub>D</sub> =50mA                        |     | 6.2 | 7.5   | Ω     |
| r <sub>DS(ON)</sub> | V <sub>GS</sub> =5.0V, I <sub>D</sub> =50mA, T <sub>A</sub> =100°C |     |     | 13.5  | Ω     |
| g <sub>FS</sub>     | V <sub>DS</sub> =10V, I <sub>D</sub> =200mA                        | 80  |     |       | mS    |

R5 (31-January 2011)

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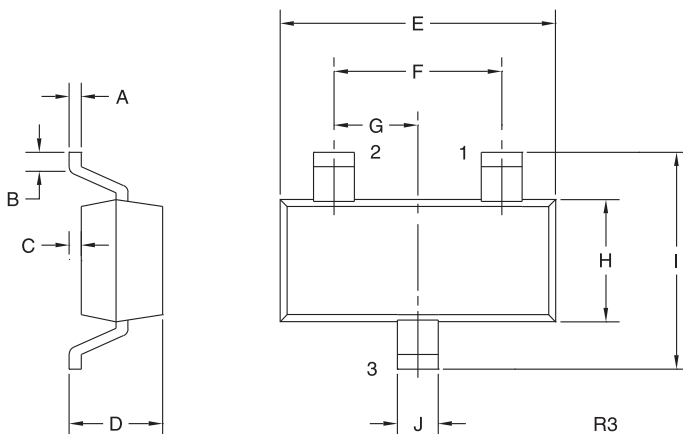
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**ELECTRICAL CHARACTERISTICS - Continued:** ( $T_A=25^{\circ}\text{C}$  unless otherwise noted)

| SYMBOL    | TEST CONDITIONS  | MAX | UNITS |
|-----------|--|-----|-------|
| $C_{rss}$ | $V_{DS}=25\text{V}, V_{GS}=0, f=1.0\text{MHz}$                     | 5.0 | pF    |
| $C_{iss}$ | $V_{DS}=25\text{V}, V_{GS}=0, f=1.0\text{MHz}$                     | 50  | pF    |
| $C_{oss}$ | $V_{DS}=25\text{V}, V_{GS}=0, f=1.0\text{MHz}$                     | 25  | pF    |
| $t_{on}$  | $V_{DD}=30\text{V}, I_D=200\text{mA}, R_G=25\Omega, R_L=150\Omega$ | 20  | ns    |
| $t_{off}$ | $V_{DD}=30\text{V}, I_D=200\text{mA}, R_G=25\Omega, R_L=150\Omega$ | 20  | ns    |

**SOT-23 CASE - MECHANICAL OUTLINE**



**LEAD CODE:**

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

**MARKING CODE: 702**

| SYMBOL | DIMENSIONS |       |             |      |
|--------|------------|-------|-------------|------|
|        | INCHES     |       | MILLIMETERS |      |
|        | MIN        | MAX   | MIN         | MAX  |
| A      | 0.003      | 0.007 | 0.08        | 0.18 |
| B      | 0.006      | -     | 0.15        | -    |
| C      | -          | 0.005 | -           | 0.13 |
| D      | 0.035      | 0.043 | 0.89        | 1.09 |
| E      | 0.110      | 0.120 | 2.80        | 3.05 |
| F      | 0.075      |       | 1.90        |      |
| G      | 0.037      |       | 0.95        |      |
| H      | 0.047      | 0.055 | 1.19        | 1.40 |
| I      | 0.083      | 0.098 | 2.10        | 2.49 |
| J      | 0.014      | 0.020 | 0.35        | 0.50 |

SOT-23 (REV: R3)

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[www.s-manuals.com](http://www.s-manuals.com)