# CMSC35N06B

**60V, 35mΩ typ., 12A N-Channel MOSFET**

## General Description

The CMSC35N06B uses advanced trench technology to provide excellent RDS(ON).This device is suitable for DC/DC converter and general purpose applications.

## Product Summary

| BVDSS | $R_{DS(on)}$ max. | ID |
|---|---|---|
| 60V | 40mΩ | 12A |

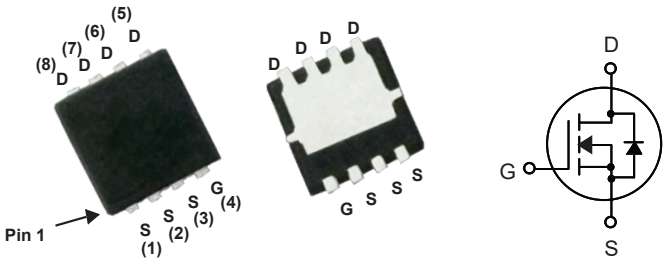
## Applications

- DC-DC converters

## Features

- Low On-Resistance
- Simple Drive Requirements
- Surface Mount Package
- RoHS Compliant

## DFN-8 3.3x3.3 Pin Configuration




DFN-8 3.3x3.3

| Type | Package | Marking |
|---|---|---|
| CMSC35N06B | DFN-8 3.3x3.3 | 35N06B |

## Absolute Maximum Ratings

| Symbol | Parameter | Rating | Units |
|---|---|---|---|
| $V_{DS}$ | Drain-Source Voltage | 60 | V |
| $V_{GS}$ | Gate-Source Voltage | ±20 | V |
| $I_D$@$T_C$=25℃ | Continuous Drain Current | 12 | A |
| $I_D$@$T_C$=100℃ | Continuous Drain Current | 8.4 | A |
| $I_{DM}$ | Pulsed Drain Current | 48 | A |
| EAS | Single Pulse Avalanche Energy[1] | 32 | mJ |
| $P_D$@$T_C$=25℃ | Total Power Dissipation | 35 | W |
| $T_{STG}$ | Storage Temperature Range | -55 to 150 | ℃ |
| $T_J$ | Operating Junction Temperature Range | -55 to 150 | ℃ |

## Thermal Data

| Symbol | Parameter | Typ. | Max. | Unit |
|---|---|---|---|---|
| $R_{\theta JA}$ | Thermal Resistance Junction-ambient | --- | 50 | ℃/W |
| $R_{\theta JC}$ | Thermal Resistance Junction-case | --- | 3.57 | ℃/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 | 60 | --- | --- | V |
| $R_{DS(ON)}$ | Static Drain-Source On-Resistance | $V_{GS}$=10V , $I_D$=10A | --- | 35 | 40 | mΩ |
| | | $V_{GS}$=4.5V , $I_D$=5A | --- | 39 | 45 | |
| $V_{GS(th)}$ | Gate Threshold Voltage | $V_{GS}$=$V_{DS}$ , $I_D$ =250uA | 1.0 | --- | 3.0 | V |
| $I_{DSS}$ | Drain-Source Leakage Current | $V_{DS}$=60V , $V_{GS}$ =0V | --- | --- | 1 | uA |
| $I_{GSS}$ | Gate-Source Leakage Current | $V_{GS}$=±20V , $V_{DS}$=0V | --- | --- | ±100 | nA |
| gfs | Forward Transconductance | $V_{DS}$=5V , $I_D$=10A | --- | 11 | --- | S |
| $R_g$ | Gate Resistance | $V_{DS}$=0V , $V_{GS}$=0V , f=1MHz | --- | 1.3 | --- | Ω |
| $Q_g$ | Total Gate Charge | $I_D$=12A<br>$V_{DS}$=48V<br>$V_{GS}$=10V | --- | 15 | --- | nC |
| $Q_{gs}$ | Gate-Source Charge | | --- | 2.2 | --- | |
| $Q_{gd}$ | Gate-Drain Charge | | --- | 4.3 | --- | |
| $T_{d(on)}$ | Turn-On Delay Time | $V_{DD}$=48V<br>$V_{GS}$ =10V<br>$R_G$ = 2.5Ω<br>$I_D$ =12A | --- | 7 | --- | ns |
| $T_r$ | Rise Time | | --- | 13 | --- | |
| $T_{d(off)}$ | Turn-Off Delay Time | | --- | 18 | --- | |
| $T_f$ | Fall Time | | --- | 2.5 | --- | |
| $C_{iss}$ | Input Capacitance | $V_{DS}$=25V , $V_{GS}$=0V , f=1MHz | --- | 680 | --- | pF |
| $C_{oss}$ | Output Capacitance | | --- | 40 | --- | |
| $C_{rss}$ | Reverse Transfer Capacitance | | --- | 30 | --- | |

