

General Description

The CMSA024N04 uses advanced SGT technology to provide excellent RDS(ON). This device is suitable to be used as the low side FET general purpose.

Features

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

Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	40	V
V_{GS}	Gate-Source Voltage	± 20	V
$I_D@T_C=25^\circ\text{C}$	Continuous Drain Current	180	A
$I_D@T_C=100^\circ\text{C}$	Continuous Drain Current	112	A
I_{DM}	Pulsed Drain Current	720	A
EAS	Single Pulse Avalanche Energy ¹	312	mJ
$P_D@T_C=25^\circ\text{C}$	Total Power Dissipation	130	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 ²	---	45	$^\circ\text{C}/\text{W}$
$R_{\theta JC}$	Thermal Resistance Junction-case	---	0.96	$^\circ\text{C}/\text{W}$

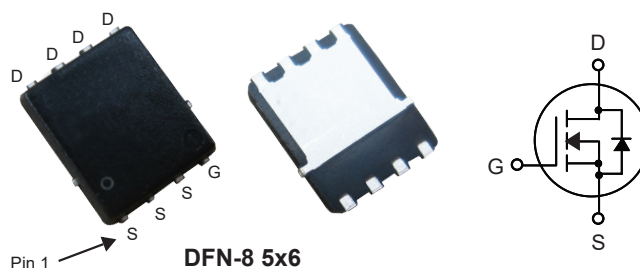
Product Summary

BVDSS	RDS(on) max.	ID
40V	2.6mΩ	180A

Applications

- Load Switch
- Synchronous Rectifier
- Motor Control Switch

DFN-8 5x6 Pin Configuration



Type	Package	Marking
CMSA024N04	DFN-8 5x6	CMSA024N04

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

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V$, $I_D=250\mu A$	40	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	$V_{GS}=10V$, $I_D=20A$	---	2.2	2.6	mΩ
		$V_{GS}=6V$, $I_D=30A$	---	---	---	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS}=V_{DS}$, $I_D=250\mu A$	2.0	---	4.0	V
I_{DSS}	Drain-Source Leakage Current	$V_{DS}=40V$, $V_{GS}=0V$	---	---	1	μA
I_{GSS}	Gate-Source Leakage Current	$V_{GS}=\pm 20V$, $V_{DS}=0V$	---	---	±100	nA
g_{fs}	Forward Transconductance	$V_{DS}=5V$, $I_D=15A$	---	32	---	S
R_g	Gate Resistance	$V_{DS}=0V$, $V_{GS}=0V$, $f=1\text{MHz}$	---	1.6	---	Ω
Q_g	Total Gate Charge	$I_D=20A$	---	27	---	nC
Q_{gs}	Gate-Source Charge	$V_{DS}=20V$	---	8.9	---	
Q_{gd}	Gate-Drain Charge	$V_{GS}=10V$ (Note 3)	---	4.4	---	
$T_{d(on)}$	Turn-On Delay Time	$V_{DS}=20V$	---	14	---	ns
T_r	Rise Time	$V_{GS}=10V$	---	16	---	
$T_{d(off)}$	Turn-Off Delay Time	$R_G=3\Omega$	---	14	---	
T_f	Fall Time	$I_D=20A$ (Note 3)	---	7.5	---	
C_{iss}	Input Capacitance	$V_{DS}=25V$, $V_{GS}=0V$, $f=1\text{MHz}$	---	2000	---	pF
C_{oss}	Output Capacitance		---	720	---	
C_{rss}	Reverse Transfer Capacitance		---	15	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current	$V_G=V_D=0V$, Force Current	---	---	180	A
I_{SM}	Pulsed Source Current		---	---	720	A
V_{SD}	Diode Forward Voltage	$V_{GS}=0V$, $I_S=2A$, $T_J=25^{\circ}\text{C}$	---	0.74	1.2	V
t_{rr}	Reverse Recovery Time	$di/dt = 100A/\mu s$	---	42	---	ns
Q_{rr}	Reverse Recovery Charge	$T_J=25^{\circ}\text{C}$, $I_{DS}=20A$ (Note 3)	---	38	---	nC

Note :

