

### General Description

The CMSA3006 uses advanced trench technology to provide excellent RDS (ON), low gate charge and minimize the loss of power conversion applications. This device is suitable to be used as the low side FET in SMPS, load switching and general purpose.

### Features

- Low ON-resistance
- 100% avalanche tested
- Small Footprint (5x6mm) for Compact Design
- RoHS Compliant

### Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
$V_{DS}$	Drain-Source Voltage	30	V
$V_{GS}$	Gate-Source Voltage	$\pm 20$	V
$I_D @ T_c = 25^\circ C$	Continuous Drain Current	90	A
$I_D @ T_c = 100^\circ C$	Continuous Drain Current	58	A
$I_{DM}$	Pulsed Drain Current <sup>1</sup>	360	A
EAS	Single Pulse Avalanche Energy <sup>2</sup>	196	mJ
$P_D @ T_c = 25^\circ C$	Total Power Dissipation	50	W
$T_{STG}$	Storage Temperature Range	-55 to 150	°C
$T_J$	Operating Junction Temperature Range	-55 to 150	°C

### Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient <sup>3</sup>	---	25	°C/W
$R_{\theta JC}$	Thermal Resistance Junction -Case	---	2.5	°C/W

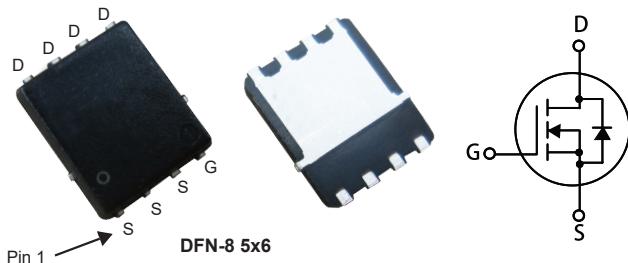
### Product Summary

BVDSS	RDSON	ID
30V	5mΩ	90A

### Applications

- DC/DC Converters in Computing, Servers, and POL
- Isolated DC/DC Converters in Telecom and Industrial

### DFN-8 5x6 Pin Configuration



Type	Package	Marking
CMSA3006	DFN-8 5*6	CMSA3006

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

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
$\text{BV}_{\text{DSS}}$	Drain-Source Breakdown Voltage	$V_{\text{GS}}=0\text{V}$ , $I_{\text{D}}=250\mu\text{A}$	30	---	---	V
$R_{\text{DS(ON)}}$	Static Drain-Source On-Resistance	$V_{\text{GS}}=10\text{V}$ , $I_{\text{D}}=28\text{A}$	---	4.5	5	$\text{m}\Omega$
		$V_{\text{GS}}=4.5\text{V}$ , $I_{\text{D}}=20\text{A}$	---	6	7.5	
$V_{\text{GS(th)}}$	Gate Threshold Voltage	$V_{\text{GS}}=V_{\text{DS}}$ , $I_{\text{D}}=250\mu\text{A}$	1.0	---	2.5	V
$I_{\text{DSS}}$	Drain-Source Leakage Current	$V_{\text{DS}}=30\text{V}$ , $V_{\text{GS}}=0\text{V}$	---	---	1	$\mu\text{A}$
$I_{\text{GSS}}$	Gate-Source Leakage Current	$V_{\text{GS}}=\pm 20\text{V}$ , $V_{\text{DS}}=0\text{V}$	---	---	$\pm 100$	$\text{nA}$
$g_{\text{fs}}$	Forward Transconductance	$V_{\text{DS}}=5\text{V}$ , $I_{\text{D}}=20\text{A}$	---	29	---	S
$Q_{\text{g}}$	Total Gate Charge	$V_{\text{DS}}=15\text{V}$ , $I_{\text{D}}=15\text{A}$ $V_{\text{GS}}=4.5\text{V}$	---	20	---	$\text{nC}$
$Q_{\text{gs}}$	Gate-Source Charge		---	7.5	---	
$Q_{\text{gd}}$	Gate-Drain Charge		---	7	---	
$T_{\text{d(on)}}$	Turn-On Delay Time	$V_{\text{DS}}=15\text{V}$ , $V_{\text{GS}}=10\text{V}$ , $I_{\text{D}}=15\text{A}$ $R_{\text{GEN}}=3.3\Omega$	---	10	---	$\text{ns}$
$T_{\text{r}}$	Rise Time		---	15	---	
$T_{\text{d(off)}}$	Turn-Off Delay Time		---	40	---	
$T_{\text{f}}$	Fall Time		---	12	---	
$C_{\text{iss}}$	Input Capacitance	$V_{\text{DS}}=25\text{V}$ , $V_{\text{GS}}=0\text{V}$ , $f=1\text{MHz}$	---	2600	---	$\text{pF}$
$C_{\text{oss}}$	Output Capacitance		---	250	---	
$C_{\text{rss}}$	Reverse Transfer Capacitance		---	230	---	

## Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
$I_{\text{s}}$	Diode continuous forward current	$V_{\text{G}}=V_{\text{D}}=0\text{V}$ , Force Current	---	---	90	A
$I_{\text{SM}}$	Pulsed Source Current		---	---	360	A
$V_{\text{SD}}$	Diode Forward Voltage	$V_{\text{GS}}=0\text{V}$ , $I_{\text{F}}=25\text{A}$ , $T_J=25^\circ\text{C}$	---	0.87	1.2	V

Note:

- Single pulse width limited by junction temperature  $T_{\text{J(MAX)}}=150^\circ\text{C}$ .
- The EAS data shows Max. rating . The test condition is  $V_{\text{DD}}=20\text{V}$  ,  $V_{\text{GS}}=10\text{V}$  ,  $L=0.5\text{mH}$  ,  $I_{\text{AS}}=28\text{A}$ .
- Surface mounted on 1 in2 copper pad of FR4 board,  $t < 10\text{sec}$

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

Cmos assumes no liability for customers' product design or applications.

Cmos reserves the right to improve product design ,functions and reliability without notice.