## Diode Characteristics

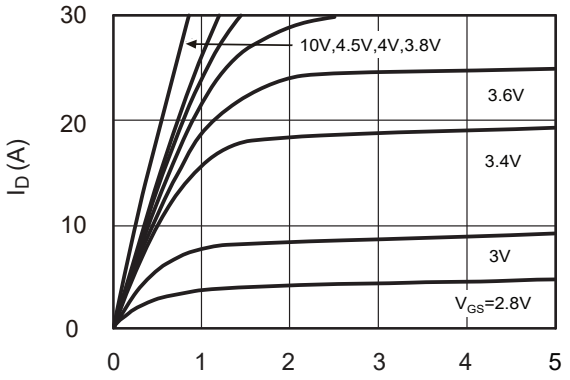
| Symbol | Parameter | Conditions | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| $I_S$ | Continuous Source Current | $V_G$=$V_D$=0V , Force Current | --- | --- | 12 | A |
| $I_{SM}$ | Pulsed Source Current | | --- | --- | 48 | A |
| $V_{SD}$ | Diode Forward Voltage | $V_{GS}$=0V , $I_S$=10A ,$T_J$=25℃ | --- | 0.87 | 1.2 | V |

Note :

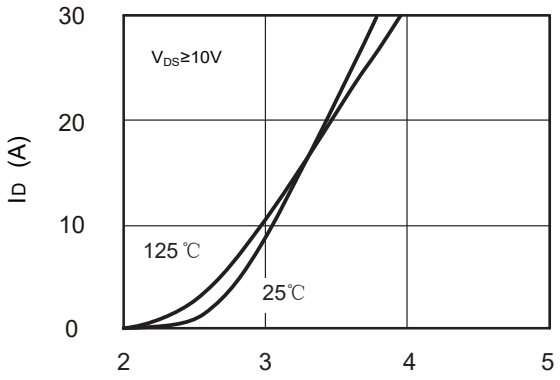
1.The EAS data shows Max. rating . The test condition is $V_{DD}$=30V , $V_{GS}$=10V , L=1mH , $I_{AS}$=8A.

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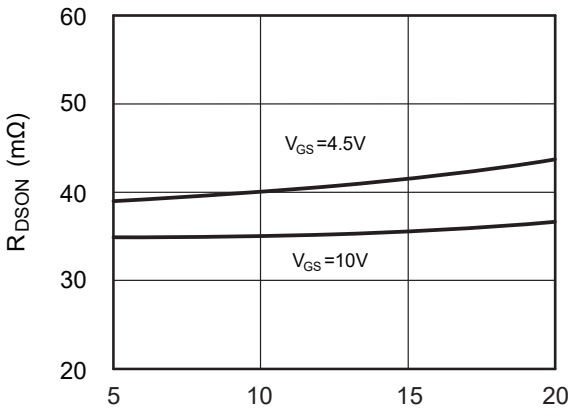
## Typical Characteristics



