

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

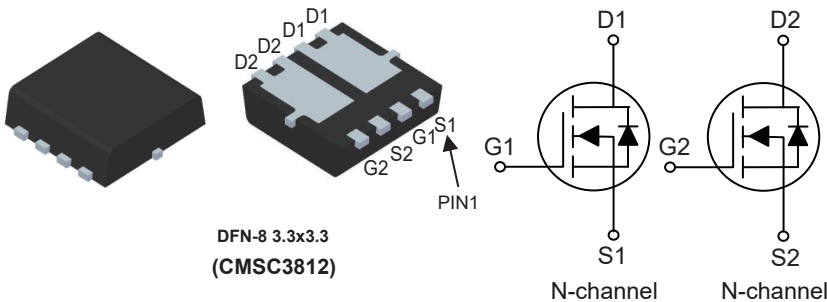
Product Summary

BVDSS	R _{DS(on)} max.	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	±20	V
I _D @T _C =25°C	Continuous Drain Current	20	A
I _D @T _C =100°C	Continuous Drain Current	13	A
I _{DM}	Pulsed Drain Current	80	A
P _D @T _C =25°C	Total Power Dissipation	25	W
T _{STG}	Storage Temperature Range	-55 to 150	°C
T _J	Operating Junction Temperature Range	-55 to 150	°C

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
R _{θJA}	Thermal Resistance Junction-ambient	---	62	°C/W
R _{θJC}	Thermal Resistance Junction-case	---	5	°C/W

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

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V$, $I_D=250\mu A$	30	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	$V_{GS}=10V$, $I_D=12A$	---	---	20	m Ω
		$V_{GS}=4.5V$, $I_D=10A$	---	---	33	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS}=V_{DS}$, $I_D = 250\mu A$	1	---	2.5	V
I_{DSS}	Drain-Source Leakage Current	$V_{DS}=30V$, $V_{GS}=0V$	---	---	1	μA
		$V_{DS}=24V$, $V_{GS}=0V$, $T_J=125^{\circ}\text{C}$	---	---	10	
I_{GSS}	Gate-Source Leakage Current	$V_{GS} = \pm 20V$	---	---	± 100	nA
g_{fs}	Forward Transconductance	$V_{DS}=5V$, $I_D=10A$	---	9	---	S
Q_g	Total Gate Charge	$V_{DS}=15V$, $I_D=8A$ $V_{GS}=4.5V$	---	4	---	nC
Q_{gs}	Gate-Source Charge		---	1	---	
Q_{gd}	Gate-Drain Charge		---	2.1	---	
$T_{d(on)}$	Turn-On Delay Time	$V_{DD}=15V$, $V_{GS}=10V$, $R_G=6\Omega$ $I_D=1A$	---	3	---	ns
T_r	Rise Time		---	7.5	---	
$T_{d(off)}$	Turn-Off Delay Time		---	16	---	
T_f	Fall Time		---	5	---	
C_{iss}	Input Capacitance	$V_{DS}=25V$, $V_{GS}=0V$, $f=1\text{MHz}$	---	550	---	pF
C_{oss}	Output Capacitance		---	55	---	
C_{rss}	Reverse Transfer Capacitance		---	35	---	

