

General Description

The CMSA024N06L uses advanced SGT technology to provide excellent RDS(ON). This is suitable device for Synchronous Rectification For Server and general purpose applications.

Features

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

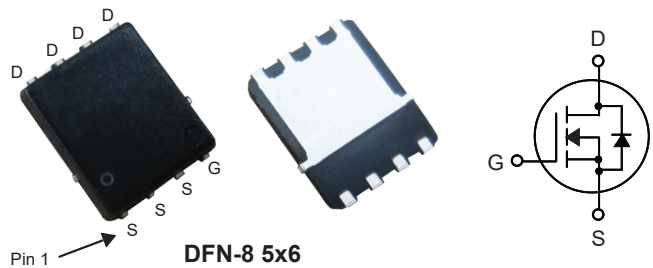
Product Summary

BVDSS	RDS(on) max.	ID
60V	2.4mΩ	175A

Applications

- Battery management
- High Frequency Switching and Synchronous Rectification

DFN-8 5x6 Pin Configuration



Type	Package	Marking
CMSA024N06L	DFN-8 5x6	CMSA024N06L

Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	60	V
V_{GS}	Gate-Source Voltage	±20	V
$I_D@T_C=25^\circ C$	Continuous Drain Current	175	A
$I_D@T_C=100^\circ C$	Continuous Drain Current	123	A
I_{DM}	Pulsed Drain Current	700	A
EAS	Single Pulse Avalanche Energy ¹	480	mJ
$P_D@T_C=25^\circ C$	Total Power Dissipation	125	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
$R_{\theta JA}$	Thermal Resistance Junction-ambient ²	---	44	°C/W
$R_{\theta JC}$	Thermal Resistance Junction-case ³	---	1.20	°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	$V_{GS}=10V, I_D=20A$	---	2.0	2.4	mΩ
		$V_{GS}=4.5V, I_D=15A$	---	2.7	3.5	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS}=V_{DS}, I_D=250\mu A$	1.0	---	2.5	V
I_{DSS}	Drain-Source Leakage Current	$V_{DS}=60V, V_{GS}=0V$	---	---	1	μA
I_{GSS}	Gate-Source Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	---	---	±100	nA
g_{fs}	Forward Transconductance	$V_{DS}=5V, I_D=20A$	---	68	---	S
R_g	Gate Resistance	$V_{DS}=0V, V_{GS}=0V, f=1\text{MHz}$	---	1.2	---	Ω
Q_g	Total Gate Charge	$I_D=20A$	---	53	---	nC
Q_{gs}	Gate-Source Charge	$V_{DS}=30V$	---	7.8	---	
Q_{gd}	Gate-Drain Charge	$V_{GS}=10V$ (Note 4)	---	12	---	
$T_{d(on)}$	Turn-On Delay Time	$V_{DS}=30V$	---	5.0	---	ns
T_r	Rise Time	$V_{GS}=10V$	---	13	---	
$T_{d(off)}$	Turn-Off Delay Time	$R_{GEN}=3\Omega$	---	46	---	
T_f	Fall Time	$I_D=20A$ (Note 4)	---	23	---	
C_{iss}	Input Capacitance	$V_{DS}=25V, V_{GS}=0V, f=1\text{MHz}$	---	2800	---	pF
C_{oss}	Output Capacitance		---	1450	---	
C_{rss}	Reverse Transfer Capacitance		---	85	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current	$V_G=V_D=0V, \text{Force Current}$	---	---	175	A
I_{SM}	Pulsed Source Current		---	---	700	A
V_{SD}	Diode Forward Voltage	$V_{GS}=0V, I_S=20A, T_J=25^\circ\text{C}$	---	0.78	1.2	V
t_{rr}	Reverse Recovery Time	$di/dt = 100A/\mu s$	---	47	---	ns
Q_{rr}	Reverse Recovery Charge	$T_J = 25^\circ\text{C}, I_F = 20A$ (Note 4)	---	42	---	nC

Note :

