

## General Description

The CMN2310M uses advanced trench technology to provide excellent  $R_{DS(on)}$ . This device is suitable for use as a load switch or in PWM applications.

## Features

- $R_{DS(on)} < 40m\Omega$  @  $V_{GS} = 4.5V$
- $R_{DS(on)} < 60m\Omega$  @  $V_{GS} = 2.5V$
- SOT-23-3L Package

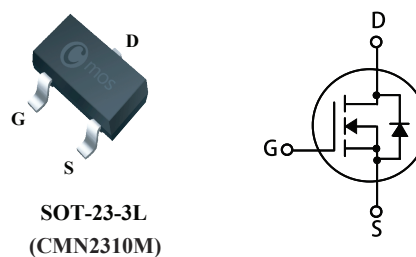
## Product Summary

| BVDSS | $R_{DS(on)}$ max. | ID |
|-------|-------------------|----|
| 20V   | 40m $\Omega$      | 4A |

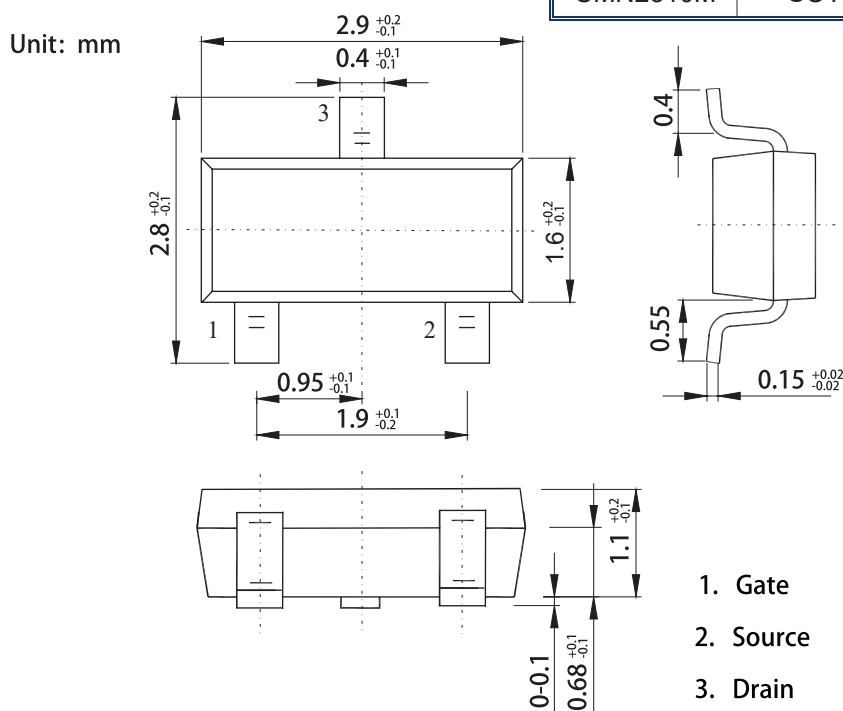
## Applications

- DC-DC converters
- Power Management in Notebook Computer
- Portable Equipment and Battery Powered Systems

## SOT-23-3L Pin Configuration



| Type     | Package   | Marking |
|----------|-----------|---------|
| CMN2310M | SOT-23-3L | 00A8C   |



## N-Channel Enhancement Mode Field Effect Transistor

## Absolute Maximum Ratings

| Symbol    | Parameter                            | Rating     | Units              |
|-----------|--------------------------------------|------------|--------------------|
| $V_{DS}$  | Drain-Source Voltage                 | 20         | V                  |
| $V_{GS}$  | Gate-Source Voltage                  | $\pm 10$   | V                  |
| $I_D$     | Continuous Drain Current             | 4          | A                  |
| $I_{DM}$  | Pulsed Drain Current                 | 15         | A                  |
| $P_D$     | Total Power Dissipation              | 1.25       | W                  |
| $T_{STG}$ | Storage Temperature Range            | -55 to 150 | $^{\circ}\text{C}$ |
| $T_J$     | Operating Junction Temperature Range | 150        | $^{\circ}\text{C}$ |

## Thermal Data

| Symbol          | Parameter                           | Typ. | Max. | Unit                        |
|-----------------|-------------------------------------|------|------|-----------------------------|
| $R_{\theta JA}$ | Thermal Resistance Junction-ambient | ---  | 100  | $^{\circ}\text{C}/\text{W}$ |