Diode Characteristics

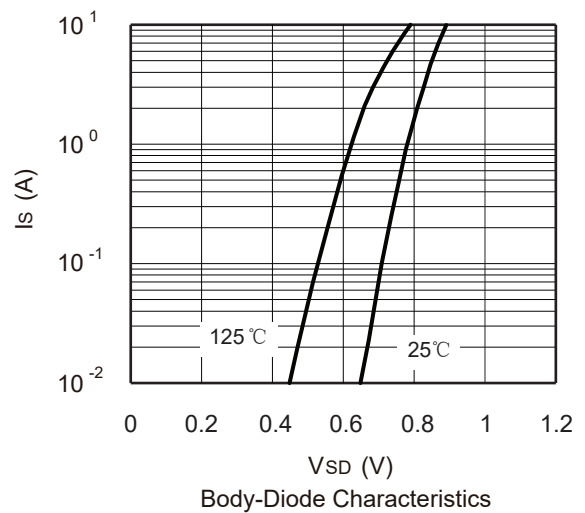
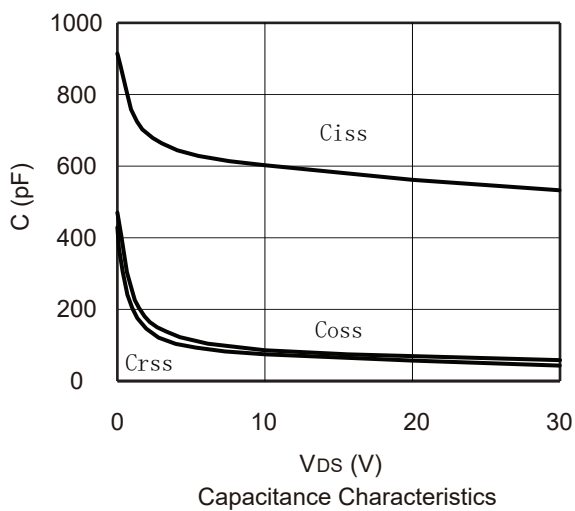
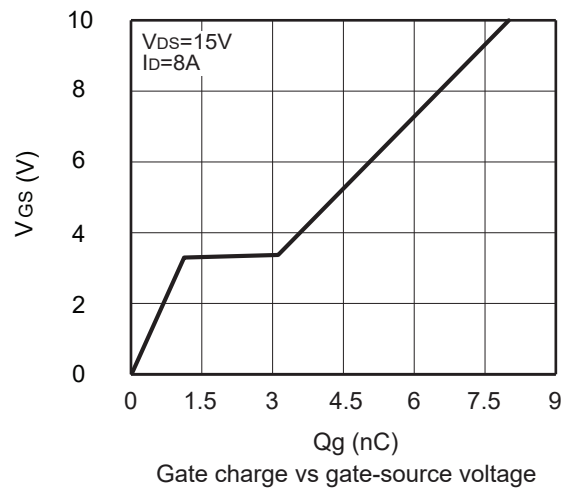
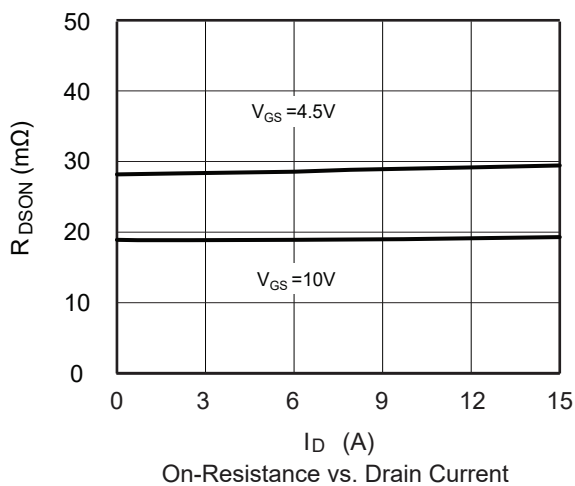
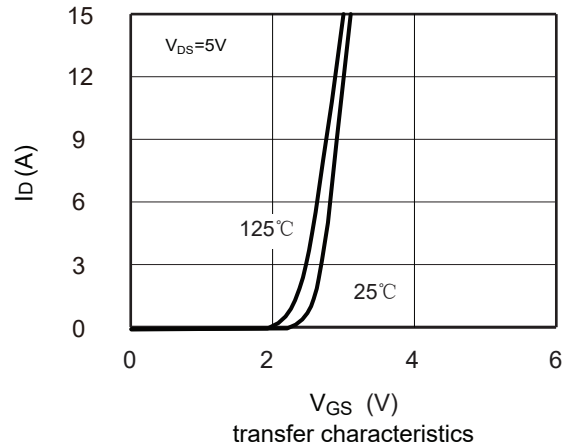
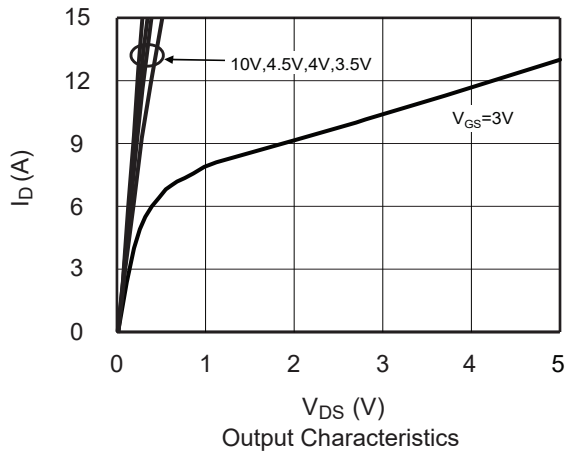
Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Diode continuous forward current	$V_G=V_D=0V$, Force Current	---	---	20	A
$I_{S,pulse}$	Diode pulse current		---	---	80	A
V_{SD}	Diode Forward Voltage	$V_{GS}=0V$, $I_F=1A$, $T_J=25^{\circ}\text{C}$	---	---	1	V

This product has been designed and qualified for the consumer market.

Cmos assumes no liability for customers' product design or applications.

