# CP390-CDM4-600LR

## N-Channel MOSFET Die
## Enhancement-Mode

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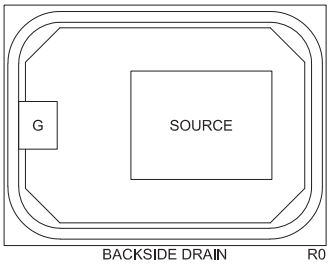
The CP390-CDM4-600LR is a silicon N-Channel MOSFET designed for high current applications.




**MECHANICAL SPECIFICATIONS:**

| | |
|---|---|
| Die Size | 117 x 87.4 MILS |
| Die Thickness | 9.1 MILS |
| Gate Bonding Pad Size | 14 x 17.3 MILS |
| Source Bonding Pad Size | 51.2 x 39.4 MILS |
| Top Side Metalization | Al – 43,000Å |
| Back Side Metalization | Ag – 8,000Å |
| Scribe Alley Width | 3.15 MILS |
| Wafer Diameter | 6 INCHES |
| Gross Die Per Wafer | 2,154 |

| **MAXIMUM RATINGS:** ($T_A$=25°C) | **SYMBOL** | | **UNITS** |
|---|---|---|---|
| Drain-Source Voltage | $V_{DS}$ | 600 | V |
| Gate-Source Voltage | $V_{GS}$ | 30 | V |
| Continuous Drain Current (Steady State) | $I_D$ | 4.0 | A |
| Maximum Pulsed Drain Current, tp=10µs | $I_{DM}$ | 13.5 | A |
| Continuous Source Current (Body Diode) | $I_S$ | 4.0 | A |
| Maximum Pulsed Source Current (Body Diode) | $I_{SM}$ | 13.5 | A |
| Single Pulse Avalanche Energy (Note 1) | $E_{AS}$ | 197 | mJ |
| Operating and Storage Junction Temperature | $T_J$, $T_{stg}$ | -55 to +150 | °C |

Note 1: L=30mH, $I_{AS}$=3.5A, $V_{DD}$=100V, $R_G$=25Ω, Initial $T_J$=25°C

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

| **SYMBOL** | **TEST CONDITIONS** | **MIN** | **TYP** | **MAX** | **UNITS** |
|---|---|---|---|---|---|
| $I_{GSSF}$, $I_{GSSR}$ | $V_{GS}$=30V, $V_{DS}$=0 | | | 100 | nA |
| $I_{DSS}$ | $V_{DS}$=600V, $V_{GS}$=0 | | 0.065 | 1.0 | µA |
| $BV_{DSS}$ | $V_{GS}$=0, $I_D$=250µA | 600 | | | V |
| $V_{GS(th)}$ | $V_{GS}$=$V_{DS}$, $I_D$=250µA | 2.0 | 3.25 | 4.0 | V |
| $V_{SD}$ | $V_{GS}$=0, $I_S$=4.0A | | 0.86 | 1.4 | V |
| $r_{DS(ON)}$ | $V_{GS}$=10V, $I_D$=2.0A | | 0.65 | 0.95 | Ω |
| $C_{rss}$ | $V_{DS}$=100V, $V_{GS}$=0, f=1.0MHz | | 1.31 | | pF |
| $C_{iss}$ | $V_{DS}$=100V, $V_{GS}$=0, f=1.0MHz | | 328 | | pF |
| $C_{oss}$ | $V_{DS}$=100V, $V_{GS}$=0, f=1.0MHz | | 26 | | pF |
| $Q_{g(tot)}$ | $V_{DS}$=480V, $V_{GS}$=10V, $I_D$=4.0A (Note 2) | | 11.59 | | nC |
| $Q_{gs}$ | $V_{DS}$=480V, $V_{GS}$=10V, $I_D$=4.0A (Note 2) | | 2.04 | | nC |
| $Q_{gd}$ | $V_{DS}$=480V, $V_{GS}$=10V, $I_D$=4.0A (Note 2) | | 6.09 | | nC |

**ELECTRICAL CHARACTERISTICS - Continued:** ($T_A$=25°C)

| SYMBOL | TEST CONDITIONS | TYP | UNITS |
|---|---|---|---|
| $t_{d(on)}$ | $V_{DD}$=300V, $V_{GS}$=10V, $I_D$=4.0A, $R_G$=25Ω (Note 2) | 8.0 | ns |
| $t_r$ | $V_{DD}$=300V, $V_{GS}$=10V, $I_D$=4.0A, $R_G$=25Ω (Note 2) | 24 | ns |
| $t_{d(off)}$ | $V_{DD}$=300V, $V_{GS}$=10V, $I_D$=4.0A, $R_G$=25Ω (Note 2) | 33 | ns |
| $t_f$ | $V_{DD}$=300V, $V_{GS}$=10V, $I_D$=4.0A, $R_G$=25Ω (Note 2) | 24 | ns |
| $t_{rr}$ | $V_{GS}$=0, $I_S$=4.0A, di/dt=100A/μs (Note 2) | 211 | ns |
| $Q_{rr}$ | $V_{GS}$=0, $I_S$=4.0A, di/dt=100A/μs (Note 2) | 1.7 | μC |

