# CMSA100P06

**-60V, 7mΩ typ., -90A P-Channel MOSFET**

## General Description

The CMSA100P06 uses advanced SGT technology to provide excellent $R_{DS(ON)}$. This device is ideal for load switch and battery protection applications.

## Product Summary

| BVDSS | $R_{DS(on)}$ max. | ID |
|---|---|---|
| -60V | 9mΩ | -90A |

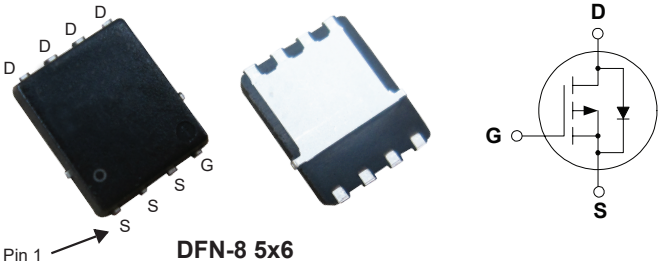
## Applications

- POL application
- BLDC Motor driver

## Features

- Low On-Resistance
- 100% avalanche tested
- RoHS Compliant

## DFN-8 5x6 Pin Configuration




DFN-8 5x6

| Type | Package | Marking |
|---|---|---|
| CMSA100P06 | DFN-8 5x6 | CMSA100P06 |

## 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 | -90 | A |
| $I_D$@$T_C$=100℃ | Continuous Drain Current | -59 | A |
| $I_{DM}$ | Pulsed Drain Current | -360 | A |
| EAS | Single Pulse Avalanche Energy[1] | 400 | mJ |
| $P_D$@$T_C$=25℃ | Total Power Dissipation | 160 | 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 [2] | --- | 38 | ℃/W |
| $R_{\theta JC}$ | Thermal Resistance Junction-case | --- | 0.94 | ℃/W |

-60V, 7mΩ typ., -90A P-Channel MOSFET

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

| Symbol | Parameter | Conditions | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| $BV_{DSS}$ | Drain-Source Breakdown Voltage | $V_{GS}$=0V , $I_D$=-250μA | -60 | --- | --- | V |
| $R_{DS(ON)}$ | Static Drain-Source On-Resistance | $V_{GS}$=-10V , $I_D$=-20A | --- | 7 | 9 | mΩ |
| | | $V_{GS}$=-4.5V , $I_D$=-15A | --- | 9.5 | 13 | |
| $V_{GS(th)}$ | Gate Threshold Voltage | $V_{GS}$=$V_{DS}$ , $I_D$ = -250μA | -1.0 | --- | -2.5 | 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 , $I_D$= -20A | --- | 47 | --- | S |
| $R_g$ | Gate Resistance | $V_{DS}$=0V , $V_{GS}$=0V , f=1MHz | --- | 5.7 | --- | Ω |
| $Q_g$ | Total Gate Charge | $V_{DS}$=-30V , $V_{GS}$=-10V , $I_D$=-20A | --- | 47 | --- | nC |
| $Q_{gs}$ | Gate-Source Charge | | --- | 10 | --- | |
| $Q_{gd}$ | Gate-Drain Charge | | --- | 5 | --- | |
| $T_{d(on)}$ | Turn-On Delay Time | $V_{DS}$=-30V, $V_{GS}$ =-10V , $R_{GEN}$=3Ω $I_D$=-20A | --- | 5 | --- | ns |
| $T_r$ | Rise Time | | --- | 12 | --- | |
| $T_{d(off)}$ | Turn-Off Delay Time | | --- | 67 | --- | |
| $T_f$ | Fall Time | | --- | 23 | --- | |
| $C_{iss}$ | Input Capacitance | $V_{DS}$=-25V , $V_{GS}$=0V , f=1MHz | --- | 3600 | --- | pF |
| $C_{oss}$ | Output Capacitance | | --- | 1400 | --- | |
| $C_{rss}$ | Reverse Transfer Capacitance | | --- | 40 | --- | |

## Diode Characteristics

| Symbol | Parameter | Conditions | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| $I_S$ | Continuous Source Current | $V_G$=$V_D$=0V , Force Current | --- | --- | -90 | A |
| $I_{SM}$ | Pulsed Source Current | | --- | --- | -360 | A |
| $V_{SD}$ | Diode Forward Voltage | $V_{GS}$=0V , $I_S$=-20A ,$T_J$=25℃ | --- | -0.85 | -1.3 | V |
| $t_{rr}$ | Reverse Recovery Time | di/dt = 100A/μs $T_J$ =25℃ , $I_F$ =-20A | --- | 43 | --- | ns |
| $Q_{rr}$ | Reverse Recovery Charge | | --- | 59 | --- | nC |

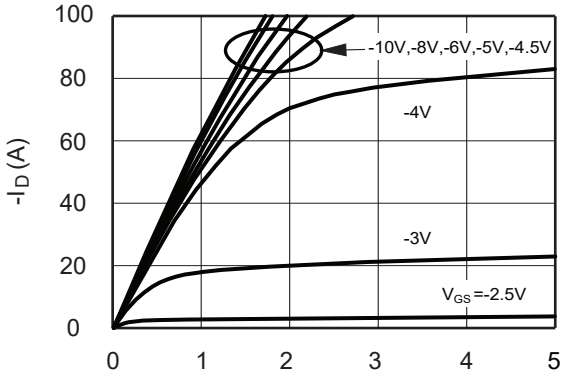
Note :

1.The EAS data shows Max. rating . The test condition is $V_{DD}$=-30V , $V_{GS}$=-10V , L=0.5mH , $I_{AS}$=-40A.

