

General Description

The CMSA011N06 uses advanced SGT technology to provide excellent RDS(ON). This technology has been optimized to minimize on-state resistance and yet maintain superior switching performance.

Features

- Low On-Resistance
- 100% avalanche tested
- Small Footprint (5x6 mm) for Compact Design
- RoHS Compliant

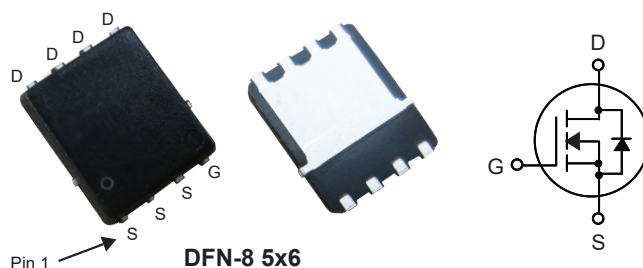
Product Summary

BVDSS	R _{DS(on)} max.	ID
60V	1.3mΩ	320A

Applications

- Motor Drive
- Switching applications

DFN-8 5x6 Pin Configuration



Type	Package	Marking
CMSA011N06	DFN-8 5x6	CMSA011N06

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°C	Continuous Drain Current	320	A
I _D @T _C =100°C	Continuous Drain Current	224	A
I _{DM}	Pulsed Drain Current	1280	A
EAS	Single Pulse Avalanche Energy ¹	1200	mJ
P _D @T _C =25°C	Total Power Dissipation	230	W
T _{STG}	Storage Temperature Range	-55 to 175	°C
T _J	Operating Junction Temperature Range	-55 to 175	°C

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
R _{θJA}	Thermal Resistance Junction-ambient ²	---	50	°C/W
R _{θJC}	Thermal Resistance Junction-case ³	---	0.65	°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	$V_{GS}=0V$, $I_D=250\mu A$	60	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	$V_{GS}=10V$, $I_D=20A$	---	1.1	1.3	mΩ
		$V_{GS}=4.5V$, $I_D=15A$	---	1.4	1.7	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS}=V_{DS}$, $I_D=250\mu A$	1.0	---	3.0	V
I_{DSS}	Drain-Source Leakage Current	$V_{DS}=60V$, $V_{GS}=0V$	---	---	1	μA
I_{GSS}	Gate-Source Leakage Current	$V_{GS}=\pm 20V$, $V_{DS}=0V$	---	---	± 100	nA
g_{fs}	Forward Transconductance	$V_{DS}=10V$, $I_D=20A$	---	56	---	S
R_g	Gate Resistance	$V_{DS}=0V$, $V_{GS}=0V$, $f=1\text{MHz}$	---	2.8	---	Ω
Q_g	Total Gate Charge	$I_D=20A$	---	112	---	nC
Q_{gs}	Gate-Source Charge	$V_{DS}=30V$	---	18.5	---	
Q_{gd}	Gate-Drain Charge	$V_{GS}=10V$ (Note 4)	---	22	---	
$T_{d(on)}$	Turn-On Delay Time	$V_{DS}=30V$	---	5.4	---	ns
T_r	Rise Time	$V_{GS}=10V$	---	15	---	
$T_{d(off)}$	Turn-Off Delay Time	$R_{GEN}=3\Omega$	---	120	---	
T_f	Fall Time	$I_D=20A$ (Note 4)	---	50	---	
C_{iss}	Input Capacitance	$V_{DS}=25V$, $V_{GS}=0V$, $f=1\text{MHz}$	---	6850	---	pF
C_{oss}	Output Capacitance		---	3460	---	
C_{rss}	Reverse Transfer Capacitance		---	180	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current	$V_G=V_D=0V$, Force Current	---	---	320	A
I_{SM}	Pulsed Source Current		---	---	1280	A
V_{SD}	Diode Forward Voltage	$V_{GS}=0V$, $I_S=20A$, $T_J=25^{\circ}\text{C}$	---	0.75	1.2	V
t_{rr}	Reverse Recovery Time	$di/dt=100A/\mu s$	---	72	---	ns
Q_{rr}	Reverse Recovery Charge	$T_J=25^{\circ}\text{C}$, $I_F=20A$ (Note 4)	---	90	---	nC

Note :