Note 2: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%

# CP390-CDM4-600LR
## Typical Electrical Characteristics

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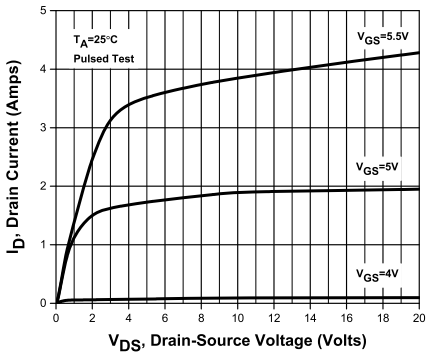
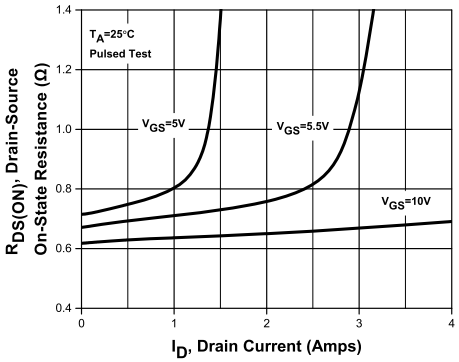
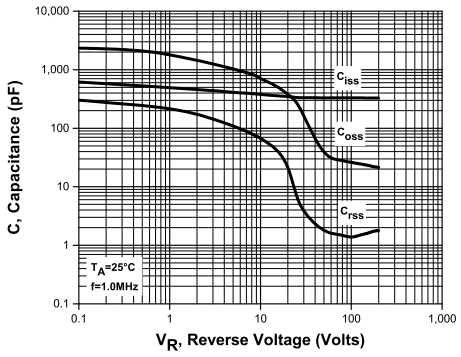
**Output Characteristics**



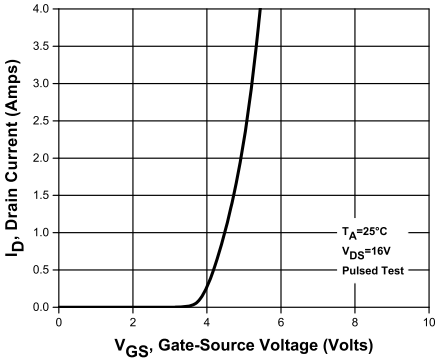

**Drain Source On Resistance**



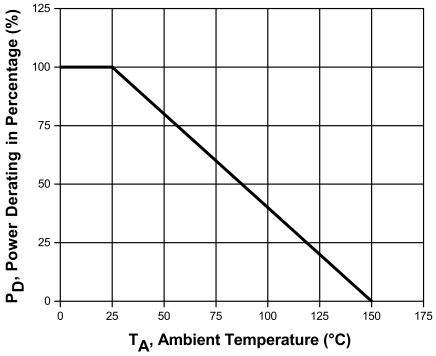

**Capacitance**




**Transfer Characteristics**

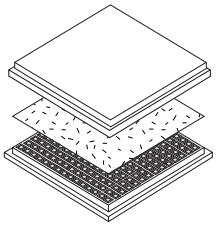



**Normalized Power Derating**




R0 (14-June 2016)

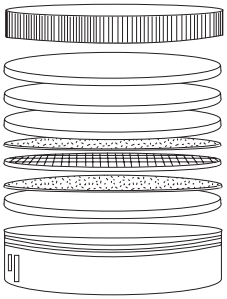
# BARE DIE PACKING OPTIONS



## BARE DIE IN TRAY (WAFFLE) PACK

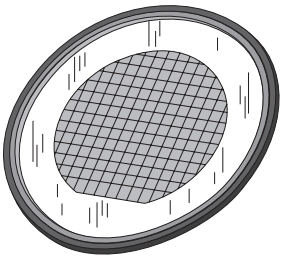
**CT**: Singulated die in tray (waffle) pack.
**(example: CP211-PART NUMBER-CT)**

**CM**: Singulated die in tray (waffle) pack 100% visually inspected as per MIL-STD-750, (method 2072 transistors, method 2073 diodes).
**(example: CP211-PART NUMBER-CM)**



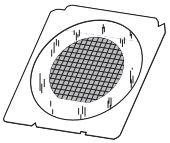
## UNSAWN WAFER

**WN**: Full wafer, unsawn, 100% tested with reject die inked.
**(example: CP211-PART NUMBER-WN)**



## SAWN WAFER ON PLASTIC RING

**WR**: Full wafer, sawn and mounted on plastic ring, 100% tested with reject die inked.
**(example: CP211-PART NUMBER-WR)**



Please note: Sawn Wafer on Metal Frame (WS) is possible as a special order. Please contact your Central Sales Representative at 631-435-1110.

Visit the Central website for a complete listing of specifications:
**www.centralsemi.com/bdspecs**

R2 (3-April 2017)

## 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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