CMSA010N04AU

40V, 0.8mΩ typ., 200A N-Channel MOSFET

General Description

The CMSA010N04AU uses advanced SGT technology to provide excellent RDS(ON).This is suitable device for Synchronous Rectification for Server and general purpose applications.

Product Summary

BVDSS	$R_{DS(on)}$ max.	ID
40V	0.95mΩ	200A

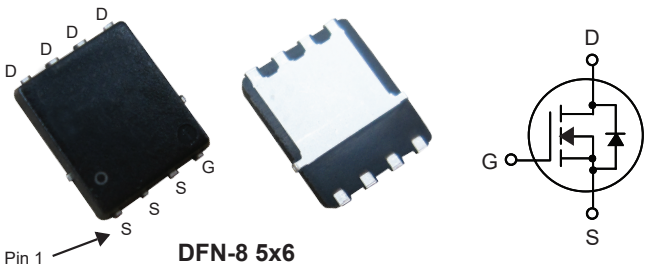
Applications

- Chargers
- Synchrounous Rectification in DC/DC and AC/DC Converters

Features

- AEC Q101 qualified
- Low On-Resistance
- 100% Avalanche tested
- Simple Drive Requirements
- RoHS Compliant

DFN-8 5x6 Pin Configuration



DFN-8 5x6

Type	Package	Marking
CMSA010N04AU	DFN-8 5x6	010N04AU

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℃	Continuous Drain Current	200	A
I_D@T_C=100℃	Continuous Drain Current	140	A
I_{DM}	Pulsed Drain Current	800	A
EAS	Single Pulse Avalanche Energy[1]	1225	mJ
P_D@T_C=25℃	Total Power Dissipation	180	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(Steady-State)	---	55	℃/W
$R_{\theta JC}$	Thermal Resistance Junction-case(Steady-State)	---	0.69	℃/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	40	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	V_{GS}=10V , I_D=40A	---	0.8	0.95	mΩ
		V_{GS}=4.5V , I_D=20A	---	1	1.3	
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =250uA	1.0	---	2.5	V
I_{DSS}	Drain-Source Leakage Current	V_{DS}=40V , V_{GS} =0V	---	---	1	μA
I_{GSS}	Gate-Source Leakage Current	V_{GS} =±20V , V_{DS}=0V	---	---	±100	nA
gfs	Forward Transconductance	V_{DS}=10V , I_D=20A	---	74	---	S
R_g	Gate Resistance	V_{DS}=0V , V_{GS}=0V , f=1MHz	---	2.0	---	Ω
Q_g	Total Gate Charge	I_D=50A	---	148	---	nC
Q_{gs}	Gate-Source Charge	V_{DS}=20V	---	26	---	
Q_{gd}	Gate-Drain Charge	V_{GS}=10V (Note 2)	---	25	---	
$T_{d(on)}$	Turn-On Delay Time	V_{DS}=20V	---	20	---	ns
T_r	Rise Time	V_{GS}=10V	---	85	---	
$T_{d(off)}$	Turn-Off Delay Time	R_{GEN}=4.5Ω	---	150	---	
T_f	Fall Time	R_L=0.75Ω , I_{DS}=50A (Note 2)	---	130	---	
C_{iss}	Input Capacitance	V_{DS}=25V , V_{GS}=0V , f=1MHz	---	7000	---	pF
C_{oss}	Output Capacitance		---	1500	---	
C_{rss}	Reverse Transfer Capacitance		---	380	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current	V_G=V_D=0V , Force Current	---	---	200	A
I_{SM}	Pulsed Source Current		---	---	800	A
V_{SD}	Diode Forward Voltage	V_{GS}=0V , I_S=30A ,T_J=25℃	---	0.74	1.2	V

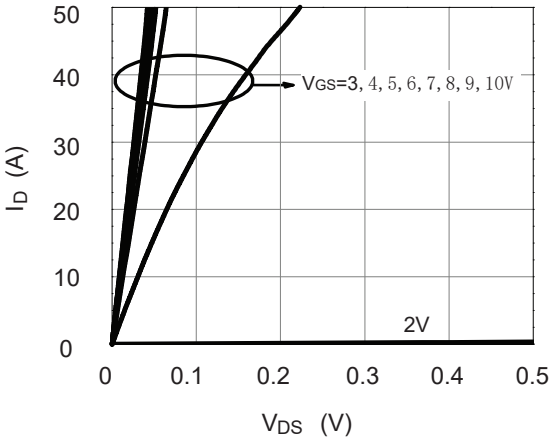
Note :

1.The EAS data shows Max. rating . The test condition is V_{DD}=30V , V_{GS}=10V , L=0.5mH , I_{AS}=70A.

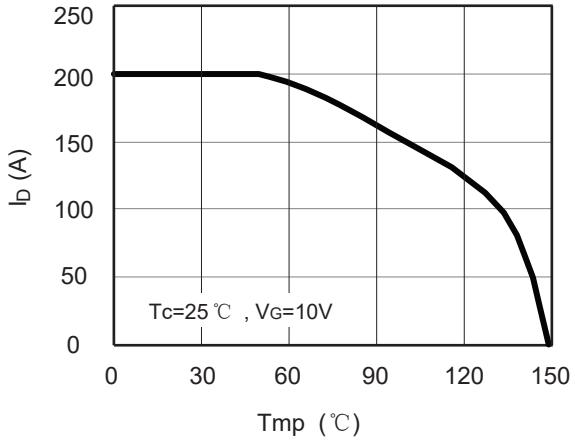
2.Guaranteed by design, not subject to production testing.

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.

