

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 | V _{DS} | 60 | V |
| Drain-Gate Voltage | V _{DG} | 60 | V |
| Gate-Source Voltage | V _{GS} | 40 | V |
| Continuous Drain Current (T _C =25°C) | I _D | 115 | mA |
| Continuous Drain Current (T _C =100°C) | I _D | 75 | mA |
| Continuous Source Current (Body Diode) | I _S | 115 | mA |
| Maximum Pulsed Drain Current | I _{DM} | 800 | mA |
| Maximum Pulsed Source Current | I _{SM} | 800 | mA |
| Power Dissipation | P _D | 350 | mW |
| Operating and Storage Junction Temperature | T _J , T _{stg} | -65 to +150 | °C |
| Thermal Resistance | θ _{JA} | 357 | °C/W |

SYMBOL

| SYMBOL | UNITS |
|-----------------------------------|-------|
| V _{DS} | V |
| V _{DG} | V |
| V _{GS} | V |
| I _D | mA |
| I _D | mA |
| I _S | mA |
| I _{DM} | mA |
| I _{SM} | mA |
| P _D | mW |
| T _J , T _{stg} | °C |
| θ _{JA} | °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 |

R6 (9-February 2015)

2N7002

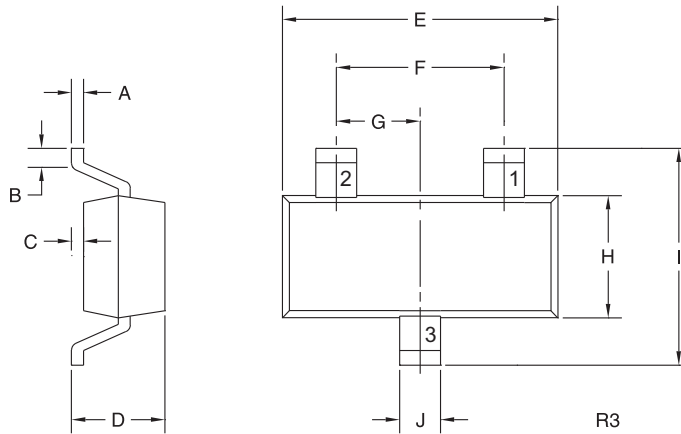
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ELECTRICAL CHARACTERISTICS - Continued: ($T_A=25^\circ\text{C}$ unless otherwise noted)

| 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)

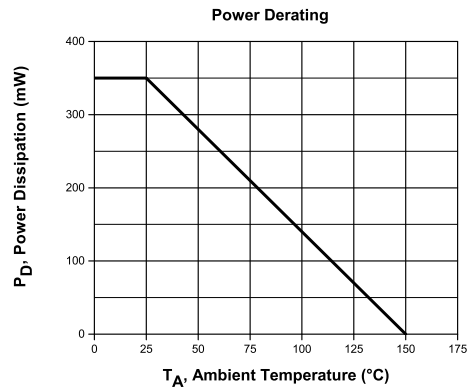
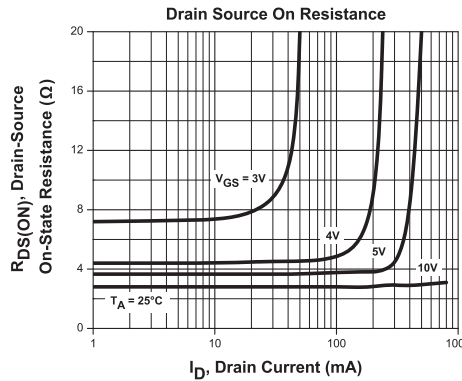
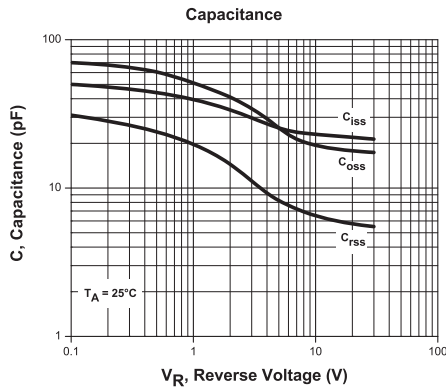
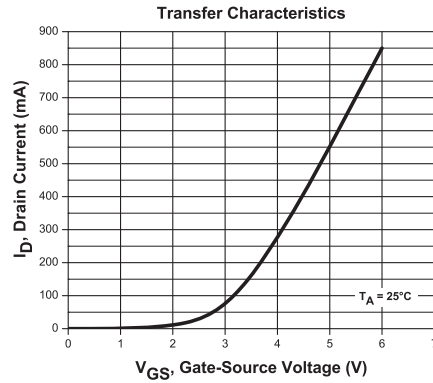
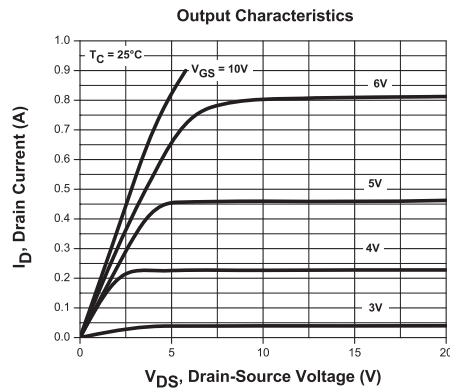
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TYPICAL ELECTRICAL CHARACTERISTICS



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OUTSTANDING SUPPORT AND SUPERIOR SERVICES



PRODUCT SUPPORT

Central's operations team provides the highest level of support to insure product is delivered on-time.

- Supply management (Customer portals)
- Inventory bonding
- Consolidated shipping options
- Custom bar coding for shipments
- Custom product packing

DESIGNER SUPPORT/SERVICES

Central's applications engineering team is ready to discuss your design challenges. Just ask.

- Free quick ship samples (2nd day air)
- Online technical data and parametric search
- SPICE models
- Custom electrical curves
- Environmental regulation compliance
- Customer specific screening
- Up-screening capabilities
- Special wafer diffusions
- PbSn plating options
- Package details
- Application notes
- Application and design sample kits
- Custom product and package development

REQUESTING PRODUCT PLATING

1. If requesting Tin/Lead plated devices, add the suffix "TIN/LEAD" to the part number when ordering (example: 2N2222A TIN/LEAD).
2. If requesting Lead (Pb) Free plated devices, add the suffix "PBFREE" to the part number when ordering (example: 2N2222A PBFREE).

CONTACT US

Corporate Headquarters & Customer Support Team

Central Semiconductor Corp.
145 Adams Avenue
Hauppauge, NY 11788 USA
Main Tel: (631) 435-1110
Main Fax: (631) 435-1824
Support Team Fax: (631) 435-3388
www.centrasemi.com

Worldwide Field Representatives:
www.centrasemi.com/wwreps

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