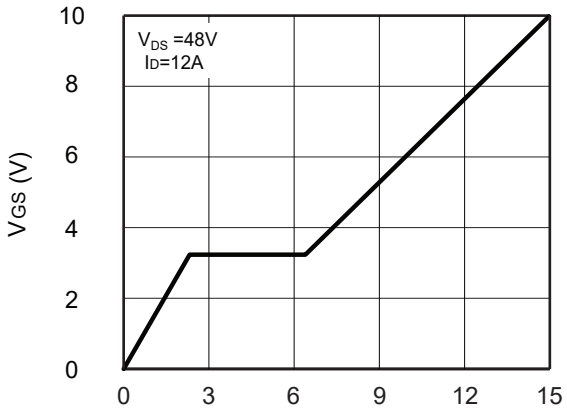

Output Characteristics



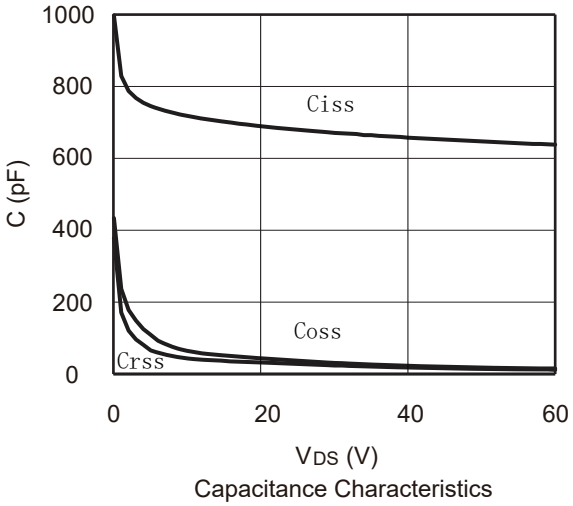

transfer characteristics



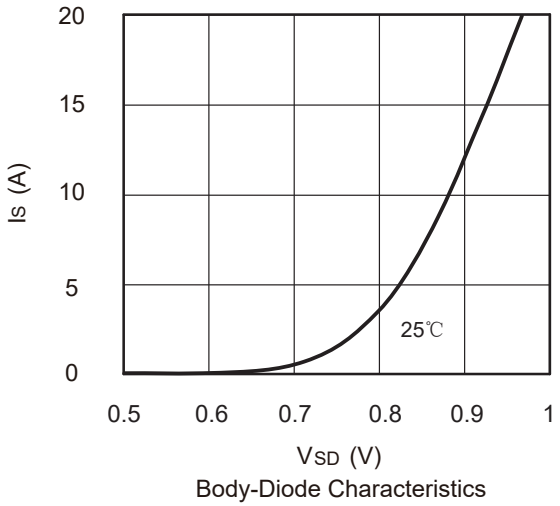

On-Resistance vs. Drain Current




Gate charge vs gate-source voltage



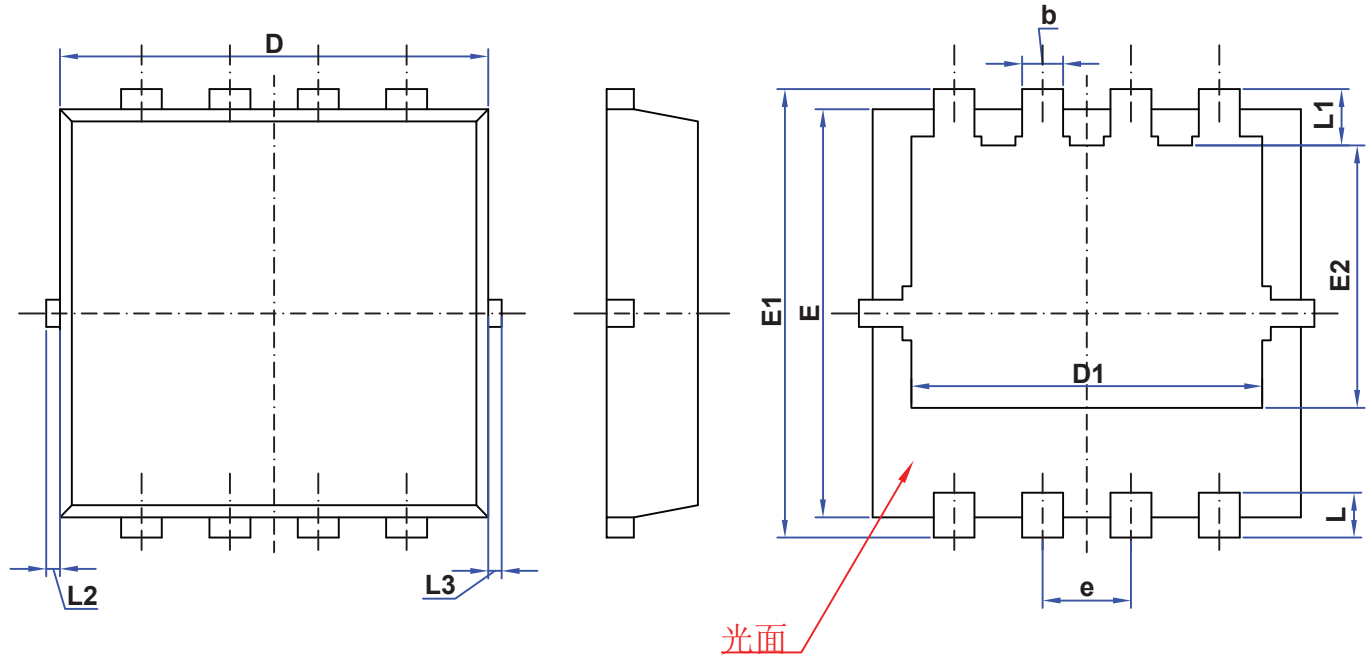

Capacitance Characteristics

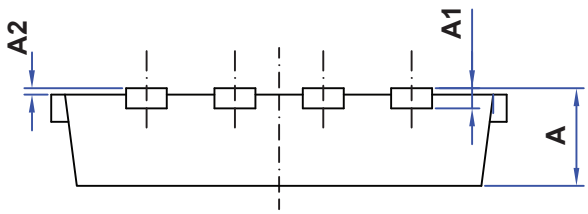



Body-Diode Characteristics

## Package Dimension

DFN-8 3.3x3.3 Unit :mm




注：
1. 未注公差±0.10,
2. 塑封体无缺损、缩孔、裂纹、气泡等不良缺陷
3. 标注单位mm

| Dimensions In Millimeters | | | |
|---|---|---|---|
| Symbol | Min. | Max. | Ave. |
| A | 0.700 | 0.900 | 0.800 |
| A1 | 0.100 | 0.200 | 0.150 |
| A2 | - | 0.050 | - |
| D | 3.000 | 3.200 | 3.100 |
| D1 | 2.350 | 2.550 | 2.450 |
| E | 3.000 | 3.200 | 3.100 |
| E1 | 3.200 | 3.600 | 3.400 |
| E2 | 1.635 | 1.835 | 1.735 |
| b | 0.200 | 0.400 | 0.300 |
| e | 0.550 | 0.750 | 0.650 |
| L | 0.250 | 0.650 | 0.450 |
| L1 | 0.345 | 0.745 | 0.545 |
| L2 | 0~0.100 | | |
| L3 | 0~0.100 | | |