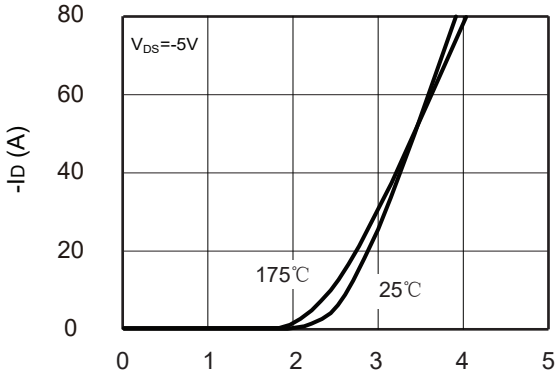
2. Device mounted on FR-4 substrate PC board with 2oz copper in 1inch square cooling area.

This product has been designed and qualified for the counsumer market.
Cmos assumes no liability for customers' product design or applications.
Cmos reserver the right to improve product design ,functions and reliability wihtout notice.Please refer to the latest version of specification.

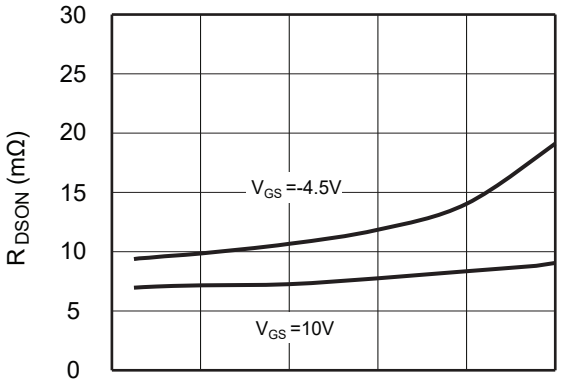
## Typical Characteristics



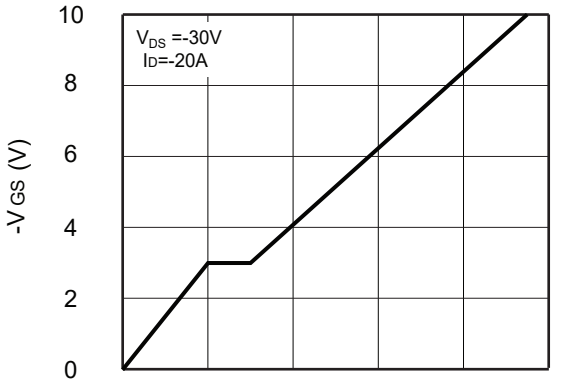

Output Characteristics



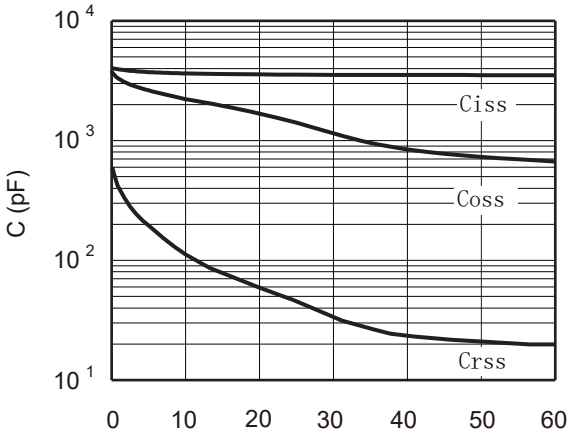

transfer characteristics



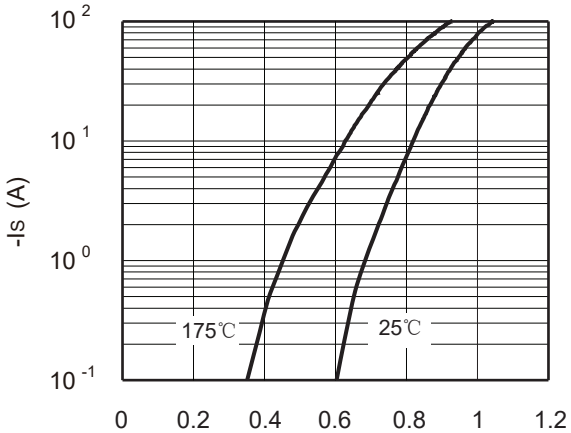

drain-source on-resistance




Gate charge vs gate-source voltage

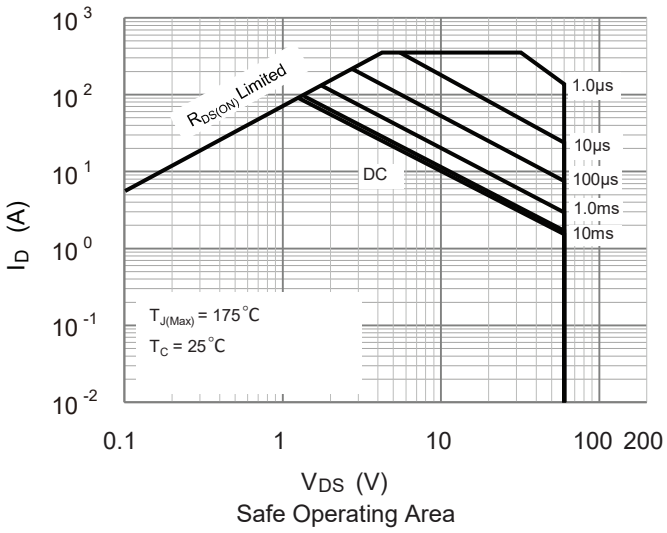