Electrical Characteristics ( $T_A=25^{\circ}\text{C}$  , unless otherwise noted)

| Symbol       | Parameter                         | Conditions                                                       | Min. | Typ. | Max.      | Unit             |
|--------------|-----------------------------------|------------------------------------------------------------------|------|------|-----------|------------------|
| $BV_{DSS}$   | Drain-Source Breakdown Voltage    | $V_{GS}=0\text{V}$ , $I_D=250\mu\text{A}$                        | 20   | ---  | ---       | V                |
| $R_{DS(ON)}$ | Static Drain-Source On-Resistance | $V_{GS}=4.5\text{V}$ , $I_D=3.5\text{A}$                         | ---  | ---  | 40        | $\text{m}\Omega$ |
|              |                                   | $V_{GS}=2.5\text{V}$ , $I_D=2.6\text{A}$                         | ---  | ---  | 60        |                  |
| $V_{GS(th)}$ | Gate Threshold Voltage            | $V_{GS}=V_{DS}$ , $I_D=250\mu\text{A}$                           | 0.55 | ---  | 1         | V                |
| $I_{DSS}$    | Drain-Source Leakage Current      | $V_{DS}=20\text{V}$ , $V_{GS}=0\text{V}$                         | ---  | ---  | 1         | $\mu\text{A}$    |
| $I_{GSS}$    | Gate-Source Leakage Current       | $V_{GS}=\pm 10\text{V}$ , $V_{DS}=0\text{V}$                     | ---  | ---  | $\pm 100$ | nA               |
| $Q_g$        | Total Gate Charge                 | $I_D=3.5\text{A}$<br>$V_{DS}=10\text{V}$<br>$V_{GS}=4.5\text{V}$ | ---  | 16   | ---       | nC               |
| $Q_{gs}$     | Gate-Source Charge                |                                                                  | ---  | 2.5  | ---       |                  |
| $Q_{gd}$     | Gate-Drain Charge                 |                                                                  | ---  | 5.4  | ---       |                  |
| $T_{d(on)}$  | Turn-On Delay Time                | $V_{DS}=10\text{V}$ , $I_D=1\text{A}$ , $R_{GEN}=6\Omega$        | ---  | 32   | ---       | ns               |
| $T_r$        | Rise Time                         |                                                                  | ---  | 15   | ---       |                  |
| $T_{d(off)}$ | Turn-Off Delay Time               |                                                                  | ---  | 50   | ---       |                  |
| $T_f$        | Fall Time                         |                                                                  | ---  | 32   | ---       |                  |
| $C_{iss}$    | Input Capacitance                 | $V_{DS}=15\text{V}$ , $V_{GS}=0\text{V}$ , $f=1\text{MHz}$       | ---  | 650  | ---       | pF               |
| $C_{oss}$    | Output Capacitance                |                                                                  | ---  | 140  | ---       |                  |
| $C_{rss}$    | Reverse Transfer Capacitance      |                                                                  | ---  | 115  | ---       |                  |

## Diode Characteristics

| Symbol   | Parameter             | Conditions                              | Min. | Typ. | Max. | Unit |
|----------|-----------------------|-----------------------------------------|------|------|------|------|
| $V_{SD}$ | Diode Forward Voltage | $V_{GS}=0\text{V}$ , $I_S=1.25\text{A}$ | ---  | ---  | 1.2  | V    |

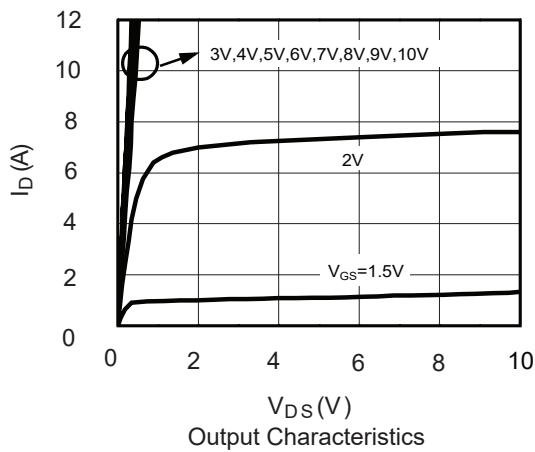
This product has been designed and qualified for the consumer market.

