

## 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

## Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
$V_{DS}$	Drain-Source Voltage	60	V
$V_{GS}$	Gate-Source Voltage	$\pm 20$	V
$I_D @ T_C = 25^\circ\text{C}$	Continuous Drain Current	20	A
$I_D @ T_C = 100^\circ\text{C}$		16	
$I_{DM}$	Pulsed Drain Current	60	A
EAS	Single Pulse Avalanche Energy	45	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 Characteristics

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

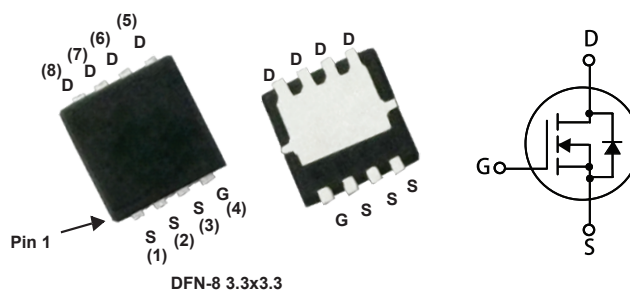
## Product Summary

BVDSS	RDSON	ID
60V	11m $\Omega$	20A

## Applications

- High efficiency power supply
- Secondary synchronous rectifier

## DFN-8 3.3x3.3 Pin Configuration



Type	Package	Marking
CMSC012N06	DFN-8 3.3x3.3	012N06

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

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
$BV_{DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V$ , $I_D=250\mu A$	60	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	$V_{GS}=10V$ , $I_D=20A$	---	---	11	$m\Omega$
		$V_{GS}=4.5V$ , $I_D=15A$	---	---	17.5	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS}=V_{DS}$ , $I_D = 250\mu A$	1	---	3	V
$I_{DSS}$	Drain-Source Leakage Current	$V_{DS}=60V$ , $V_{GS}=0V$	---	---	1	$\mu A$
$I_{GSS}$	Gate-Source Leakage Current	$V_{GS} = \pm 20V$	---	---	$\pm 100$	nA
$g_{fs}$	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	$V_{DS}=30V$ , $V_{GS}=10V$ , $R_{GEN}=3\Omega$ $I_D=20A$	---	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	$V_{GS}=0V$ , $I_F=28A$ , $T_J=25^{\circ}\text{C}$	---	---	1	V

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