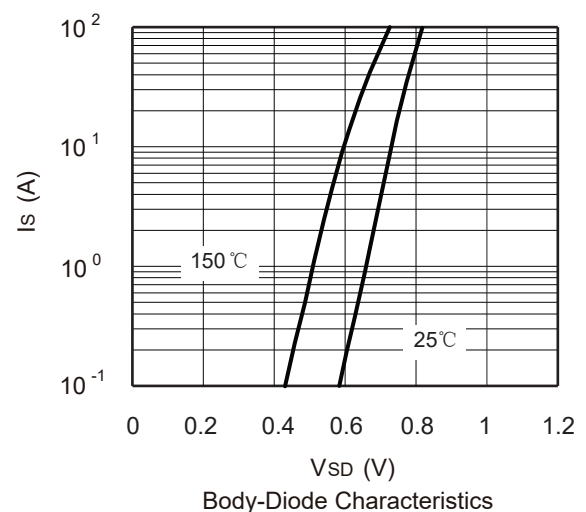
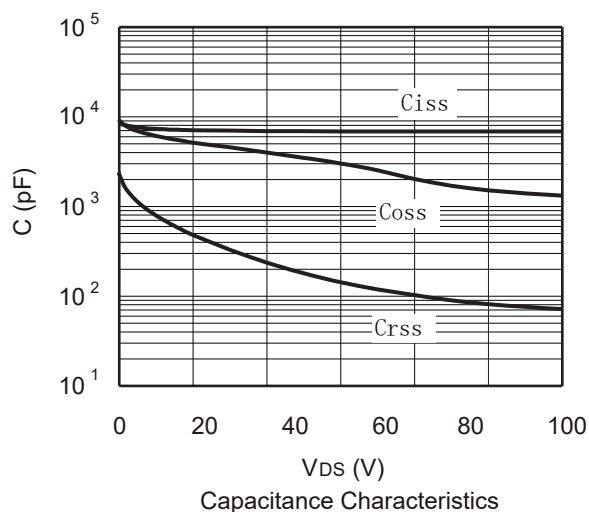
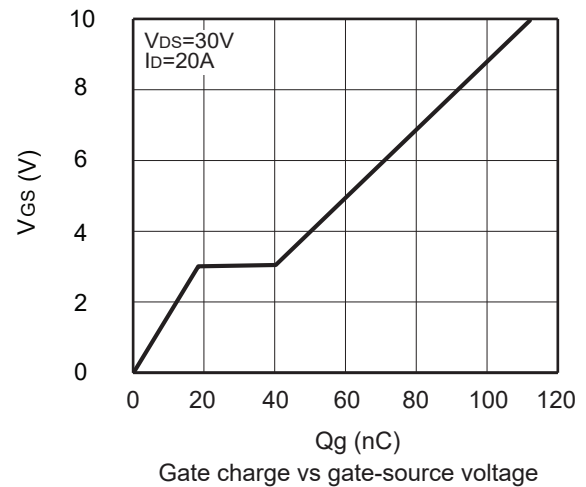
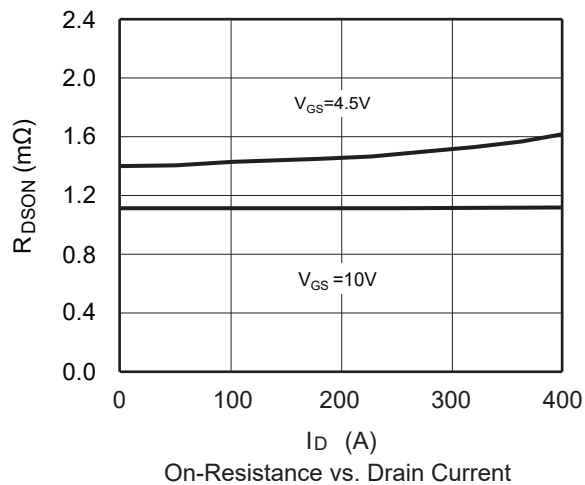
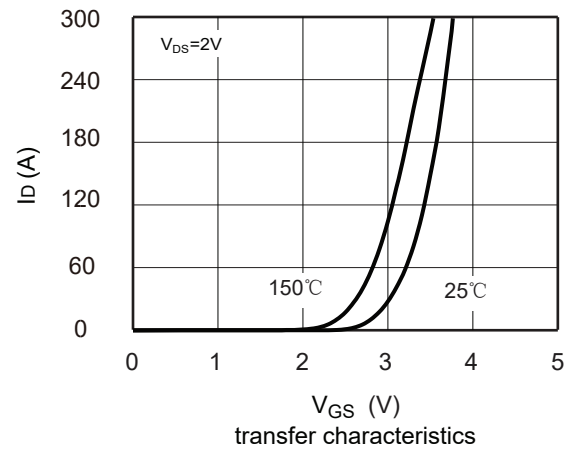
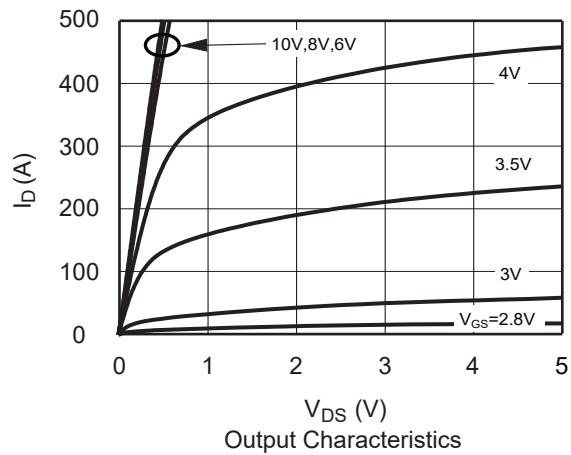
1. The EAS data shows Max. rating . The test condition is $V_{DD}=40V$, $V_{GS}=10V$, $L=1mH$, $I_{AS}=49A$.
2. Device mounted on FR-4 substrate PC board with 2oz copper in 1inch square cooling area.
3. Thermal resistance from junction to the exposed pad.
4. Defined by design, not subject to production.

