

2N7002

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



SOT-23 CASE



www.centrasemi.com

DESCRIPTION:

The CENTRAL SEMICONDUCTOR 2N7002 type is an N-Channel enhancement-mode MOSFET manufactured by the N-Channel DMOS Process, designed for high speed pulsed amplifier and driver applications.

MARKING CODE: 702

MAXIMUM RATINGS: (T_A=25°C)

Drain-Source Voltage
Drain-Gate Voltage
Gate-Source Voltage
Continuous Drain Current (T_C=25°C)
Continuous Drain Current (T_C=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_{DS} 60
V_{DG} 60
V_{GS} 40
I_D 115
I_D 75
I_S 115
I_{DM} 800
I_{SM} 800
P_D 350
T_J, T_{stg} -65 to +150
θ_{JA} 357

UNITS

V
V
V
mA
mA
mA
mA
mA
mW
°C
°C/W

ELECTRICAL CHARACTERISTICS: (T_A=25°C unless otherwise noted)

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

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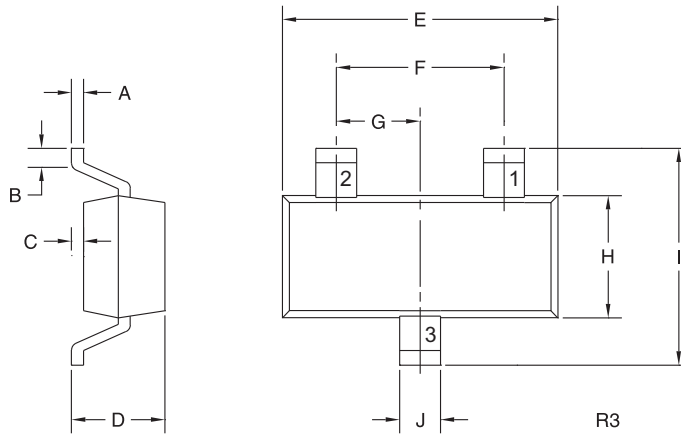
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ELECTRICAL CHARACTERISTICS - Continued: ($T_A=25^\circ\text{C}$ unless otherwise noted)

| SYMBOL | TEST CONDITIONS | TYP | 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 |
| $Q_{g(\text{tot})}$ | $V_{DS}=30\text{V}$, $V_{GS}=4.5\text{V}$, $I_D=100\text{mA}$ | 0.592 | | nC |
| Q_{gs} | $V_{DS}=30\text{V}$, $V_{GS}=4.5\text{V}$, $I_D=100\text{mA}$ | 0.196 | | nC |
| Q_{gd} | $V_{DS}=30\text{V}$, $V_{GS}=4.5\text{V}$, $I_D=100\text{mA}$ | 0.148 | | nC |
| 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)

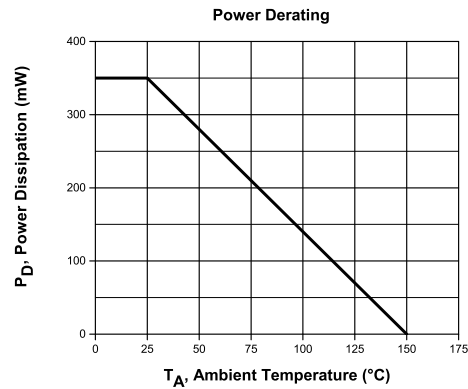
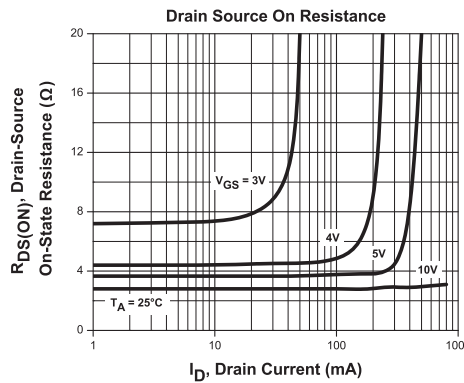
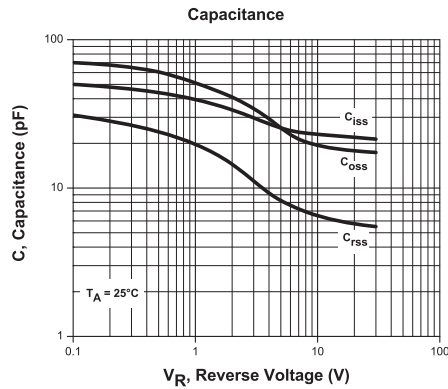
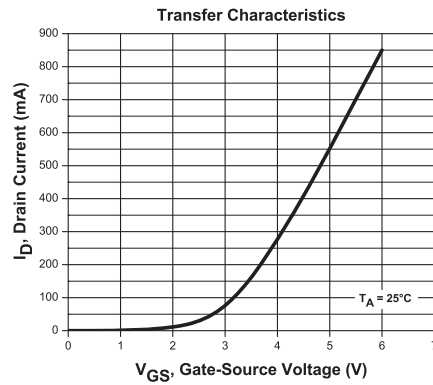
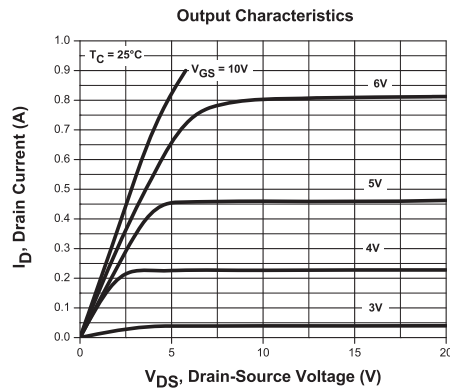
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TYPICAL ELECTRICAL CHARACTERISTICS



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