

## Dual N-Channel Enhancement Mode MOSFET

### General Description

The CMSC3812 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

- Low On-Resistance
- Improved dv/dt capability
- Fast switching
- RoHS Compliant

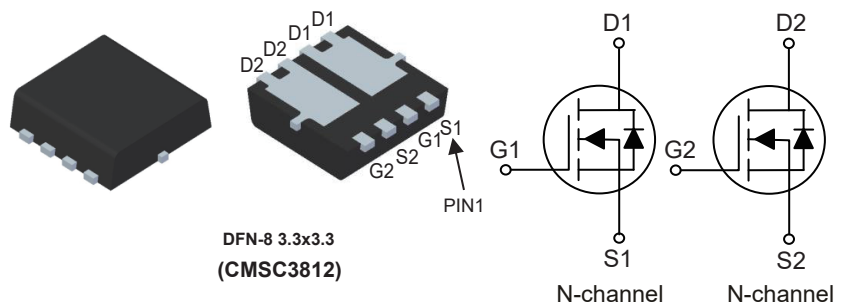
### Product Summary

BVDSS	RDSON	ID
30V	20mΩ	20A

### Applications

- DC/DC Converters in Computing, Servers, and POL
- Isolated DC/DC Converters in Telecom and Industrial

### DFN-8 3.3x3.3 Pin Configuration



### Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
$V_{DS}$	Drain-Source Voltage	30	V
$V_{GS}$	Gate-Source Voltage	$\pm 20$	V
$I_D@T_C=25^\circ\text{C}$	Continuous Drain Current	20	A
$I_D@T_C=100^\circ\text{C}$	Continuous Drain Current	13	A
$I_{DM}$	Pulsed Drain Current	80	A
$P_D@T_C=25^\circ\text{C}$	Total Power Dissipation	25	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-ambient	---	62	$^\circ\text{C}/\text{W}$
$R_{\theta JC}$	Thermal Resistance Junction-case	---	5	$^\circ\text{C}/\text{W}$

**Electrical Characteristics (T<sub>J</sub>=25°C , unless otherwise noted)**

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV <sub>DSS</sub>	Drain-Source Breakdown Voltage	V <sub>GS</sub> =0V , I <sub>D</sub> =250uA	30	---	---	V
R <sub>DS(ON)</sub>	Static Drain-Source On-Resistance	V <sub>GS</sub> =10V , I <sub>D</sub> =12A	---	---	20	mΩ
		V <sub>GS</sub> =4.5V , I <sub>D</sub> =10A	---	---	33	
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>GS</sub> =V <sub>DS</sub> , I <sub>D</sub> = 250μA	1	---	2.5	V
I <sub>DSS</sub>	Drain-Source Leakage Current	V <sub>DS</sub> =30V , V <sub>GS</sub> =0V	---	---	1	uA
		V <sub>DS</sub> =24V , V <sub>GS</sub> =0V , T <sub>J</sub> =125 C	---	---	10	
I <sub>GSS</sub>	Gate-Source Leakage Current	V <sub>GS</sub> = ±20V	---	---	±100	nA
g <sub>fs</sub>	Forward Transconductance	V <sub>DS</sub> =5V , I <sub>D</sub> =10A	---	9	---	S
Q <sub>g</sub>	Total Gate Charge	V <sub>DS</sub> =15V , I <sub>D</sub> =8A V <sub>GS</sub> =4.5V	---	4	---	nC
Q <sub>gs</sub>	Gate-Source Charge		---	1	---	
Q <sub>gd</sub>	Gate-Drain Charge		---	2.1	---	
T <sub>d(on)</sub>	Turn-On Delay Time	V <sub>DD</sub> =15V , V <sub>GS</sub> =10V , R <sub>G</sub> =6Ω I <sub>D</sub> =1A	---	3	---	ns
T <sub>r</sub>	Rise Time		---	7.5	---	
T <sub>d(off)</sub>	Turn-Off Delay Time		---	16	---	
T <sub>f</sub>	Fall Time		---	5	---	
C <sub>iss</sub>	Input Capacitance	V <sub>DS</sub> = 25V , V <sub>GS</sub> =0V , f=1MHz	---	550	---	pF
C <sub>oss</sub>	Output Capacitance		---	55	---	
C <sub>rss</sub>	Reverse Transfer Capacitance		---	35	---	

**Diode Characteristics**

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I <sub>S</sub>	Diode continuous forward current	V <sub>G</sub> =V <sub>D</sub> =0V , Force Current	---	---	20	A
I <sub>S,pulse</sub>	Diode pulse current		---	---	80	A
V <sub>SD</sub>	Diode Forward Voltage	V <sub>GS</sub> =0V , I <sub>F</sub> =1A , T <sub>J</sub> =25°C	---	---	1	V

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