CMSA8972

N-Channel Enhancement Mode Field Effect Transistor

General Description

The CMSA8972 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

- RDS(ON)<2.5mΩ @ VGS=10V
- 100% avalanche tested
- Conduction losses reduced
- Switching losses reduced

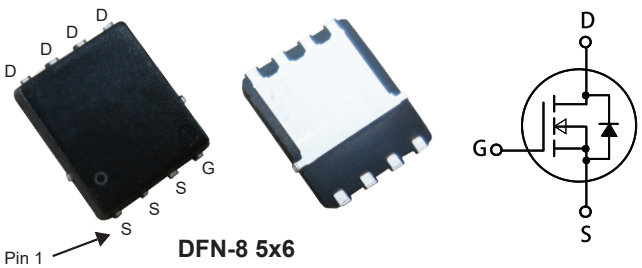
Product Summary

BVDSS	RDSON	ID
20V	2.5mΩ	100A

Applications

- On board power for server
- Power managment for high performance computing
- High-efficiency DC-DC converters
- Synchronous rectification

DFN-8 5x6 Pin Configuration



Type	Package	Marking
CMSA8972	DFN-8 5*6	CMSA8972

Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	20	V
V_{GS}	Gate-Source Voltage	±8	V
I_D@T_C=25℃	Continuous Drain Current	100	A
I_D@T_C=100℃	Continuous Drain Current	85	A
I_{DM}	Pulsed Drain Current	400	A
EAS	Single Pulse Avalanche Energy	460	mJ
P_D@T_C=25℃	Total Power Dissipation	80	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-to-Ambient	---	62	℃/W
$R_{\theta JC}$	Thermal Resistance Junction -Case	---	2.6	℃/W

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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	20	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	V_{GS}=4.5V , I_D=15A	---	---	2.5	mΩ
		V_{GS}=2.5V , I_D=15A	---	---	3	
		V_{GS}=1.8V, I_D=15A	---	---	3.7	
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =250μA	0.5	---	1.5	V
I_{DSS}	Drain-Source Leakage Current	V_{DS}=16V , V_{GS}=0V	---	---	1	uA
I_{GSS}	Gate-Source Leakage Current	V_{GS}= ±8V , V_{DS}=0V	---	---	±100	nA
gfs	Forward Transconductance	V_{DS}=5V, I_D =20A	---	85	---	S
R_g	Gate Resistance	V_{DS}=0V , V_{GS}=0V , f=1MHz	---	8	---	Ω
Q_g	Total Gate Charge	V_{DD}=10V , I_D=30A V_{GS}=0 to 4.5 V	---	20	---	nC
Q_{gs}	Gate-Source Charge		---	7	---	
Q_{gd}	Gate-Drain Charge		---	5	---	
$T_{d(on)}$	Turn-On Delay Time	V_{DD}=10V , V_{GS}=4.5V, R_G=1.6Ω I_D =30A	---	15	---	ns
T_r	Rise Time		---	119	---	
$T_{d(off)}$	Turn-Off Delay Time		---	36	---	
T_f	Fall Time		---	5	---	
C_{iss}	Input Capacitance	V_{DS}=10V , V_{GS}=0V , f=1MHz	---	7400	---	pF
C_{oss}	Output Capacitance		---	800	---	
C_{rss}	Reverse Transfer Capacitance		---	700	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Diode continuous forward current	V_G=V_D=0V , Force Current	---	---	100	A
$I_{S,pulse}$	Diode pulse current		---	---	400	A
V_{SD}	Diode Forward Voltage	V_{GS}=0V , I_F=20A , Tj=25℃	---	---	1.2	V

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