

100V, 9mΩ typ., 50A N-Channel MOSFET

General Description

The CMSC100N10L uses advanced SGT technology to provide excellent $R_{DS(ON)}$. This device is ideal for boost converters and synchronous rectifiers for consumer, telecom, industrial power supplies and LED backlighting.

Features

- Low On-Resistance
- 100% avalanche tested
- Surface Mount Package
- Simple Drive Requirement
- RoHS Compliant

Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	100	V
V_{GS}	Gate-Source Voltage	± 20	V
$I_D@T_C=25^\circ\text{C}$	Continuous Drain Current	50	A
$I_D@T_C=100^\circ\text{C}$	Continuous Drain Current	33	A
I_{DM}	Pulsed Drain Current	200	A
EAS	Single Pulse Avalanche Energy ¹	49	mJ
$P_D@T_C=25^\circ\text{C}$	Total Power Dissipation	65	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(PCB mount)	---	50	$^\circ\text{C}/\text{W}$
$R_{\theta JC}$	Thermal Resistance Junction-case	---	1.92	$^\circ\text{C}/\text{W}$

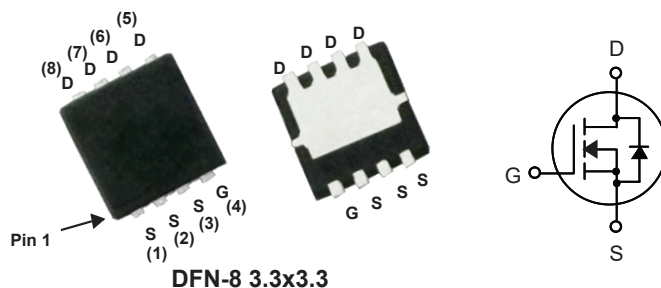
Product Summary

BVDSS	$R_{DS(on)}$ max.	ID
100V	10mΩ	50A

Applications

- Motor Drivers
- High-Efficiency DC-DC Converters

DFN-8 3.3x3.3 Pin Configuration



DFN-8 3.3x3.3

Type	Package	Marking
CMSC100N10L	DFN-8 3.3x3.3	100N10L

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

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V$, $I_D=250\mu A$	100	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	$V_{GS}=10V$, $I_D=25A$	---	9	10	$m\Omega$
		$V_{GS}=4.5V$, $I_D=20A$	---	11	15	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS}=V_{DS}$, $I_D=250\mu A$	1.0	---	2.5	V
I_{DSS}	Drain-Source Leakage Current	$V_{DS}=100V$, $V_{GS}=0V$	---	---	1	μA
I_{GSS}	Gate-Source Leakage Current	$V_{GS}=\pm 20V$, $V_{DS}=0V$	---	---	± 100	nA
g_{fs}	Forward Transconductance	$V_{DS}=10V$, $I_D=25A$	---	17	---	S
R_g	Gate Resistance	$V_{DS}=0V$, $V_{GS}=0V$, $f=1\text{MHz}$	---	1.0	---	Ω
Q_g	Total Gate Charge	$I_D=20A$ $V_{DD}=50V$ $V_{GS}=10V$	---	26	---	nC
Q_{gs}	Gate-Source Charge		---	6.5	---	
Q_{gd}	Gate-Drain Charge		---	5	---	
$T_{d(on)}$	Turn-On Delay Time	$V_{DD}=50V$ $V_{GS}=10V$ $R_G=3\Omega$ $R_L=2.5\Omega$	---	10	---	ns
T_r	Rise Time		---	5	---	
$T_{d(off)}$	Turn-Off Delay Time		---	25	---	
T_f	Fall Time		---	4	---	
C_{iss}	Input Capacitance	$V_{DS}=25V$, $V_{GS}=0V$, $f=1\text{MHz}$	---	1100	---	pF
C_{oss}	Output Capacitance		---	650	---	
C_{rss}	Reverse Transfer Capacitance		---	45	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current	$V_G=V_D=0V$, Force Current	---	---	50	A
I_{SM}	Pulsed Source Current		---	---	200	A
V_{SD}	Diode Forward Voltage	$V_{GS}=0V$, $I_S=20A$, $T_J=25^\circ\text{C}$	---	0.87	1.2	V

Note :