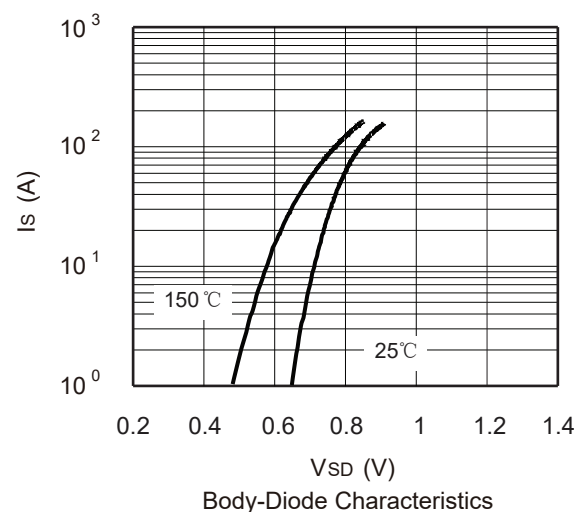
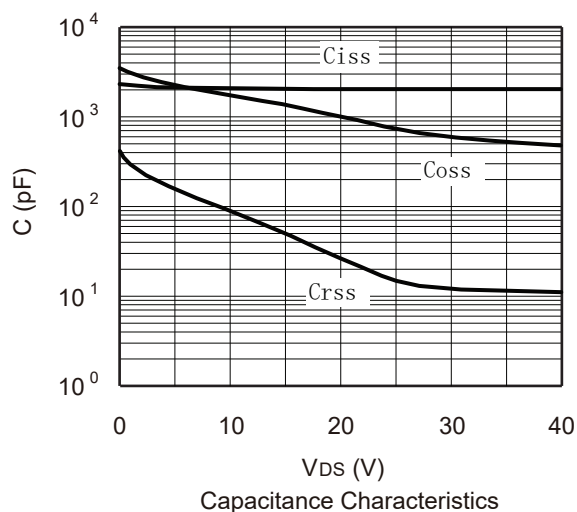
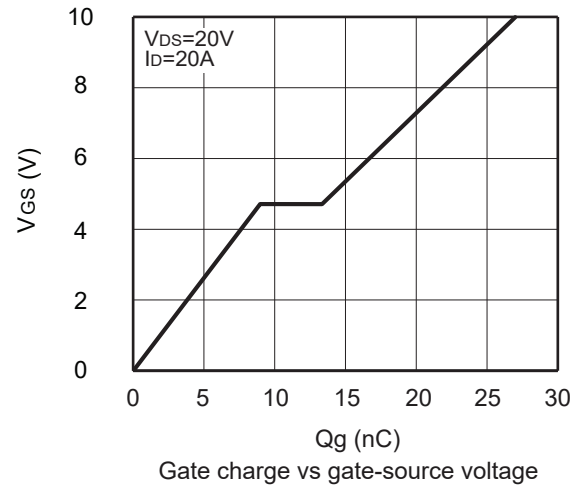
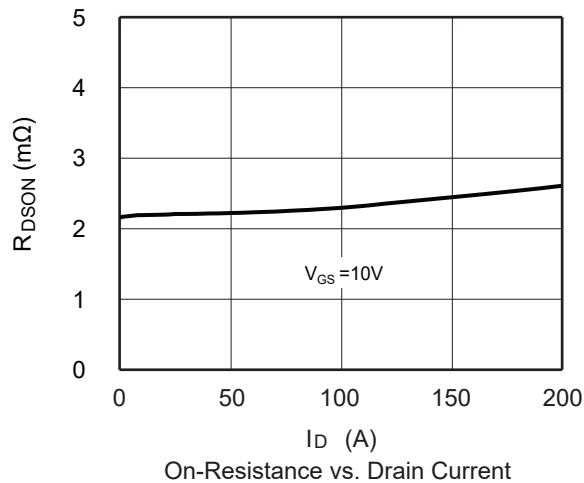
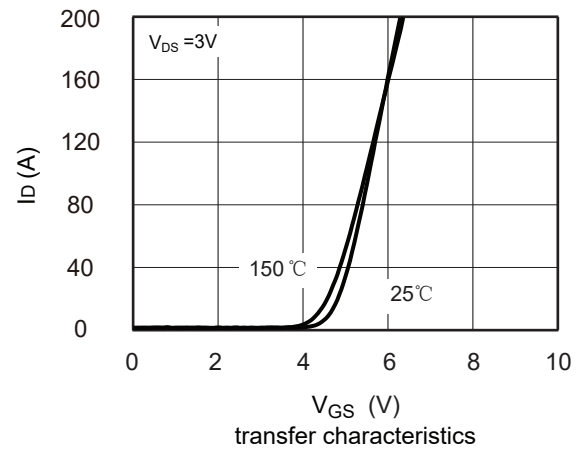
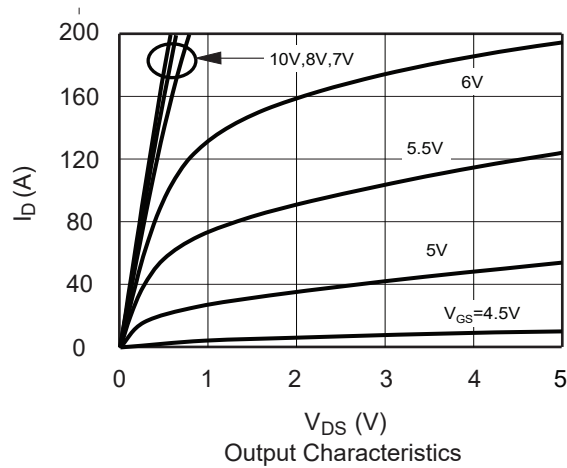
1. The EAS data shows Max. rating . The test condition is $V_{DD}=30V$, $V_{GS}=10V$, $L=1mH$, $I_{AS}=25A$.
2. Device mounted on FR-4 substrate PC board with 2oz copper in 1inch square cooling area.
3. Defined by design, not subject to production.

