

CEDM7002AE

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



www.centrasemi.com

DESCRIPTION:

The CENTRAL SEMICONDUCTOR CEDM7002AE is a special ESD protected version of the 2N7002 enhancement-mode N-Channel MOSFET designed for high speed pulsed amplifier and driver applications.

MARKING CODE: 7



Top View Bottom View



SOT-883L CASE

APPLICATIONS:

- Load/Power switches
- DC-DC converter circuits
- Power management

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

| |
|--|
| Drain-Source Voltage |
| Drain-Gate Voltage |
| Gate-Source Voltage |
| Continuous Drain Current |
| Maximum Pulsed Drain Current |
| Power Dissipation |
| Operating and Storage Junction Temperature |
| Thermal Resistance |

FEATURES:

- ◆ ESD protection up to 1800V
- Low gate charge
- Low $r_{DS(ON)}$

SYMBOL

| SYMBOL | | UNITS |
|----------------|-------------|--------------------|
| V_{DS} | 60 | V |
| V_{DG} | 60 | V |
| V_{GS} | 20 | V |
| I_D | 300 | mA |
| I_{DM} | 800 | mA |
| P_D | 100 | mW |
| T_J, T_{stg} | -65 to +150 | $^\circ\text{C}$ |
| Θ_{JA} | 1250 | $^\circ\text{C/W}$ |

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

| SYMBOL | TEST CONDITIONS | MIN | TYP | MAX | UNITS |
|----------------------|--|-----|------|-----|---------------|
| I_{GSSF}, I_{GSSR} | $V_{GS}=20\text{V}, V_{DS}=0$ | | | 10 | μA |
| ◆ I_{DSS} | $V_{DS}=60\text{V}, V_{GS}=0$ | | | 100 | nA |
| I_{DSS} | $V_{DS}=60\text{V}, V_{GS}=0, T_J=125^\circ\text{C}$ | | | 500 | μA |
| ◆ BV_{DSS} | $V_{GS}=0, I_D=10\mu\text{A}$ | 60 | 70 | | V |
| $V_{GS(th)}$ | $V_{DS}=V_{GS}, I_D=250\mu\text{A}$ | 1.2 | 1.5 | 2.0 | V |
| V_{SD} | $V_{GS}=0, I_S=115\text{mA}$ (Note 1) | 0.5 | | 1.1 | V |
| ◆ $r_{DS(ON)}$ | $V_{GS}=10\text{V}, I_D=500\text{mA}$ (Note 1) | | 1.1 | 1.6 | Ω |
| $r_{DS(ON)}$ | $V_{GS}=5.0\text{V}, I_D=100\text{mA}$ (Note 1) | | 1.15 | 2.0 | Ω |
| $r_{DS(ON)}$ | $V_{GS}=2.5\text{V}, I_D=10\text{mA}$ (Note 1) | | 3.0 | 6.0 | Ω |
| 9FS | $V_{DS}=10\text{V}, I_D=200\text{mA}$ | 220 | | | mS |
| 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 |

◆ Enhanced specification
Notes: (1) $t_p=380\mu\text{s}$

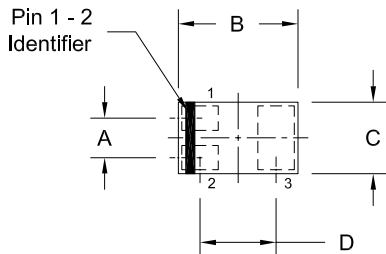
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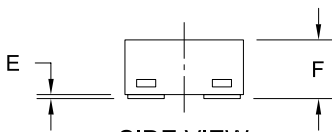
ELECTRICAL CHARACTERISTICS - Continued: ($T_A=25^{\circ}\text{C}$ unless otherwise noted)

| SYMBOL | TEST CONDITIONS | TYP | MAX | UNITS |
|---------------------|--|------|-----|-------|
| $Q_{g(\text{tot})}$ | $V_{DS}=10\text{V}, V_{GS}=4.5\text{V}, I_D=200\text{mA}$ | 0.5 | | nC |
| Q_{gs} | $V_{DS}=10\text{V}, V_{GS}=4.5\text{V}, I_D=200\text{mA}$ | 0.2 | | nC |
| Q_{gd} | $V_{DS}=10\text{V}, V_{GS}=4.5\text{V}, I_D=200\text{mA}$ | 0.14 | | nC |
| t_{on} | $[V_{DD}=30\text{V}, V_{GS}=10\text{V}, I_D=200\text{mA}]$ | | 20 | ns |
| t_{off} | $[R_G=25\Omega, R_L=150\Omega]$ | | 45 | ns |

