

CDM2208-800FP

SILICON
N-CHANNEL POWER MOSFET
8.0 AMP, 800 VOLT



TO-220FP CASE



www.centrasemi.com

DESCRIPTION:

The CENTRAL SEMICONDUCTOR CDM2208-800FP is an 800 volt N-Channel MOSFET designed for high voltage, fast switching applications such as Power Factor Correction (PFC), lighting and power inverters. This MOSFET combines high voltage capability with low $r_{DS(ON)}$, low threshold voltage, and low gate charge for optimal efficiency.

MARKING CODE: CDM8-800FP

APPLICATIONS:

- Power Factor Correction
- Alternative energy inverters
- Solid State Lighting (SSL)

FEATURES:

- High voltage capability ($V_{DS}=800V$)
- Low gate charge ($Q_{g(tot)}=24.45nC$ TYP)
- Low $r_{DS(ON)}$ (1.42Ω TYP)

MAXIMUM RATINGS: ($T_C=25^\circ C$ unless otherwise noted)

| | SYMBOL | | UNITS |
|---|----------------|-------------|--------------|
| Drain-Source Voltage | V_{DS} | 800 | V |
| Gate-Source Voltage | V_{GS} | 30 | V |
| Continuous Drain Current (Steady State) | I_D | 8.0 | A |
| Maximum Pulsed Drain Current, $t_p=10\mu s$ | I_{DM} | 32 | A |
| Continuous Source Current (Body Diode) | I_S | 8.0 | A |
| Maximum Pulsed Source Current (Body Diode) | I_{SM} | 32 | A |
| Single Pulse Avalanche Energy (Note 1) | E_{AS} | 534 | mJ |
| Power Dissipation | P_D | 57 | W |
| Operating and Storage Junction Temperature | T_J, T_{stg} | -55 to +150 | $^\circ C$ |
| Thermal Resistance | θ_{JC} | 2.19 | $^\circ C/W$ |
| Thermal Resistance | θ_{JA} | 120 | $^\circ C/W$ |

Note 1: $L=30mH, I_{AS}=5.5A, V_{DD}=135V, R_G=25\Omega, \text{Initial } T_J=25^\circ C$

ELECTRICAL CHARACTERISTICS: ($T_C=25^\circ C$ unless otherwise noted)

| SYMBOL | TEST CONDITIONS | MIN | TYP | MAX | UNITS |
|----------------------|----------------------------------|-----|------|-----|----------|
| I_{GSSF}, I_{GSSR} | $V_{GS}=30V, V_{DS}=0$ | | 30 | 100 | nA |
| I_{DSS} | $V_{DS}=800V, V_{GS}=0$ | | 0.05 | 1.0 | μA |
| BV_{DSS} | $V_{GS}=0, I_D=250\mu A$ | 800 | | | V |
| $V_{GS(th)}$ | $V_{GS}=V_{DS}, I_D=250\mu A$ | 2.0 | 2.9 | 4.0 | V |
| V_{SD} | $V_{GS}=0, I_S=8.0A$ | | 0.9 | 1.4 | V |
| $r_{DS(ON)}$ | $V_{GS}=10V, I_D=4.0A$ | | 1.42 | 1.6 | Ω |
| C_{rss} | $V_{DS}=25V, V_{GS}=0, f=1.0MHz$ | | 2.7 | | pF |
| C_{iss} | $V_{DS}=25V, V_{GS}=0, f=1.0MHz$ | | 1110 | | pF |
| C_{oss} | $V_{DS}=25V, V_{GS}=0, f=1.0MHz$ | | 104 | | pF |

R4 (23-December 2015)

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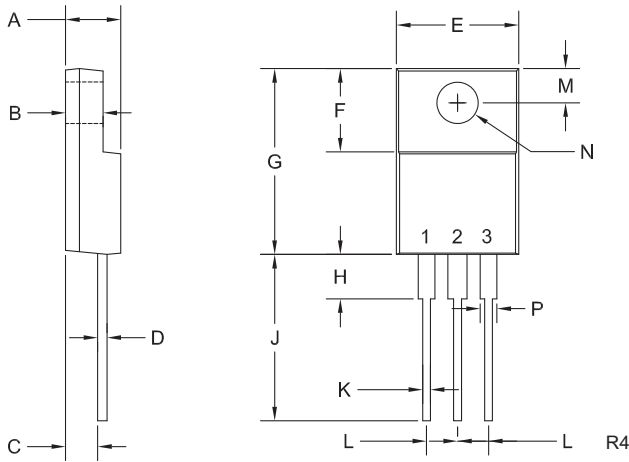


ELECTRICAL CHARACTERISTICS - Continued: ($T_C=25^\circ\text{C}$ unless otherwise noted)