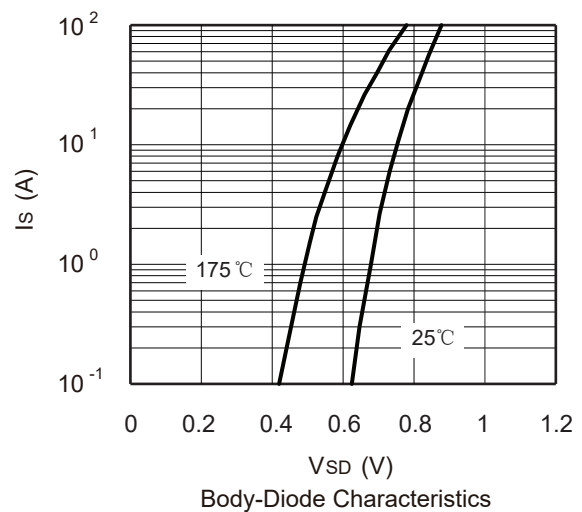
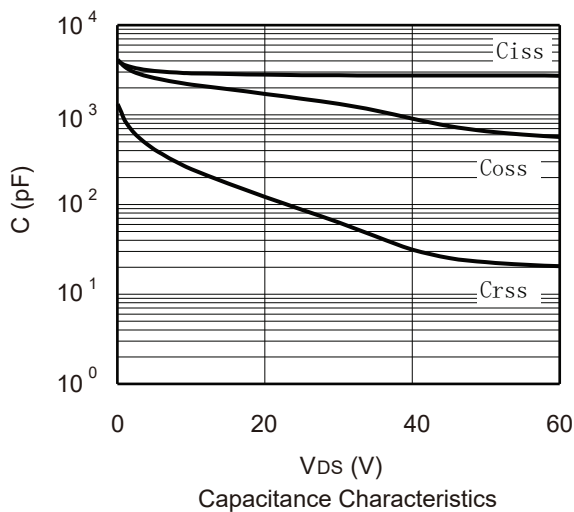
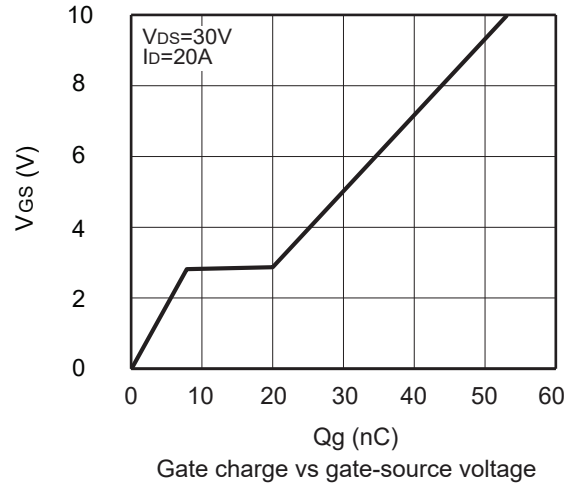
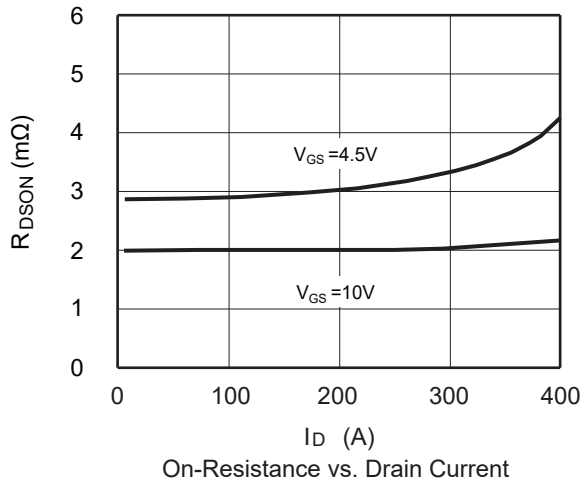
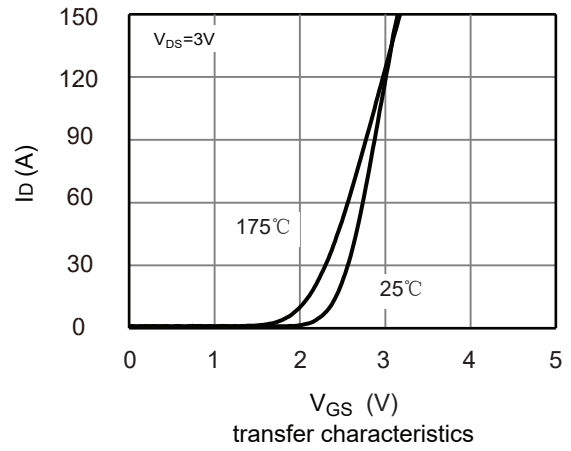
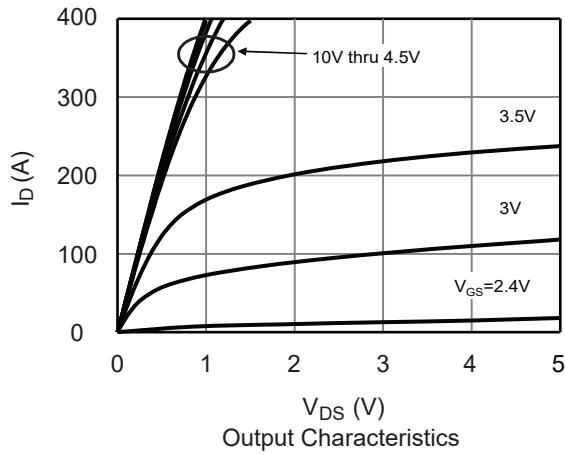
- 1.The EAS data shows Max. rating . The test condition is $V_{DD}=30V, V_{GS}=10V, L=1\text{mH}, I_{AS}=31A$.
- 2.Device mounted on FR-4 substrate PC board with 2oz copper in 1inch square cooling area.
- 3.Thermal resistance from junction to the exposed pad.
- 4.Guaranteed by design, not subject to production testing.

