# CMP40N10

100V N-Channel MOSFET

## General Description

The CMP40N10 uses advanced process technology and design to provide excellent RDS(ON).This device is ideal for boost converters and synchronous rectifiers for consumer, telecom, industrial power supplies and LED backlighting.

## Product Summary

| BVDSS | RDSON | ID |
|---|---|---|
| 100V | 40mΩ | 40A |

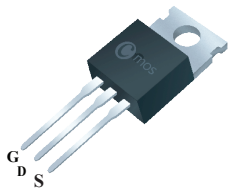
## Applications

- DC-DC converters
- UPS
- Power Supply
- PWM Motor Controls

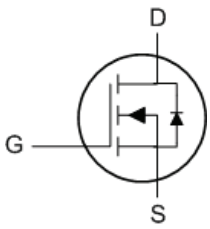
## Features

- Fast Switching
- 100% Avalanche tested
- RoHS compliant

## TO-220 Pin Configuration




TO-220
(CMP40N10)




## Absolute Maximum Ratings

| Symbol | Parameter | Rating | Units |
|---|---|---|---|
| $V_{DS}$ | Drain-Source Voltage | 100 | V |
| $V_{GS}$ | Gate-Source Voltage | ±20 | V |
| $I_D$@$T_C$=25℃ | Continuous Drain Current | 40 | A |
| $I_D$@$T_C$=100℃ | Continuous Drain Current | 23 | A |
| $I_{DM}$ | Pulsed Drain Current[1] | 120 | A |
| EAS | Single Pulse Avalanche Energy[2] | 238 | mJ |
| $P_D$@$T_C$=25℃ | Total Power Dissipation | 105 | W |
| $T_{STG}$ | Storage Temperature Range | -55 to 175 | ℃ |
| $T_J$ | Operating Junction Temperature Range | -55 to 175 | ℃ |

## Thermal Data

| Symbol | Parameter | Typ. | Max. | Unit |
|---|---|---|---|---|
| $R_{\theta JA}$ | Thermal Resistance Junction-ambient | --- | 62.5 | ℃/W |
| $R_{\theta JC}$ | Thermal Resistance Junction-case | --- | 1.4 | ℃/W |

## Electrical Characteristics ($T_J$=25℃ , unless otherwise noted)

| Symbol | Parameter | Conditions | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| $BV_{DSS}$ | Drain-Source Breakdown Voltage | $V_{GS}$=0V , $I_D$=250uA | 100 | --- | --- | V |
| $R_{DS(ON)}$ | Static Drain-Source On-Resistance | $V_{GS}$=10V , $I_D$=20A | --- | 28 | 40 | mΩ |
| | | $V_{GS}$=4.5V , $I_D$=10A | --- | 32 | 43 | |
| $V_{GS(th)}$ | Gate Threshold Voltage | $V_{GS}$=$V_{DS}$ , $I_D$ =250uA | 1 | --- | 3 | V |
| $I_{DSS}$ | Drain-Source Leakage Current | $V_{DS}$=100V , $V_{GS}$ =0V | --- | --- | 1 | uA |
| $I_{GSS}$ | Gate-Source Leakage Current | $V_{GS}$ = ±20V ,$V_{DS}$=0V | --- | --- | ±100 | nA |
| gfs | Forward Transconductance | $V_{DS}$=10V , $I_D$=15A | --- | 22 | --- | S |
| $R_g$ | Gate Resistance | $V_{DS}$=0V , $V_{GS}$=0V , f=1MHz | --- | 3.3 | --- | Ω |
| $Q_g$ | Total Gate Charge | $I_D$=40 A<br>$V_{DS}$ =50 V<br>$V_{GS}$ =10V | --- | 35 | --- | nC |
| $Q_{gs}$ | Gate-Source Charge | | --- | 10 | --- | |
| $Q_{gd}$ | Gate-Drain Charge | | --- | 8 | --- | |
| $T_{d(on)}$ | Turn-On Delay Time | $V_{DD}$=50V , $I_D$=40A , $R_G$=2.5Ω<br>$R_L$ =1.25Ω , $V_{GEN}$ =10V | --- | 10 | --- | ns |
| $T_r$ | Rise Time | | --- | 12 | --- | |
| $T_{d(off)}$ | Turn-Off Delay Time | | --- | 30 | --- | |
| $T_f$ | Fall Time | | --- | 13 | --- | |
| $C_{iss}$ | Input Capacitance | $V_{DS}$=25V , $V_{GS}$=0V , f=1MHz | --- | 6000 | --- | pF |
| $C_{oss}$ | Output Capacitance | | --- | 270 | --- | |
| $C_{rss}$ | Reverse Transfer Capacitance | | --- | 100 | --- | |

## Diode Characteristics

| Symbol | Parameter | Conditions | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| $I_S$ | Continuous Source Current | $V_G$=$V_D$=0V , Force Current | --- | --- | 40 | A |
| $I_{SM}$ | Pulsed Source Current | | --- | --- | 120 | A |
| $V_{SD}$ | Diode Forward Voltage | $V_{GS}$=0V , $I_S$=20A , $T_J$=25℃ | --- | --- | 1.2 | V |

Note :

1.Repetitive rating; pulse width limited by maximum junction temperature

2.The EAS data shows Max. rating . The test condition is $V_{DD}$=50V , $V_{GS}$=10V , L=0.9mH , $I_{AS}$=23A

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## Typical Characteristics