Capacitance Characteristics




Body-Diode Characteristics

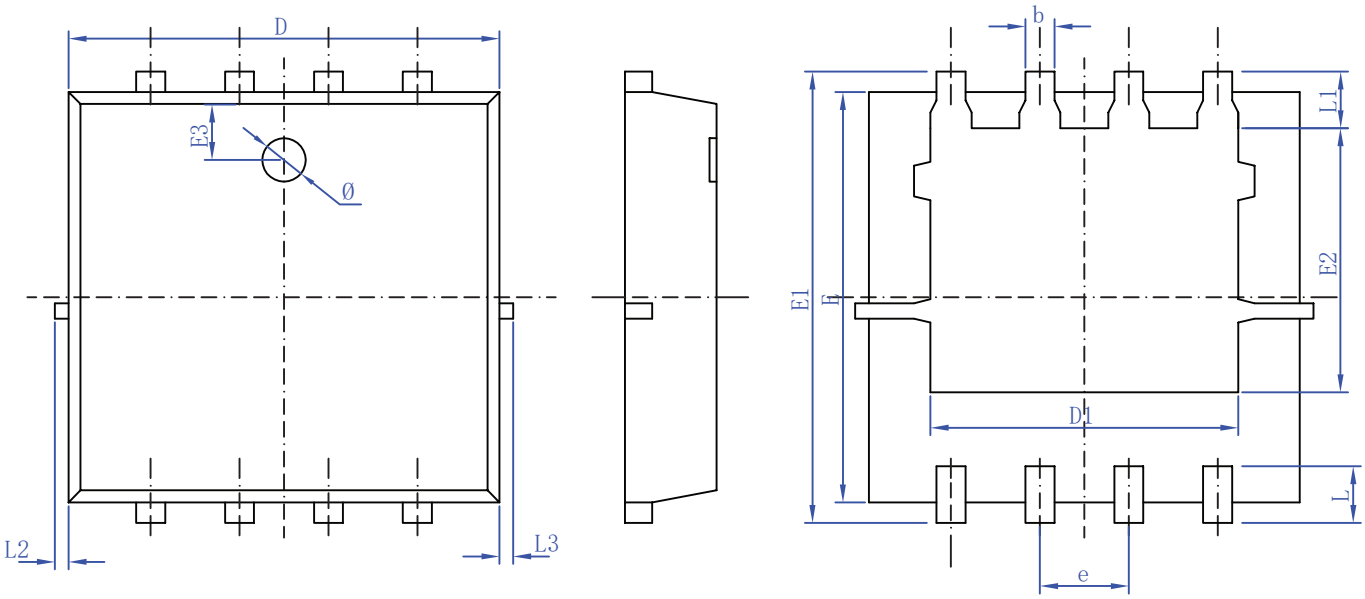
## Characteristics

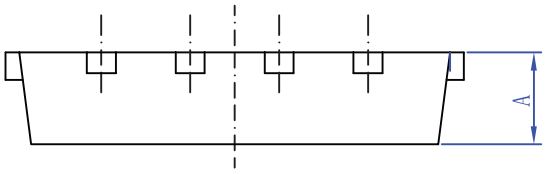



Safe Operating Area

## Package Dimension

DFN-8 5x6 Unit :mm




注：
1.未注公差±0.05未标注圆角R max=0.25

| Dimensions In Millimeters | | | |
|---|---|---|---|
| Symbol | Min. | Max. | Ave. |
| A | 0.900 | 1.100 | 1.000 |
| D | 4.950 | 5.150 | 5.050 |
| D1 | 3.850 | 4.250 | 4.050 |
| E | 5.750 | 5.950 | 5.850 |
| E1 | 5.950 | 6.350 | 6.150 |
| E2 | 3.300 | 3.700 | 3.500 |
| E3 | 0.900 | 1.300 | 1.100 |
| b | 0.250 | 0.350 | 0.300 |
| e | 1.220 | 1.320 | 1.270 |
| L | 0.585 | 0.785 | 0.685 |
| L1 | 0.525 | 0.725 | 0.625 |
| Ø | 1.000 | 1.400 | 1.200 |
| L2 | 0~0.100 | | |
| L3 | 0~0.100 | | |