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

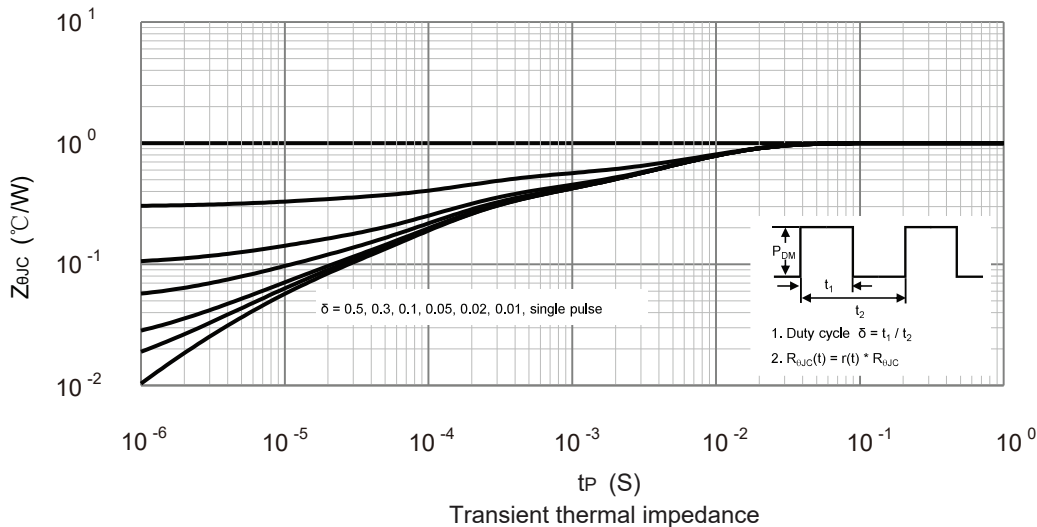
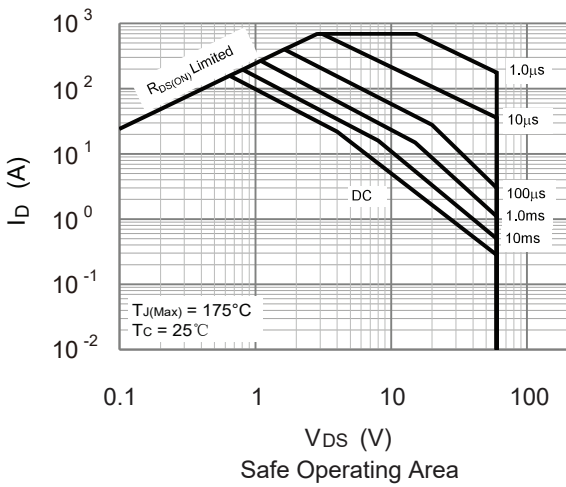
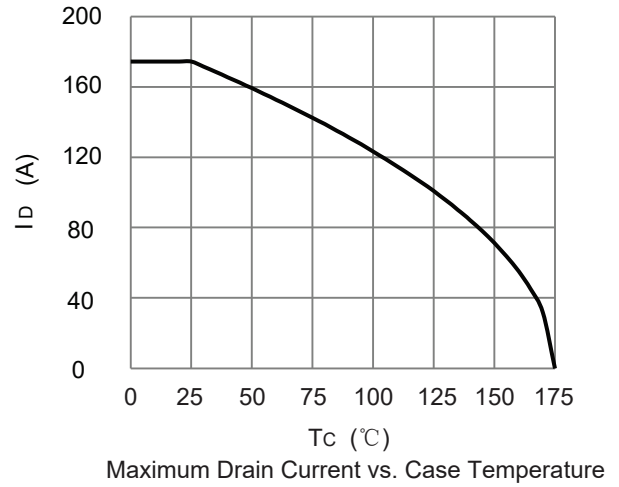
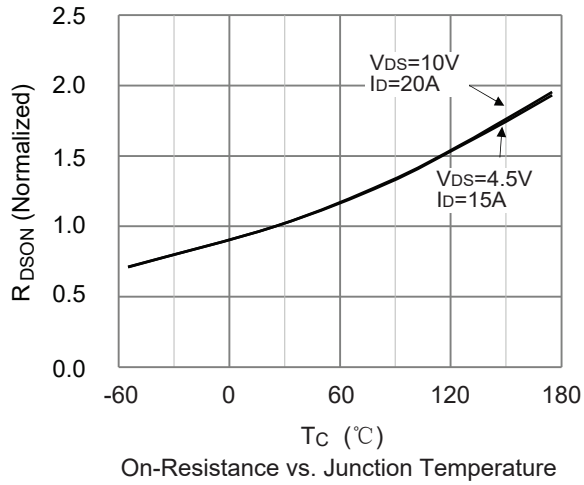
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Cmos reserves the right to improve product design, functions and reliability without notice. Please refer to the latest version of specification.

