CMSC7216DN

Dual N-Channel Enhancement Mode MOSFET

General Description

The CMSC7216DN 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
- 100% EAS Guaranteed
- Surface Mount Package
- RoHS Compliant

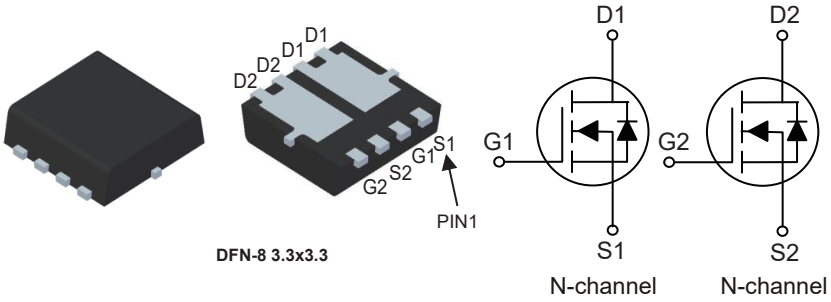
Product Summary

BVDSS	RDSON	ID
40V	30mΩ	12A

Applications

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

DFN-8 3.3x3.3_Dual Pin Configuration



Type	Package	Marking
CMSC7216DN	DFN-8 3.3*3.3	7216DN

Maximum Ratings and Thermal Characteristics (T_A = 25℃ unless otherwise noted)

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	40	V
V_{GS}	Gate-Source Voltage	±20	V
I_D@T_C=25℃	Continuous Drain Current, V_{GS} @ 10V	12	A
I_D@T_C=100℃	Continuous Drain Current, V_{GS} @ 10V	8.5	A
I_{DM}	Pulsed Drain Current	48	A
EAS	Single Pulse Avalanche Energy[1]	15	mJ
P_D@T_C=25℃	Total Power Dissipation	21	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(t ≤ 10 s) [2,3]	---	50	℃/W
$R_{\theta JC}$	Thermal Resistance Junction -Case(Steady-State)	---	6	℃/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=250μA	40	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	V_{GS}=10V , I_D=5A	---	26	30	mΩ
		V_{GS}=4.5V , I_D=5A	---	34	39	
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =250μA	1	---	3	V
I_{DSS}	Drain-Source Leakage Current	V_{DS}=40V , 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=5A	---	7	---	S
Q_g	Total Gate Charge	V_{DS}=20V , V_{GS}=4.5V , I_D=5A	---	6	---	nC
Q_{gs}	Gate-Source Charge		---	2	---	
Q_{gd}	Gate-Drain Charge		---	2	---	
$T_{d(on)}$	Turn-On Delay Time	V_{DD}=20V , V_{GEN} =10V , I_D=5A R_G=1Ω , R_L=4Ω	---	10	---	ns
T_r	Rise Time		---	60	---	
$T_{d(off)}$	Turn-Off Delay Time		---	20	---	
T_f	Fall Time		---	5	---	
C_{iss}	Input Capacitance	V_{DS}=25V , V_{GS}=0V , f=1MHz	---	550	---	pF
C_{oss}	Output Capacitance		---	35	---	
C_{rss}	Reverse Transfer Capacitance		---	30	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current	V_G=V_D=0V , Force Current	---	---	12	A
V_{SD}	Diode Forward Voltage	V_{GS}=0V , I_S=6A	---	0.85	1.2	V