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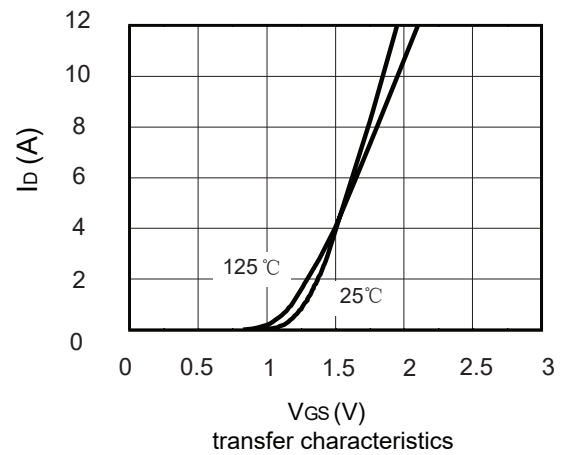
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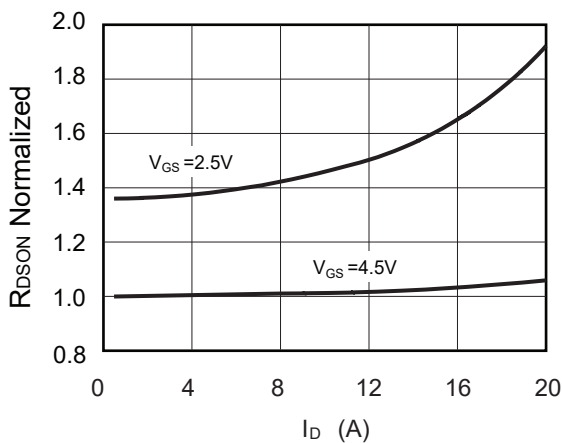
## Typical Characteristics



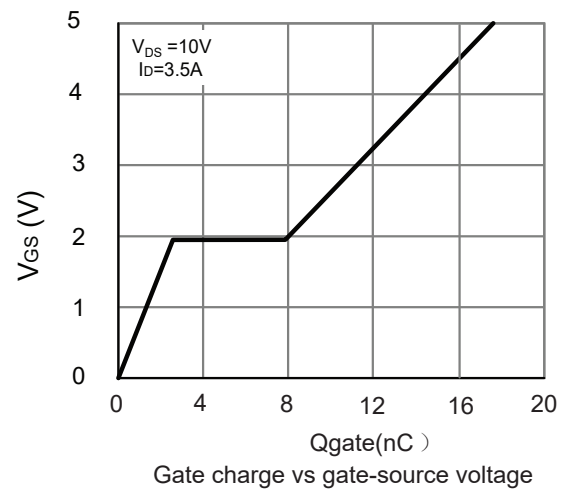
Output Characteristics



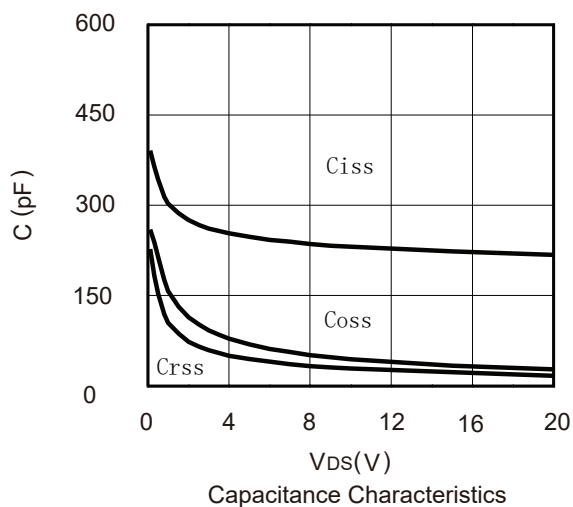
transfer characteristics



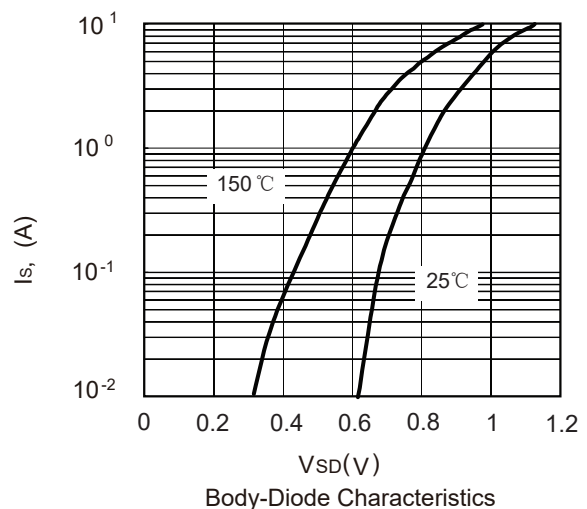
drain-source on-resistance



Gate charge vs gate-source voltage



Capacitance Characteristics



Body-Diode Characteristics