CMSC019N03LS

N-Channel MOSFET

General Description

The CMSC019N03LS 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

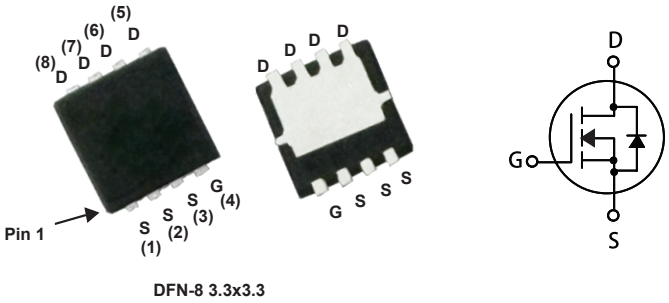
Product Summary

BVDSS	RDSON	ID
30V	1.9mΩ	50A

Applications

- Load switch, battery switch in portable devices

DFN-8 3.3x3 .3 Pin Configuration



DFN-8 3.3x3.3

Type	Package	Marking
CMSC019N03LS	DFN-8 3.3x3.3	019N03L

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℃	Continuous Drain Current	50	A
I_D@T_C=100℃	Continuous Drain Current	39	A
I_{DM}	Pulsed Drain Current	200	A
EAS	Single Pulse Avalanche Energy [1]	420	mJ
P_D@T_C=25℃	Total Power Dissipation	83	W
T_{STG}	Storage Temperature Range	-55 to 150	℃
T_J	Operating Junction Temperature Range	-55 to 150	℃

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-ambient(Device on PCB)	---	60	℃/W
$R_{\theta JC}$	Thermal Resistance Junction-case	---	1.8	℃/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	30	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	V_{GS}=10V , I_D=30A	---	1.5	1.9	mΩ
		V_{GS}=4.5V , I_D=20A	---	2.1	2.5	
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D = 250μA	1	---	3	V
I_{DSS}	Drain-Source Leakage Current	V_{DS}=24V , 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=20A	---	48	---	S
R_g	Gate Resistance	V_{DS}=0V , V_{GS}=0V , f=1MHz	---	3.5	---	Ω
Q_g	Total Gate Charge	V_{DD}=15V , I_D= 30A V_{GS}=0 to 4.5V	---	22	---	nC
Q_{gs}	Gate-Source Charge		---	7	---	
Q_{gd}	Gate-Drain Charge		---	6.5	---	
$T_{d(on)}$	Turn-On Delay Time	V_{DD}=15V , V_{GS}=10V , R_G=1.6Ω I_D=30A	---	6	---	ns
T_r	Rise Time		---	8	---	
$T_{d(off)}$	Turn-Off Delay Time		---	30	---	
T_f	Fall Time		---	5	---	
C_{iss}	Input Capacitance	V_{DS}= 25V, V_{GS}=0V , f=1MHz	---	2400	---	pF
C_{oss}	Output Capacitance		---	720	---	
C_{rss}	Reverse Transfer Capacitance		---	80	---	

Diode Characteristics

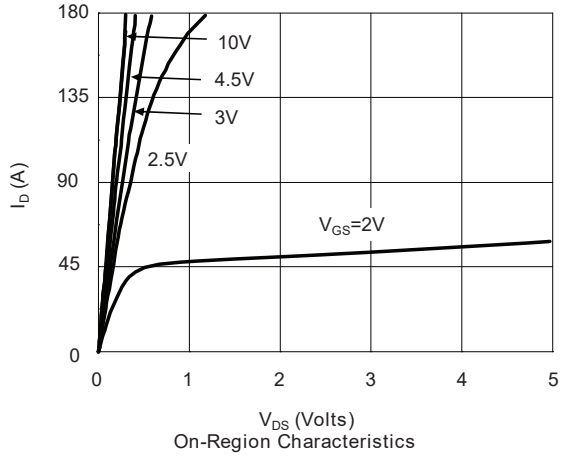
Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Diode continuous forward current	V_G=V_D=0V , Force Current	---	---	50	A
$I_{S,pulse}$	Diode pulse current		---	---	200	A
V_{SD}	Diode Forward Voltage	V_{GS}=0V , I_S=20A , Tj=25℃	---	0.75	1	V

Notes:

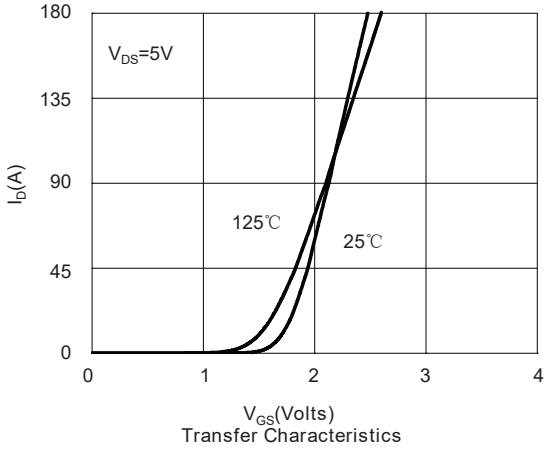
1.The EAS data shows Max. rating .The test condition is V_{DS}=25V , V_{GS}=10V , L=0.5mH , I_{AS} =41A.

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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.