Notes

1. The EAS data shows Max. rating .The test condition is V_{DS}=25V , V_{GS}=10V , L=0.3mH , I_{AS} =10A.

2. Surface mounted on 1" x 1" FR4 board.

3. Maximum under steady state conditions is 94 ℃/W.

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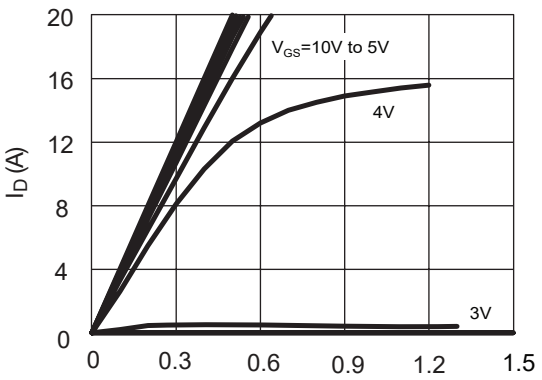
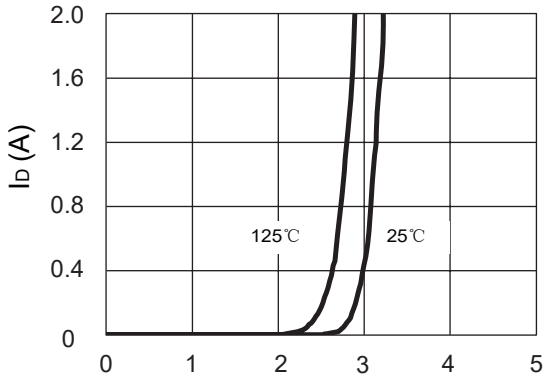
Cmos assumes no liability for customers' product design or applications.
Cmos reserver the right to improve product design ,functions and reliability wihtout notice.