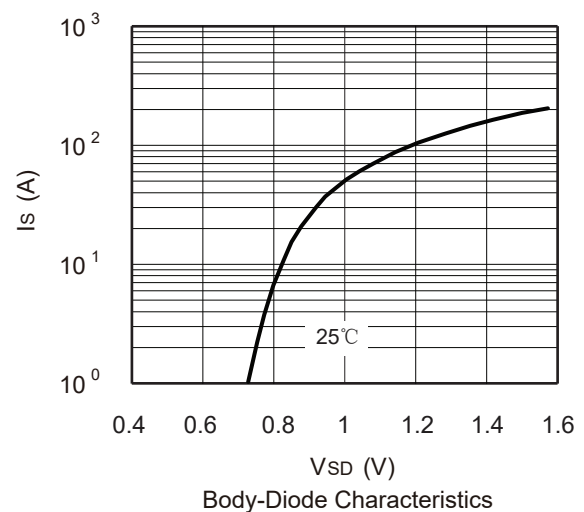
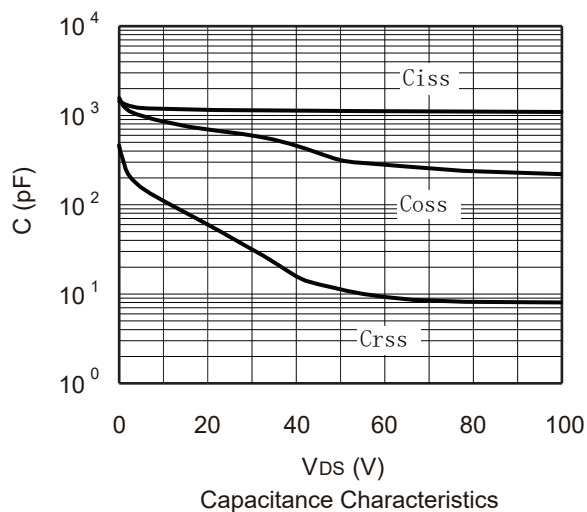
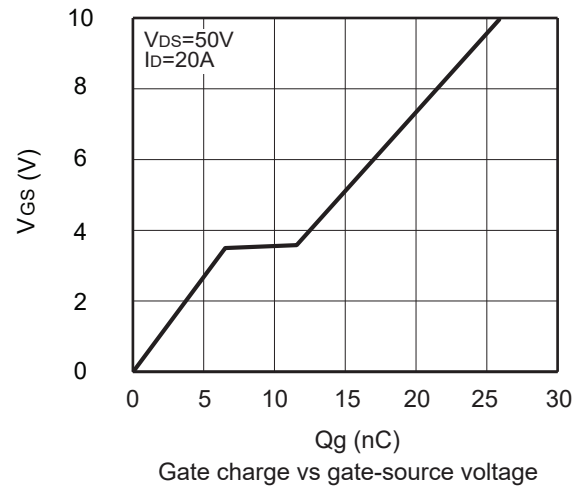
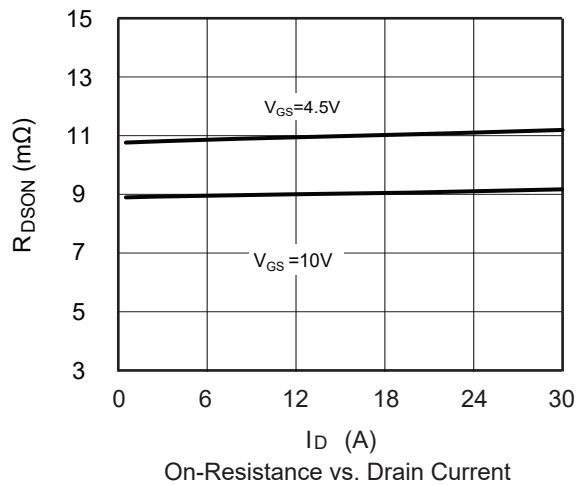
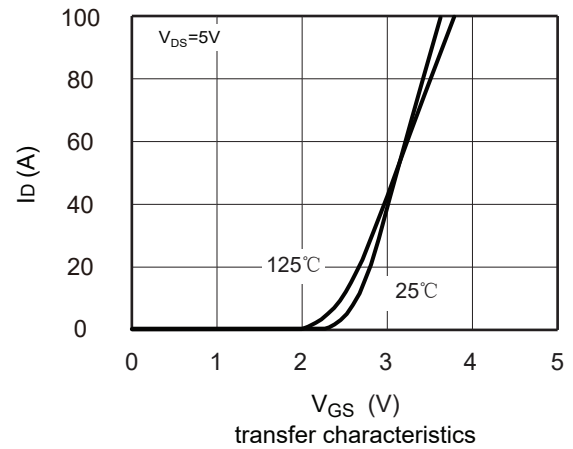
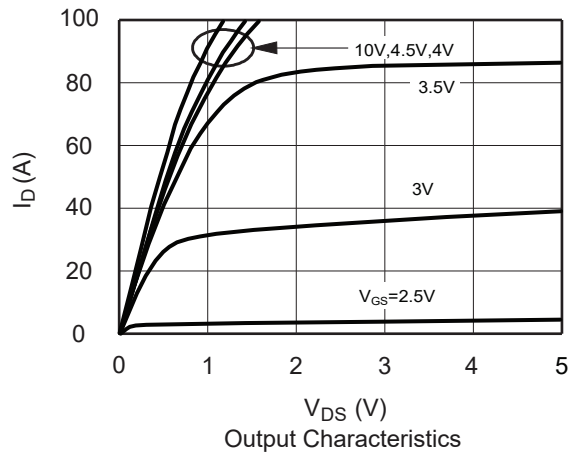
1.The EAS data shows Max. rating . The test condition is $V_{DD}=50V$, $V_{GS}=10V$, $L=0.5mH$, $I_{AS}=14A$.