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

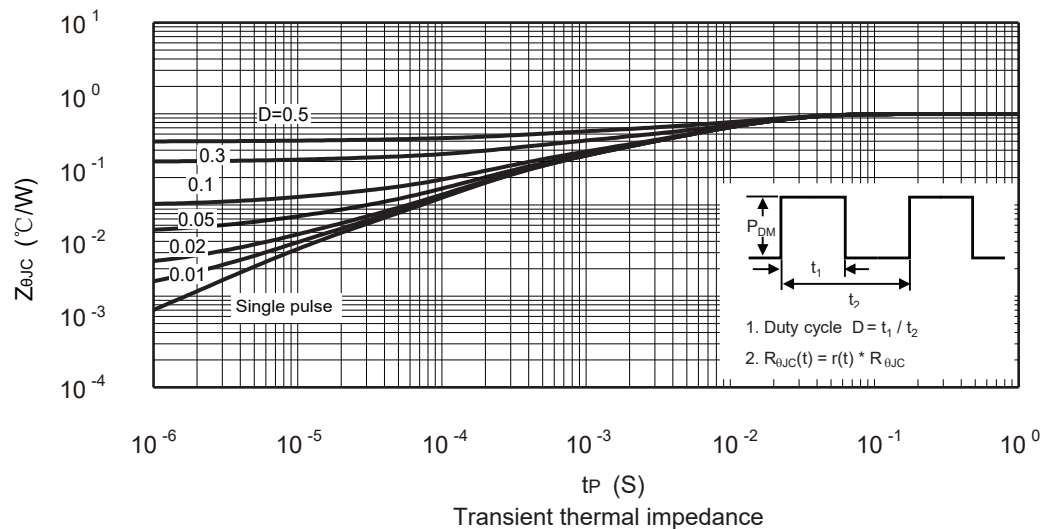
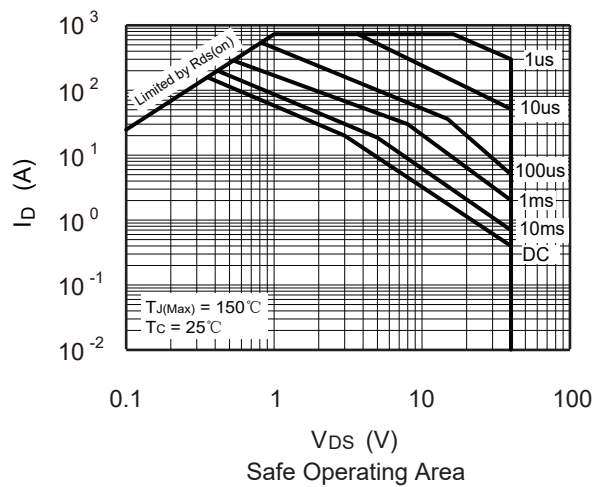
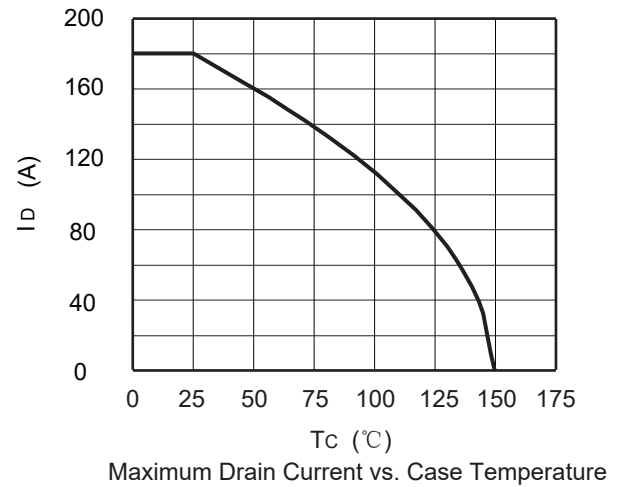
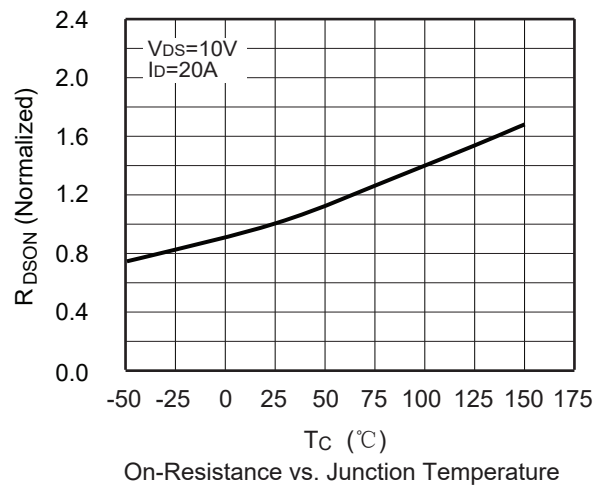
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Cmos reserves the right to improve product design ,functions and reliability without notice.Please refer to the latest version of specification.

