CMSC012N06

N-Channel Enhancement Mode MOSET

General Description

The CMSC012N06 is designed to provide a high efficiency synchronous buck power stage with optimal layout and board space utilization. This device is well suited for use in compact DC/DC converter applications.

Features

- N-Channel MOSFET
- Low Gate Charge
- Surface Mount Package
- RoHS Compliant

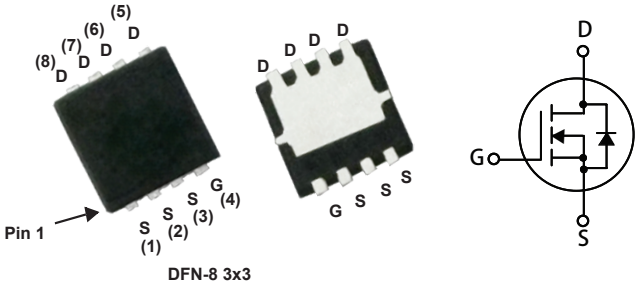
Product Summary

BVDSS	RDSON	ID
60V	11mΩ	20A

Applications

- High efficiency power supply
- Secondary synchronous rectifier

DFN-8 3x3 Pin Configuration



Type	Package	Marking
CMSC012N06	DFN-8 3*3	012N06

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	20	A
I_D@T_C=100℃		16	
I_{DM}	Pulsed Drain Current	60	A
EAS	Single Pulse Avalanche Energy	45	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 Characteristics

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-ambient(Steady-State)	---	60	℃/W
$R_{\theta JC}$	Thermal Resistance Junction -Case(Steady-State)	---	2.5	℃/W

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	60	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	V_{GS}=10V , I_D=20A	---	---	11	mΩ
		V_{GS}=4.5V , I_D=15A	---	---	17.5	
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D = 250μA	1	---	3	V
I_{DSS}	Drain-Source Leakage Current	V_{DS}=60V , V_{GS}=0V	---	---	1	uA
I_{GSS}	Gate-Source Leakage Current	V_{GS} = ±20V	---	---	±100	nA
gfs	Forward Transconductance	V_{DS}=10V , I_D=20A	---	15	---	S
Q_g	Total Gate Charge	V_{DS}=30V , I_D=20A V_{GS}=10V	---	26	---	nC
Q_{gs}	Gate-Source Charge		---	11	---	
Q_{gd}	Gate-Drain Charge		---	2	---	
$T_{d(on)}$	Turn-On Delay Time	V_{DS}=30V , V_{GS}=10V , R_{GEN} =3Ω I_D=20A	---	11	---	ns
T_r	Rise Time		---	78	---	
$T_{d(off)}$	Turn-Off Delay Time		---	15	---	
T_f	Fall Time		---	7	---	
C_{iss}	Input Capacitance	V_{DS}= 30V, V_{GS}=0V , f=1MHz	---	860	---	pF
C_{oss}	Output Capacitance		---	440	---	
C_{rss}	Reverse Transfer Capacitance		---	18	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Diode continuous forward current	V_G=V_D=0V , Force Current	---	---	20	A
$I_{S,pulse}$	Diode pulse current		---	---	60	A
V_{SD}	Diode Forward Voltage	V_{GS}=0V , I_F=28A , Tj=25℃	---	---	1	V

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