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

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

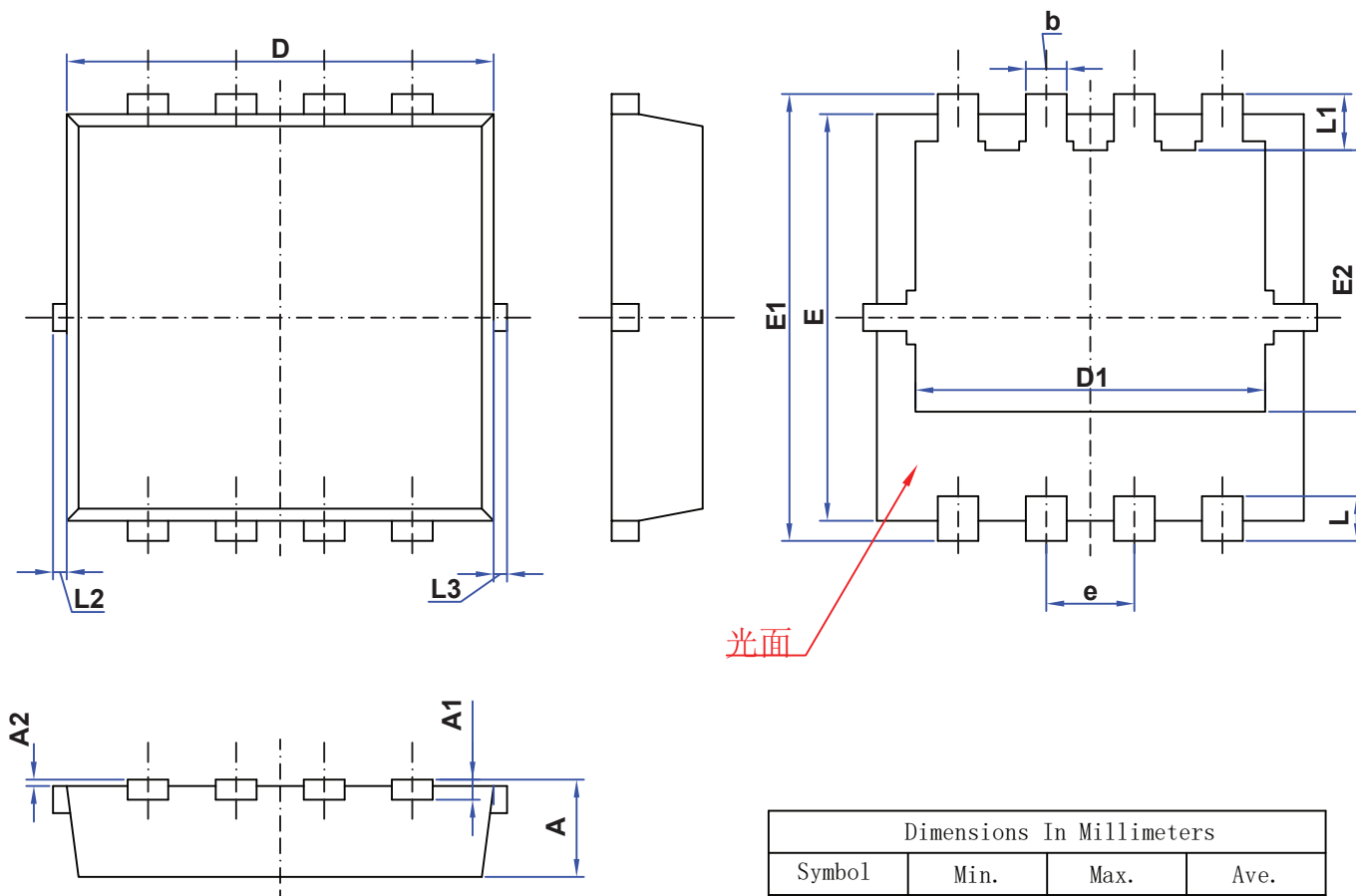
Cmos reserves the right to improve product design, functions and reliability without notice. Please refer to the latest version of specification.

Typical Characteristics



Package Dimension

DFN-8 3.3x3.3 Unit :mm



注:

1. 未注公差 ± 0.10 ,
2. 塑封体无缺损、缩孔、裂纹、气泡等不良缺陷
3. 标注单位mm

Dimensions In Millimeters			
Symbol	Min.	Max.	Ave.
A	0.700	0.900	0.800
A1	0.100	0.200	0.150
A2	—	0.050	—
D	3.000	3.200	3.100
D1	2.350	2.550	2.450
E	3.000	3.200	3.100
E1	3.200	3.600	3.400
E2	1.635	1.835	1.735
b	0.200	0.400	0.300
e	0.550	0.750	0.650
L	0.250	0.650	0.450
L1	0.345	0.745	0.545
L2	0~0.100		
L3	0~0.100		