CMSC100N06AL

60V, 9mΩ typ., 50A N-Channel MOSFET

General Description

The CMSC100N06AL 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.

Product Summary

BVDSS	$R_{DS(on)}$ max.	ID
60V	10.5mΩ	50A

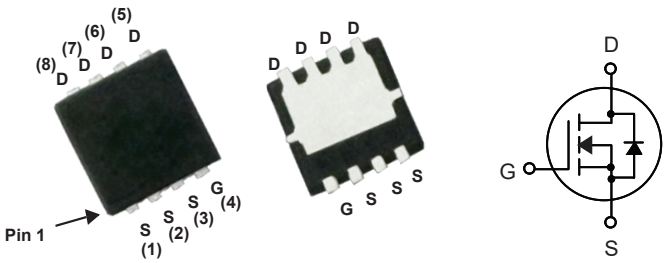
Applications

- DC−DC Converters
- Synchronous Rectification

Features

- Low On-Resistance
- Simple Drive Requirements
- Surface Mount Package
- RoHS Compliant

DFN-8 3.3x3.3 Pin Configuration



DFN-8 3.3x3.3

Type	Package	Marking
CMSC100N06AL	DFN-8 3.3x3.3	100N06AL

Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	60	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	32	A
I_{DM}	Pulsed Drain Current	200	A
EAS	Single Pulse Avalanche Energy[1]	64	mJ
P_D@T_C=25℃	Total Power Dissipation	50	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[2]	---	55	℃/W
$R_{\theta JC}$	Thermal Resistance Junction-case	---	2.50	℃/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	60	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	V_{GS}=10V , I_D=20A	---	9	10.5	mΩ
		V_{GS}=4.5V , I_D=15A	---	12.6	18	
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =250uA	1.0	---	3.0	V
I_{DSS}	Drain-Source Leakage Current	V_{DS}=60V , 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=10A	---	14	---	S
R_g	Gate Resistance	V_{DS}=0V , V_{GS}=0V , f=1MHz	---	1.3	---	Ω
Q_g	Total Gate Charge	I_D=20A V_{DD}=30V V_{GS}=10V (Note 3)	---	15	---	nC
Q_{gs}	Gate-Source Charge		---	2.5	---	
Q_{gd}	Gate-Drain Charge		---	3	---	
$T_{d(on)}$	Turn-On Delay Time	V_{DD}=30V V_{GS}=10V R_{GEN}=3Ω R_L=1.5Ω (Note 3)	---	5	---	ns
T_r	Rise Time		---	3.5	---	
$T_{d(off)}$	Turn-Off Delay Time		---	20	---	
T_f	Fall Time		---	3.5	---	
C_{iss}	Input Capacitance	V_{DS}=25V , V_{GS}=0V , f=1MHz	---	620	---	pF
C_{oss}	Output Capacitance		---	330	---	
C_{rss}	Reverse Transfer Capacitance		---	20	---	

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℃	---	0.89	1.3	V

Note :

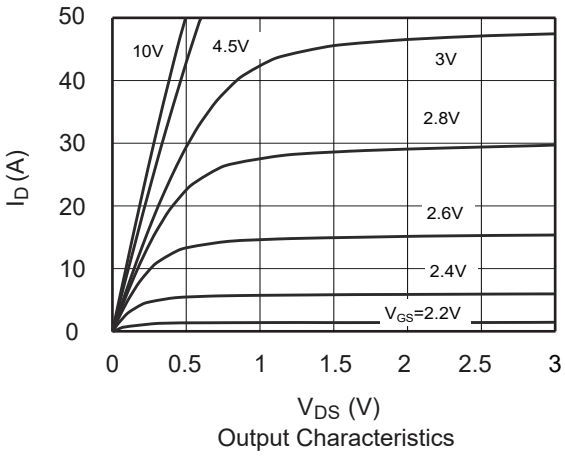
1.The EAS data shows Max. rating . The test condition is V_{DD}=30V , V_{GS}=10V , L=0.5mH , I_{AS}=16A.