Cmos reserves the right to improve product design ,functions and reliability without notice. Please refer to the latest version of specification.

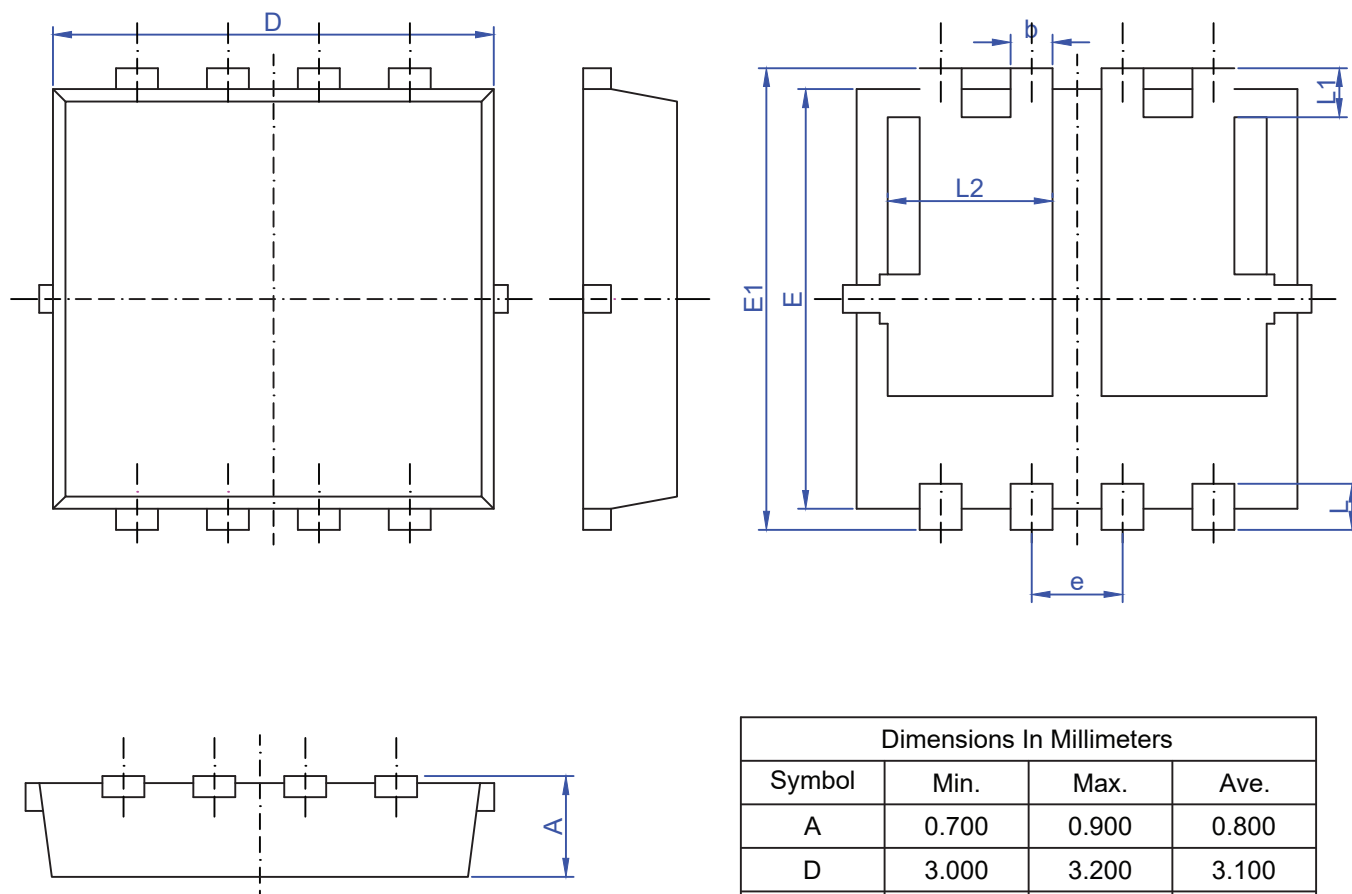
Typical Characteristics



Package Dimension

DFN-8 3.3X3.3 Dual

Unit :mm



Dimensions In Millimeters			
Symbol	Min.	Max.	Ave.
A	0.700	0.900	0.800
D	3.000	3.200	3.100
E	3.000	3.200	3.100
E1	3.200	3.600	3.400
b	0.200	0.400	0.300
e	0.550	0.750	0.650
L	0.250	0.650	0.450
L1	0.255	0.655	0.455
L2	0.935	1.135	1.035

Note:

1. No tolerance ± 0.10
2. The plastic package has no defects such as defects, shrinkage holes, cracks, bubbles, etc.
3. Marking unit mm