CMSA90N03

N-Channel Enhancement Mode Field Effect Transistor

General Description

The CMSA90N03 is a high performance trench N-channel MOSFET which utilizes extremely high cell density to provide low Rdson and gate charge characteristics. It is ideally suited to support synchronous buck converter applications.

Product Summary

BVDSS	RDSON	ID
30V	3.8mΩ	90A

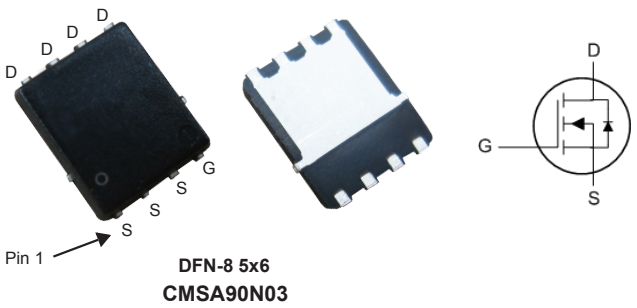
Applications

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

Features

- Fast switching
- Super Low Gate Charge
- 100% avalanche tested
- RoHS Compliant

DFN-8 5x6 Pin Configuration



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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℃	Continuous Drain Current	90	A
I_{DM}	Pulsed Drain Current	270	A
EAS	Single Pulse Avalanche Energy [1]	750	mJ
P_D@T_C=25℃	Total Power Dissipation	50	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	---	30	℃/W
$R_{\theta JC}$	Thermal Resistance Junction -Case	---	2.5	℃/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=250μA	30	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	V_{GS}=10V , I_D=20A	---	---	3.8	mΩ
		V_{GS}=4.5V , I_D=20A	---	---	5.5	
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =250μA	1	---	2.5	V
I_{DSS}	Drain-Source Leakage Current	V_{DS}=24V , 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=15A	---	60	---	S
R_g	Gate Resistance	V_{DS}=0V , V_{GS}=0V , f=1MHz	---	5.5	---	Ω
Q_g	Total Gate Charge	V_{DS}=15V , I_D=20A V_{GS}=4.5 V	---	30	---	nC
Q_{gs}	Gate-Source Charge		---	5	---	
Q_{gd}	Gate-Drain Charge		---	15	---	
$T_{d(on)}$	Turn-On Delay Time	V_{DS}=15V , V_{GS}=10V , R_G=3.3Ω I_D =1A, R_D=15Ω	---	12	---	ns
T_r	Rise Time		---	8	---	
$T_{d(off)}$	Turn-Off Delay Time		---	50	---	
T_f	Fall Time		---	23	---	
C_{iss}	Input Capacitance	V_{DS}=25V , V_{GS}=0V , f=1MHz	---	3400	---	pF
C_{oss}	Output Capacitance		---	415	---	
C_{rss}	Reverse Transfer Capacitance		---	350	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Diode continuous forward current	V_G=V_D=0V , Force Current	---	---	90	A
$I_{S,pulse}$	Diode pulse current		---	---	270	A
V_{SD}	Diode Forward Voltage	V_{GS}=0V , I_F=20A , Tj=25℃	---	---	1.2	V

Notes

1. The test condition is V_{DS}=15V , V_{GS}=10V , L=0.5mH , I_D=55A.

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