Typical Characteristics



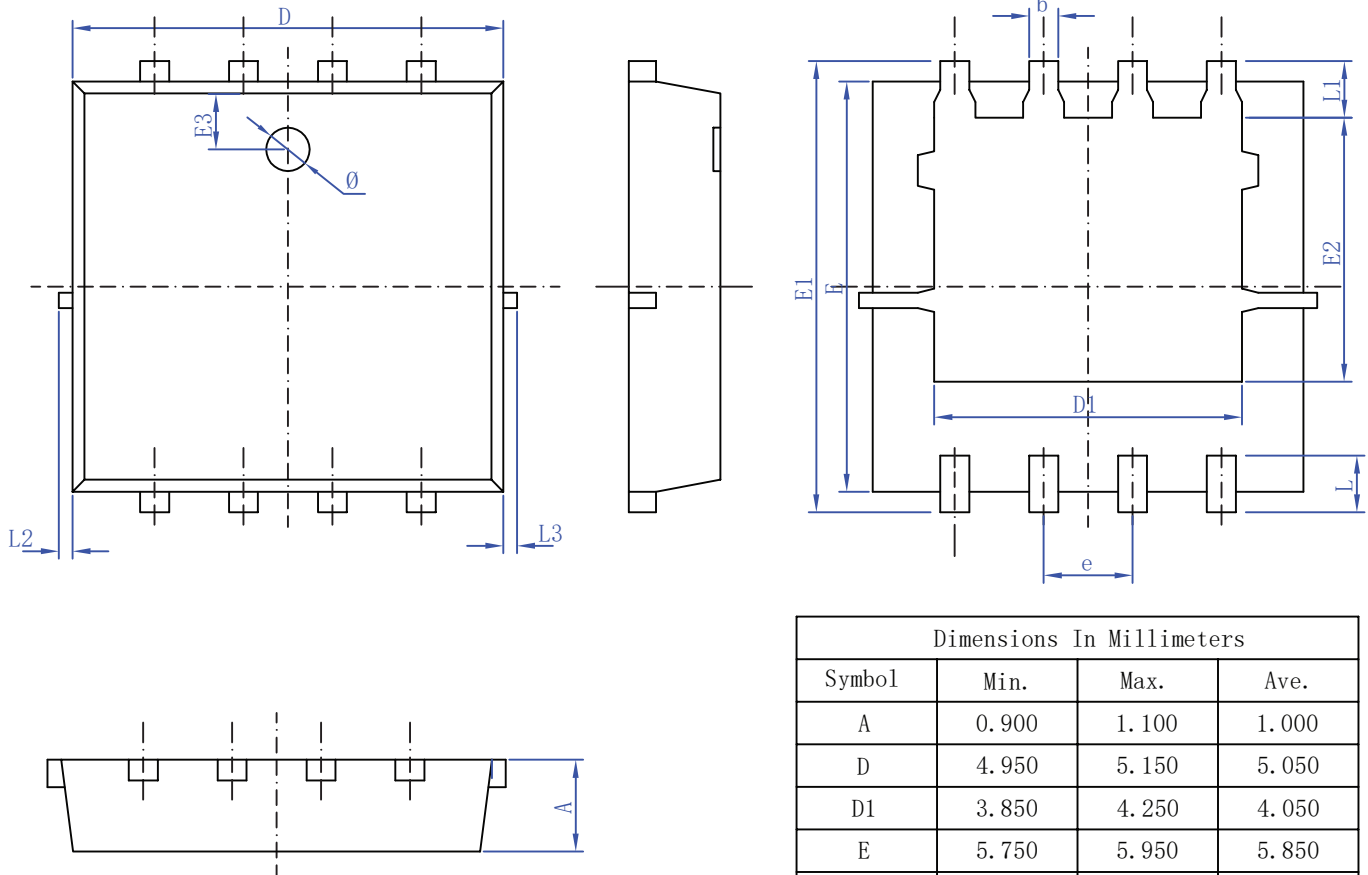
Typical Characteristics



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		