Typical Characteristics



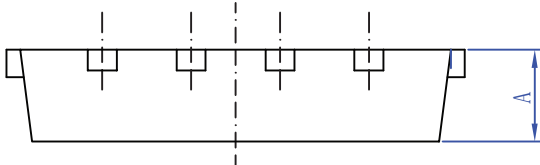
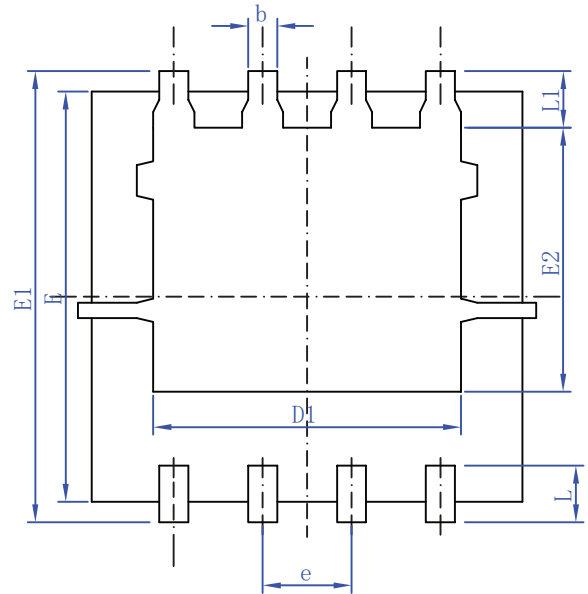
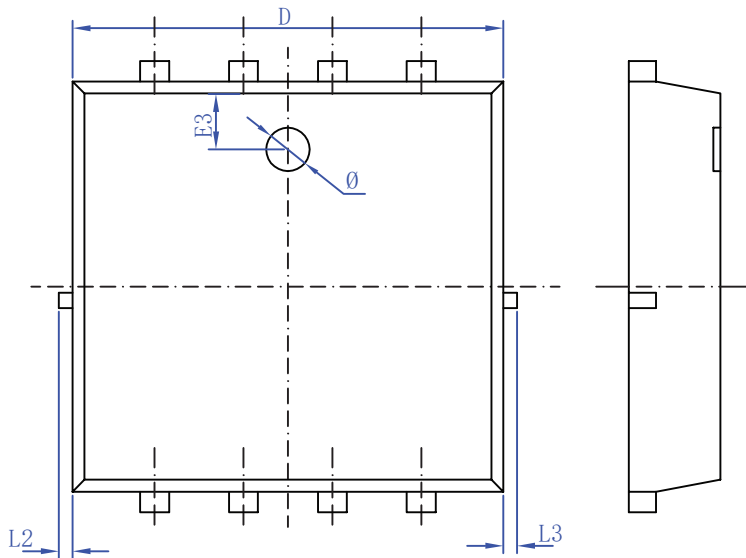
Typical Characteristics



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		