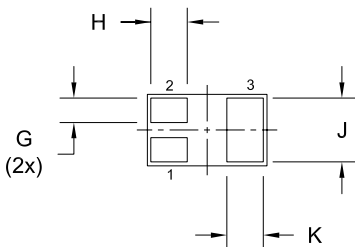
SOT-883L CASE - MECHANICAL OUTLINE



TOP VIEW



SIDE VIEW

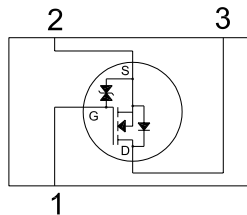


BOTTOM VIEW R2

| DIMENSIONS | | | | |
|------------|--------|-------|-------------|------|
| SYMBOL | INCHES | | MILLIMETERS | |
| | MIN | MAX | MIN | MAX |
| A | 0.014 | | 0.35 | |
| B | 0.037 | 0.041 | 0.95 | 1.05 |
| C | 0.022 | 0.026 | 0.55 | 0.65 |
| D | 0.026 | | 0.65 | |
| E | 0.000 | 0.002 | 0.00 | 0.05 |
| F | 0.012 | 0.016 | 0.30 | 0.40 |
| G | 0.005 | 0.007 | 0.13 | 0.18 |
| H | 0.008 | 0.012 | 0.20 | 0.30 |
| J | 0.018 | 0.022 | 0.45 | 0.55 |
| K | 0.008 | 0.012 | 0.20 | 0.30 |

SOT-883L (REV:R2)

PIN CONFIGURATION
(Bottom View)



LEAD CODE:

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

MARKING CODE: 7

R3 (21-January 2022)

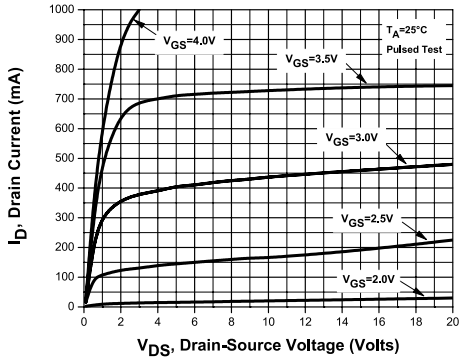
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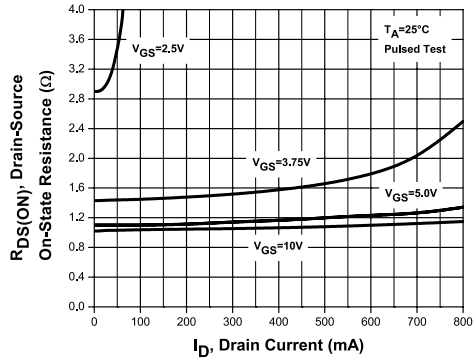


TYPICAL ELECTRICAL CHARACTERISTICS

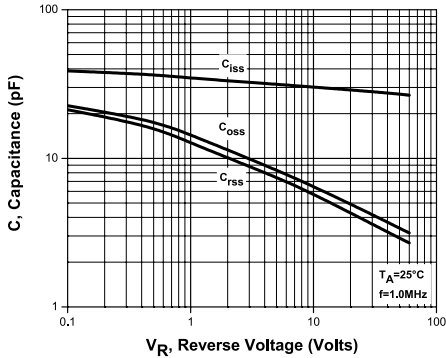
Output Characteristics



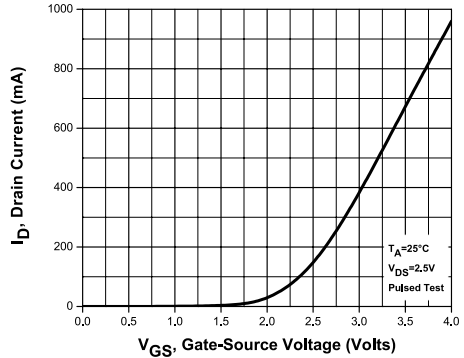
Drain Source On Resistance



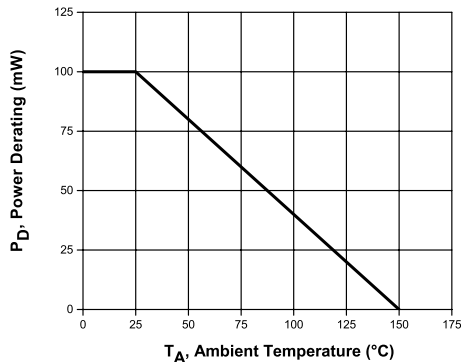
Capacitance



Transfer Characteristics



Power Derating



R3 (21-January 2022)

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

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