| SYMBOL | TEST CONDITIONS | TYP | UNITS |
|---------------------|---|-------|---------------|
| $Q_{g(\text{tot})}$ | $V_{DS}=640\text{V}, V_{GS}=10\text{V}, I_D=8.0\text{A}$ (Note 2) | 24.45 | nC |
| Q_{gs} | $V_{DS}=640\text{V}, V_{GS}=10\text{V}, I_D=8.0\text{A}$ (Note 2) | 5.76 | nC |
| Q_{gd} | $V_{DS}=640\text{V}, V_{GS}=10\text{V}, I_D=8.0\text{A}$ (Note 2) | 9.94 | nC |
| $t_{d(\text{on})}$ | $V_{DD}=400\text{V}, I_D=8.0\text{A}, R_G=25\Omega$ (Note 2) | 19 | ns |
| t_r | $V_{DD}=400\text{V}, I_D=8.0\text{A}, R_G=25\Omega$ (Note 2) | 34 | ns |
| $t_{d(\text{off})}$ | $V_{DD}=400\text{V}, I_D=8.0\text{A}, R_G=25\Omega$ (Note 2) | 65 | ns |
| t_f | $V_{DD}=400\text{V}, I_D=8.0\text{A}, R_G=25\Omega$ (Note 2) | 37 | ns |
| t_{rr} | $V_{GS}=0, I_S=8.0\text{A}, di/dt=100\text{A}/\mu\text{s}$ (Note 2) | 310 | ns |
| Q_{rr} | $V_{GS}=0, I_S=8.0\text{A}, di/dt=100\text{A}/\mu\text{s}$ (Note 2) | 0.53 | μC |

Note 2: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2\%$

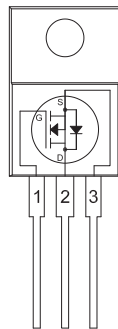
TO-220FP CASE - MECHANICAL OUTLINE



| SYMBOL | DIMENSIONS | | | |
|---------|------------|-------|--------|-------------|
| | | | INCHES | MILLIMETERS |
| | MIN | MAX | MIN | MAX |
| A | 0.165 | 0.202 | 4.20 | 5.12 |
| B | 0.090 | 0.130 | 2.30 | 3.30 |
| C | 0.098 | 0.122 | 2.50 | 3.10 |
| D | - | 0.031 | - | 0.80 |
| E | 0.382 | 0.418 | 9.70 | 10.63 |
| F | 0.238 | 0.276 | 6.06 | 7.00 |
| G | 0.583 | 0.640 | 14.80 | 16.25 |
| H | - | 0.161 | - | 4.10 |
| J | 0.506 | 0.543 | 12.85 | 13.80 |
| K | 0.020 | 0.031 | 0.50 | 0.79 |
| L | | 0.100 | | 2.54 |
| M | 0.120 | 0.140 | 3.05 | 3.55 |
| N (DIA) | 0.116 | 0.134 | 2.95 | 3.40 |
| P | 0.039 | 0.058 | 1.00 | 1.47 |

TO-220FP (REV: R4)

PIN CONFIGURATION



LEAD CODE:

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

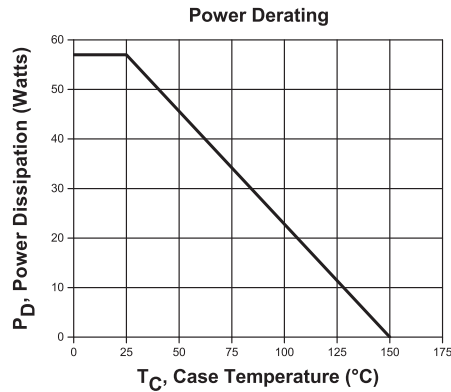
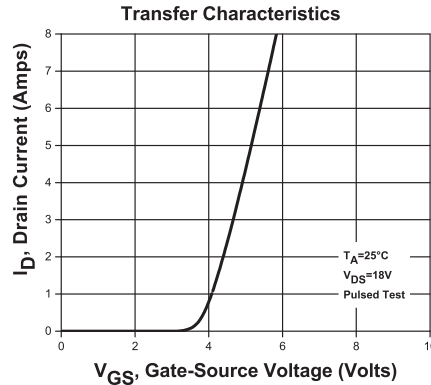
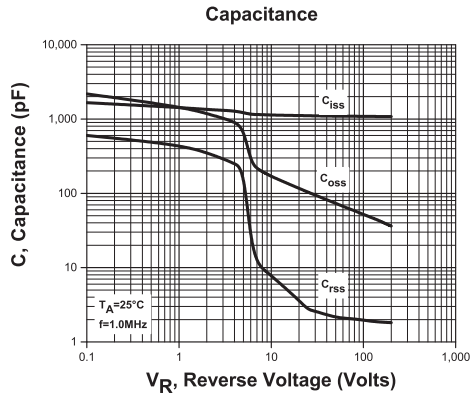
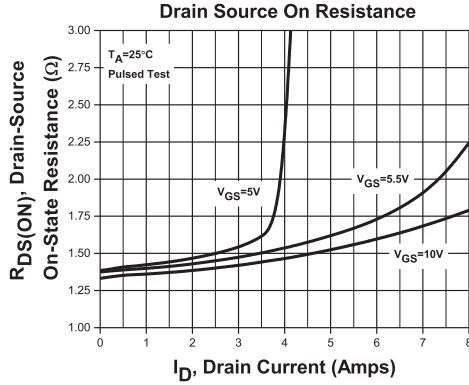
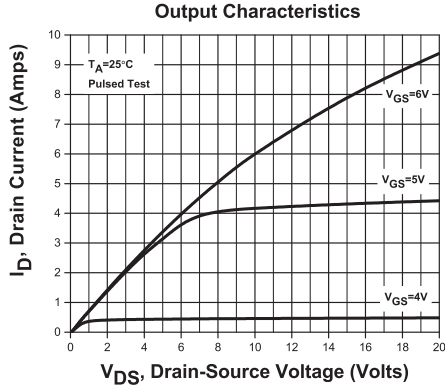
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TYPICAL ELECTRICAL CHARACTERISTICS



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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).

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