2. Device mounted on FR-4 substrate PC board with 2oz copper in 1inch square cooling area.

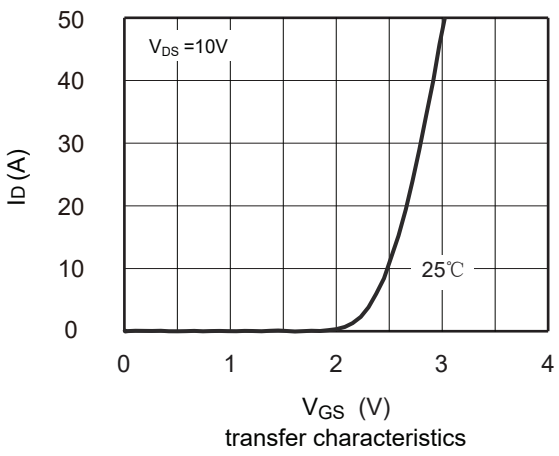
3. Defined by design, not subject to production.

This product has been designed and qualified for the counsumer market.
Cmos assumes no liability for customers' product design or applications.
Cmos reserver the right to improve product design ,functions and reliability wihtout notice.Please refer to the latest version of specification.

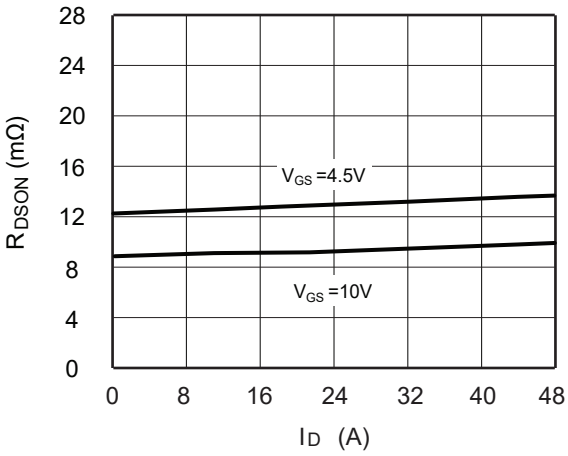
Typical Characteristics



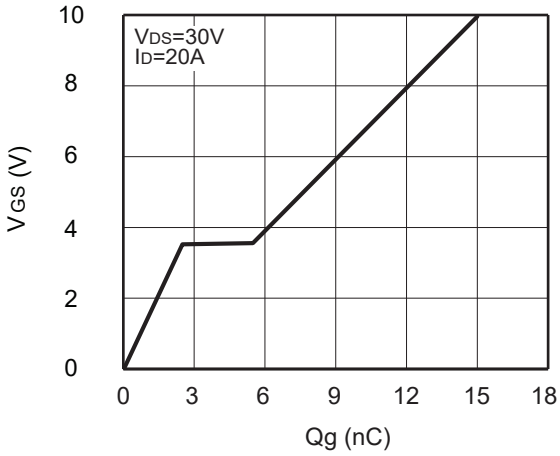
Output Characteristics



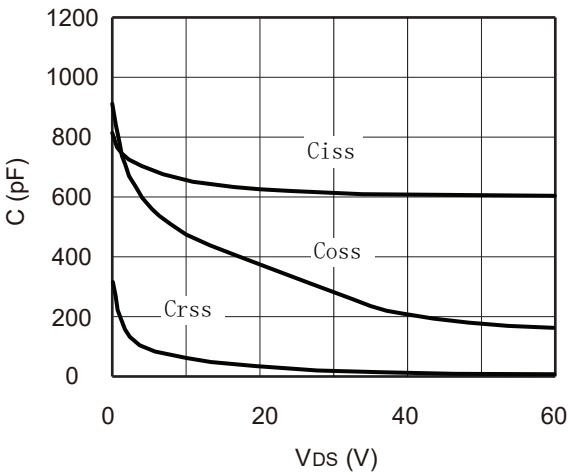
transfer characteristics



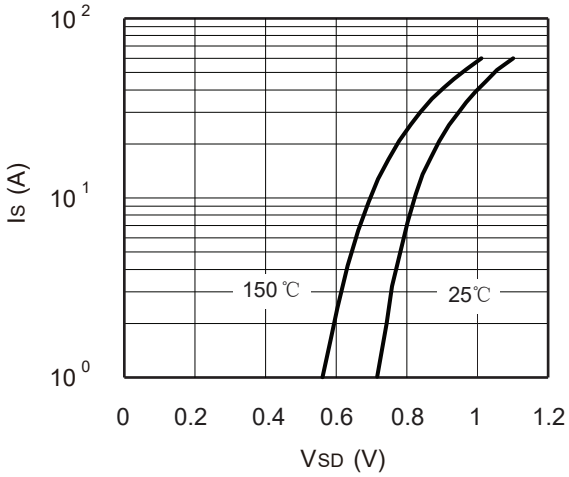
On-Resistance vs. Drain Current



Gate charge vs gate-source voltage



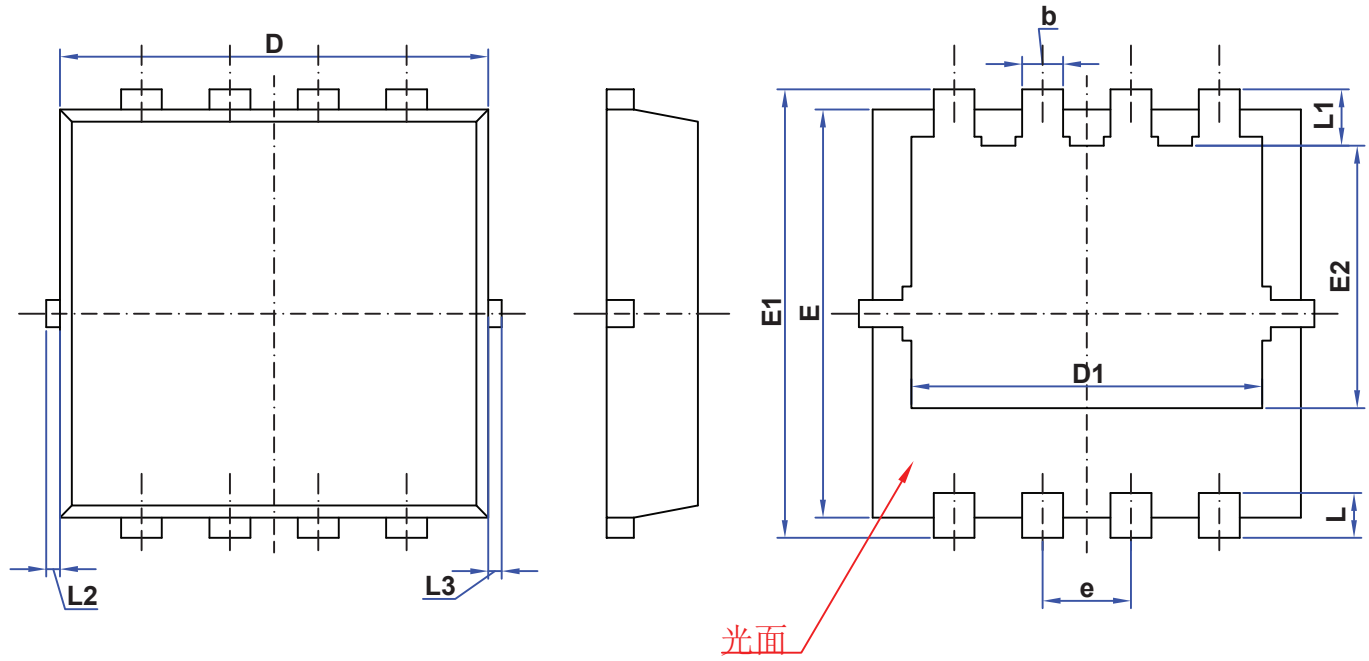
Capacitance Characteristics

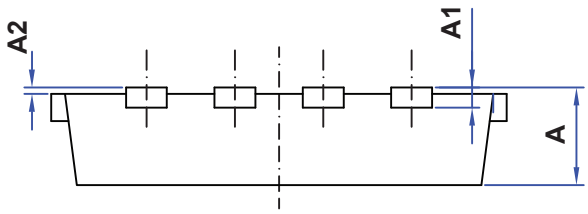


Body-Diode Characteristics

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		