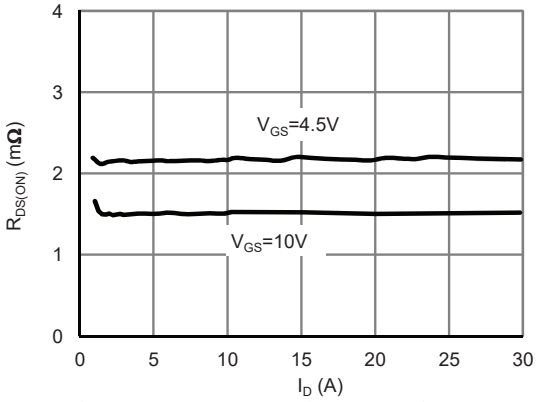
Typical Characteristics



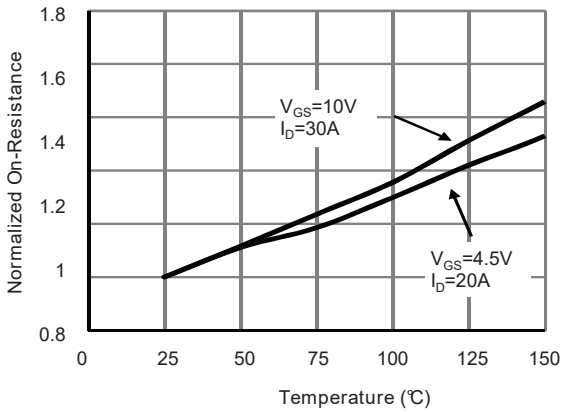
On-Region Characteristics



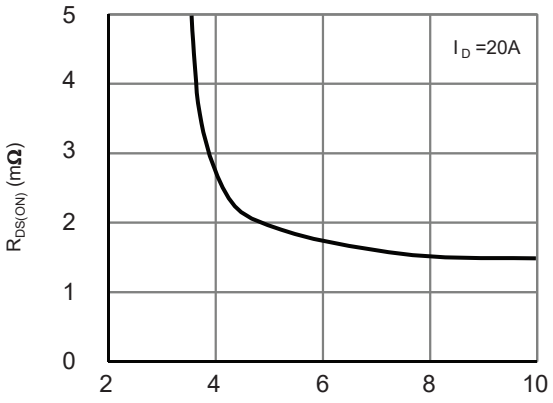
Transfer Characteristics



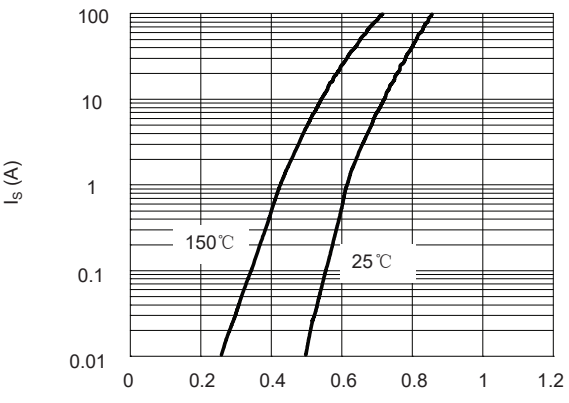
On-Resistance vs. Drain Current and Gate Voltage



On-Resistance vs. Junction Temperature

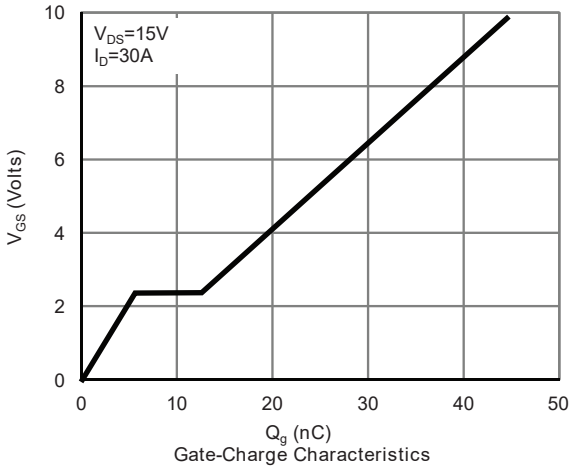


On-Resistance vs. Gate-Source Voltage

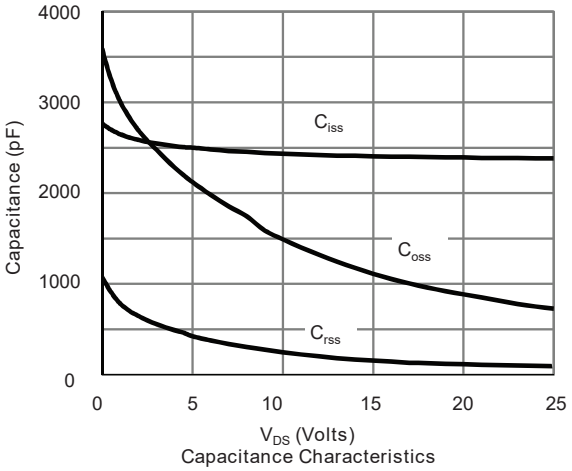


Body-Diode Characteristics

Typical Characteristics



Gate-Charge Characteristics



Capacitance Characteristics