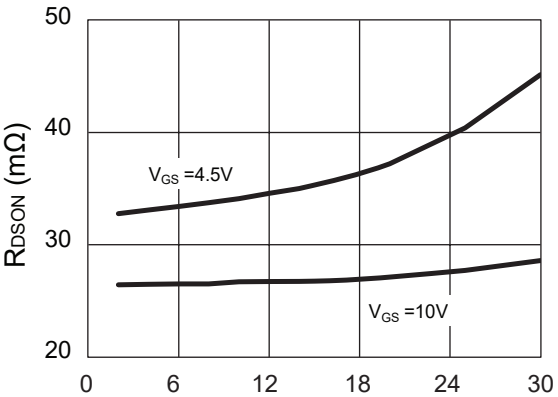
Typical Characteristics



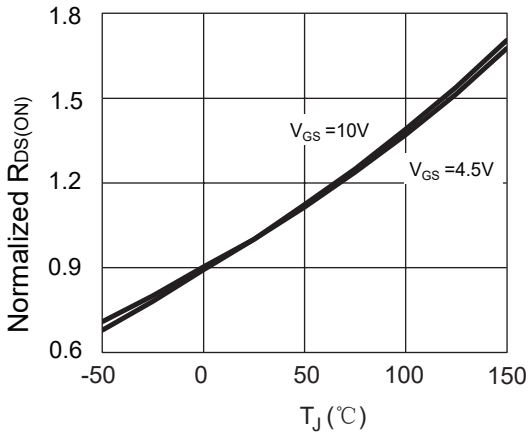
Output Characteristics



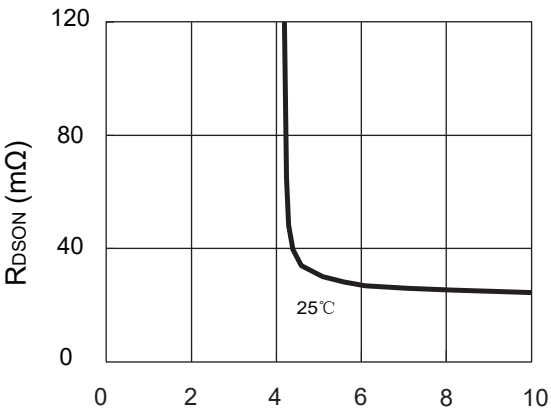
transfer characteristics



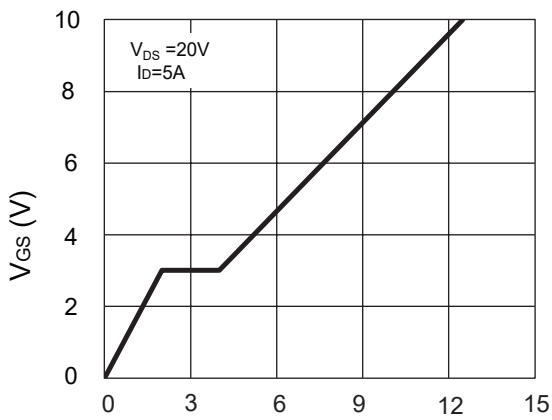
drain-source on-resistance



On-Resistance vs. Junction Temperature

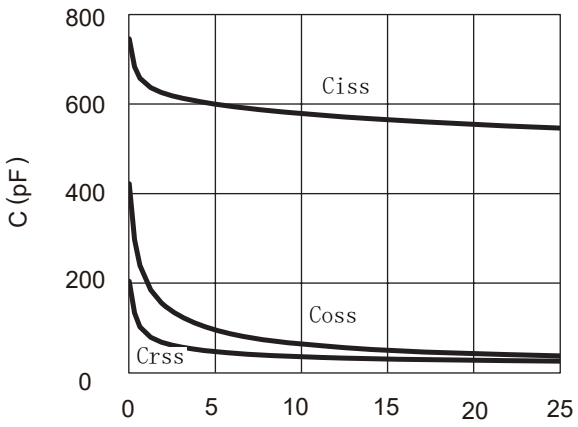


On-Resistance vs. Gate-Source Voltage

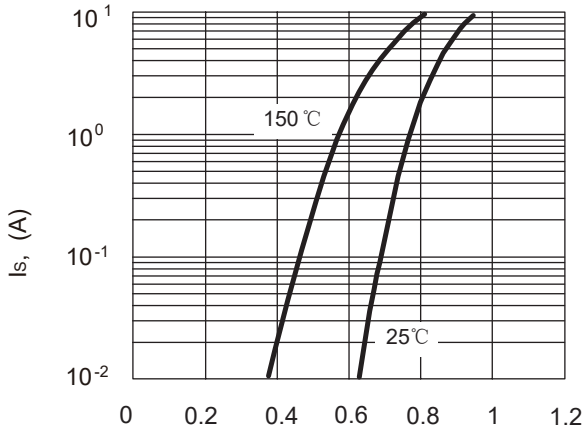


Gate charge vs gate-source voltage

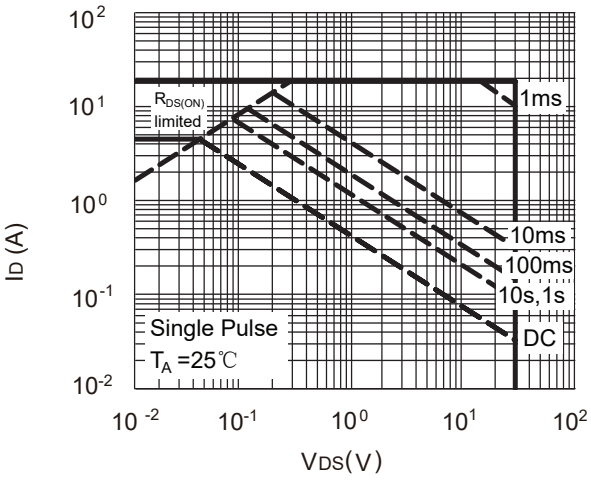
Typical Characteristics



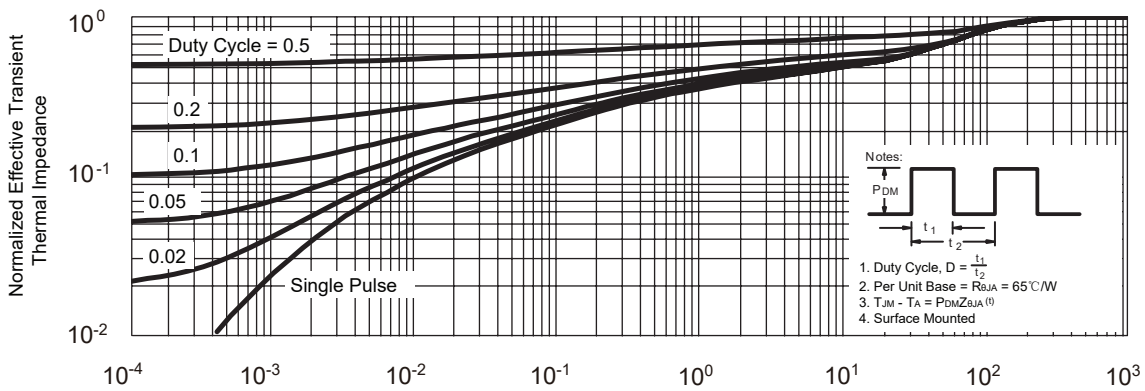
Capacitance Characteristics



Body-Diode Characteristics



Safe Operating Area



Normalized Thermal Transient Impedance, Junction-to-Ambient