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

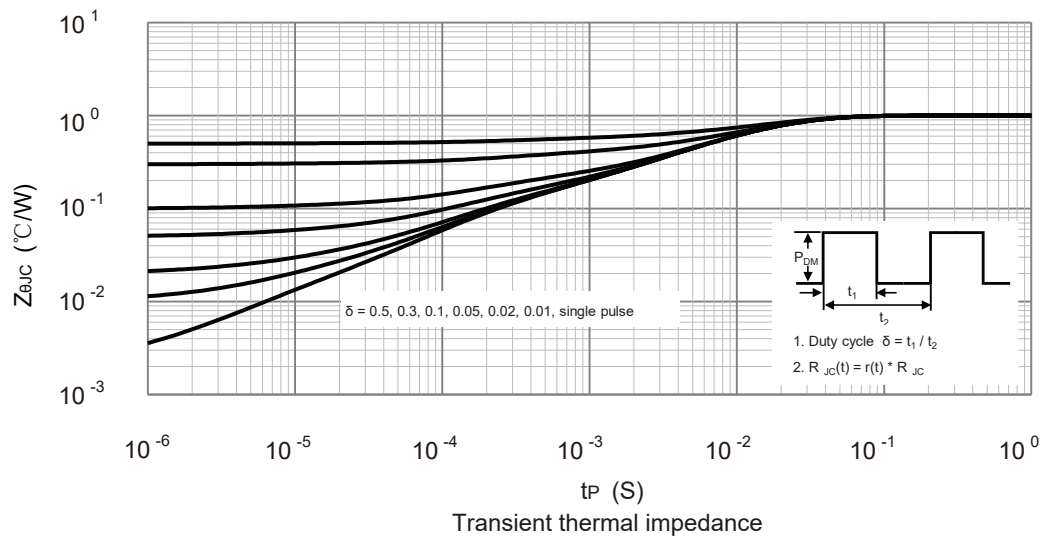
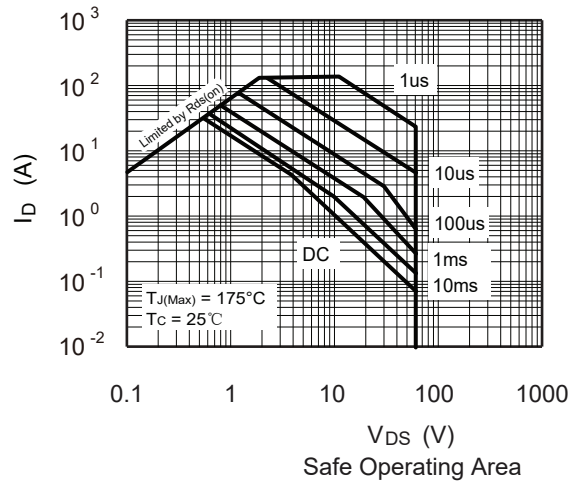
Cmos assumes no liability for customers' product design or applications.

