

N-Channel Enhancement Mode MOSFET

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	± 20	V
$I_D@T_C=25^\circ\text{C}$	Continuous Drain Current	90	A
$I_D@T_C=100^\circ\text{C}$	Continuous Drain Current	58	A
I_{DM}	Pulsed Drain Current ¹	360	A
EAS	Single Pulse Avalanche Energy ²	196	mJ
$P_D@T_C=25^\circ\text{C}$	Total Power Dissipation	50	W
T_{STG}	Storage Temperature Range	-55 to 150	$^\circ\text{C}$
T_J	Operating Junction Temperature Range	-55 to 150	$^\circ\text{C}$

Thermal Data

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

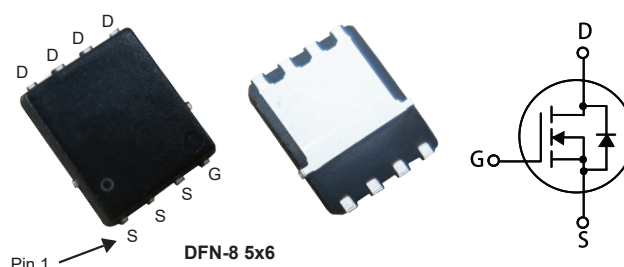
Product Summary

BVDSS	RDSON	ID
30V	5m Ω	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
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V$, $I_D=250\mu A$	30	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	$V_{GS}=10V$, $I_D=28A$	---	4.5	5	$m\Omega$
		$V_{GS}=4.5V$, $I_D=20A$	---	6	7.5	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS}=V_{DS}$, $I_D=250\mu A$	1.0	---	2.5	V
I_{DSS}	Drain-Source Leakage Current	$V_{DS}=30V$, $V_{GS}=0V$	---	---	1	μA
I_{GSS}	Gate-Source Leakage Current	$V_{GS}=\pm 20V$, $V_{DS}=0V$	---	---	± 100	nA
g_{fs}	Forward Transconductance	$V_{DS}=5V$, $I_D=20A$	---	29	---	S
Q_g	Total Gate Charge	$V_{DS}=15V$, $I_D=15A$ $V_{GS}=4.5V$	---	20	---	nC
Q_{gs}	Gate-Source Charge		---	7.5	---	
Q_{gd}	Gate-Drain Charge		---	7	---	
$T_{d(on)}$	Turn-On Delay Time	$V_{DS}=15V$, $V_{GS}=10V$, $I_D=15A$ $R_{GEN}=3.3\Omega$	---	10	---	ns
T_r	Rise Time		---	15	---	
$T_{d(off)}$	Turn-Off Delay Time		---	40	---	
T_f	Fall Time		---	12	---	
C_{iss}	Input Capacitance	$V_{DS}=25V$, $V_{GS}=0V$, $f=1MHz$	---	2600	---	pF
C_{oss}	Output Capacitance		---	250	---	
C_{rss}	Reverse Transfer Capacitance		---	230	---	

Diode Characteristics

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

Note:

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

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