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

Typical Characteristics



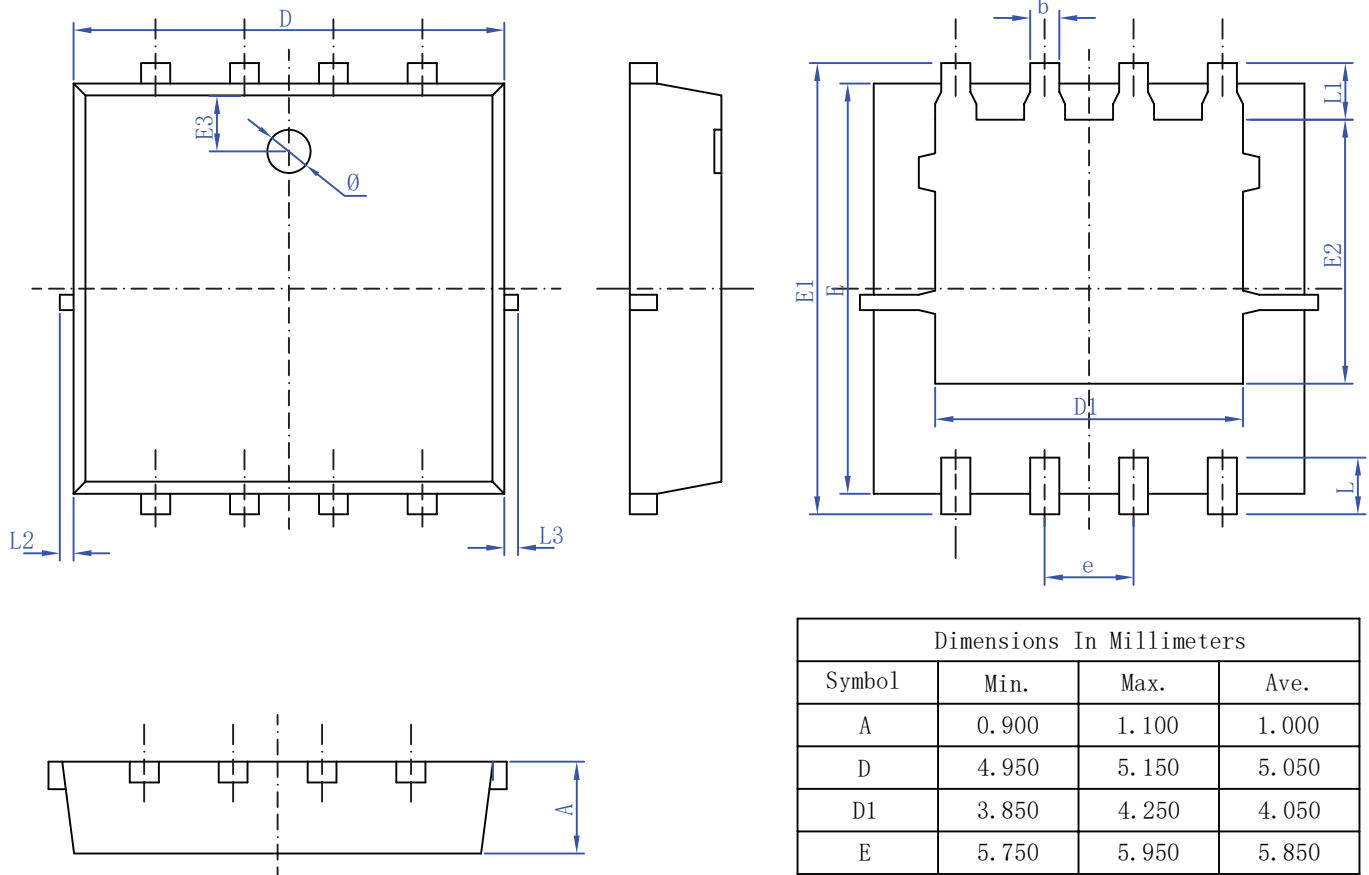
Typical Characteristics



Package Dimension

DFN-8 5x6

Unit :mm



注:

1. 未注公差 ± 0.05 未标注圆角 $R_{\max} = 0.25$

Dimensions In Millimeters			
Symbol	Min.	Max.	Ave.
A	0.900	1.100	1.000
D	4.950	5.150	5.050
D1	3.850	4.250	4.050
E	5.750	5.950	5.850
E1	5.950	6.350	6.150
E2	3.300	3.700	3.500
E3	0.900	1.300	1.100
b	0.250	0.350	0.300
e	1.220	1.320	1.270
L	0.585	0.785	0.685
L1	0.525	0.725	0.625
Ø	1.000	1.400	1.200
L2	0~0.100		
L3	0~0.100		