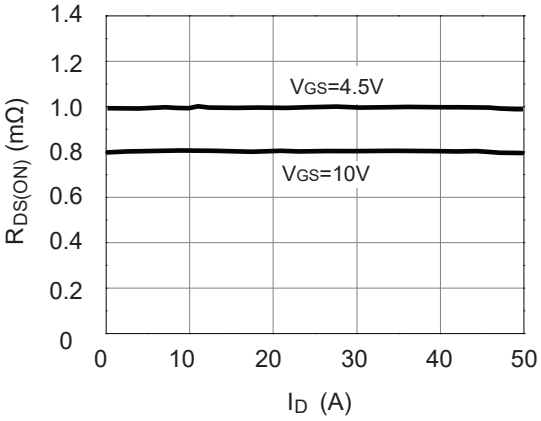
Typical Characteristics



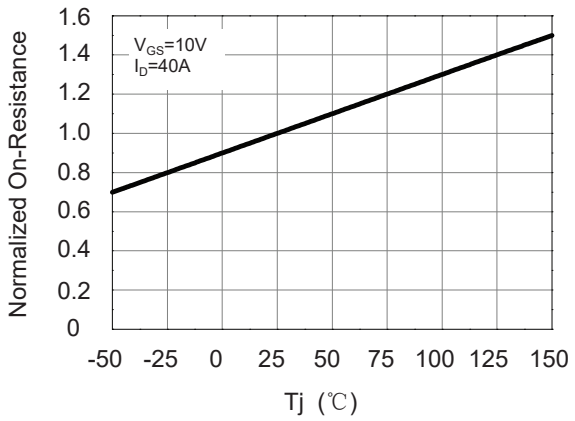
Output Characteristics



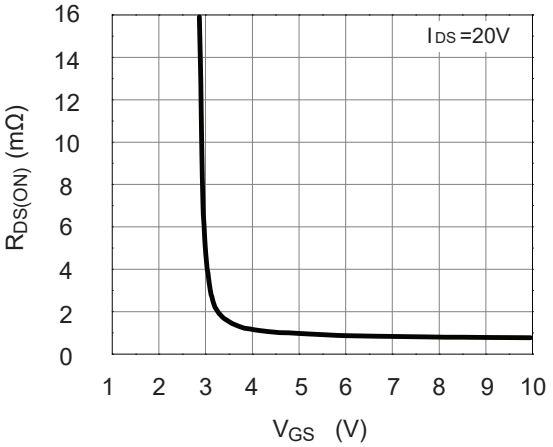
Current Capability



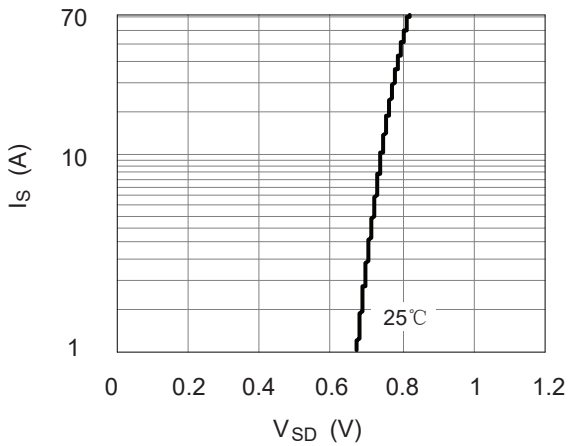
On-Resis tance vs. Drain Current and Gate Voltage



On-Resistance vs. Junction Temperature

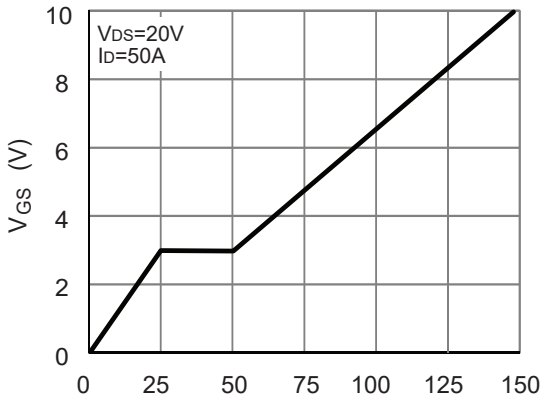


On-Resistance vs. Gate-Source Voltage

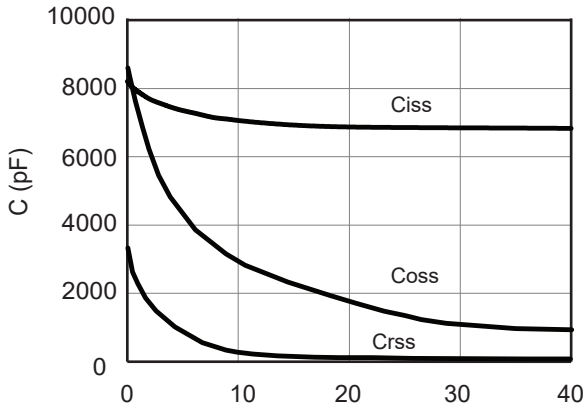


Body-Diode Characteristics

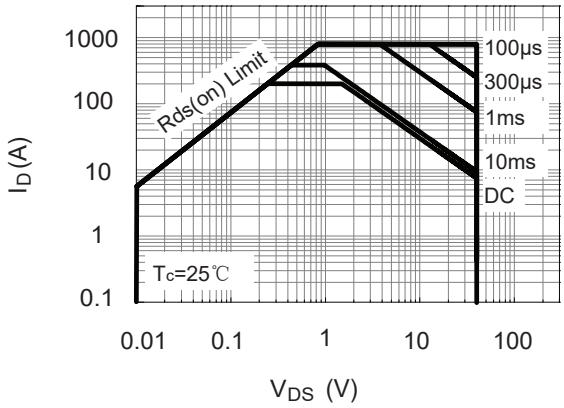
Typical Characteristics



Gate-Charge Characteristics



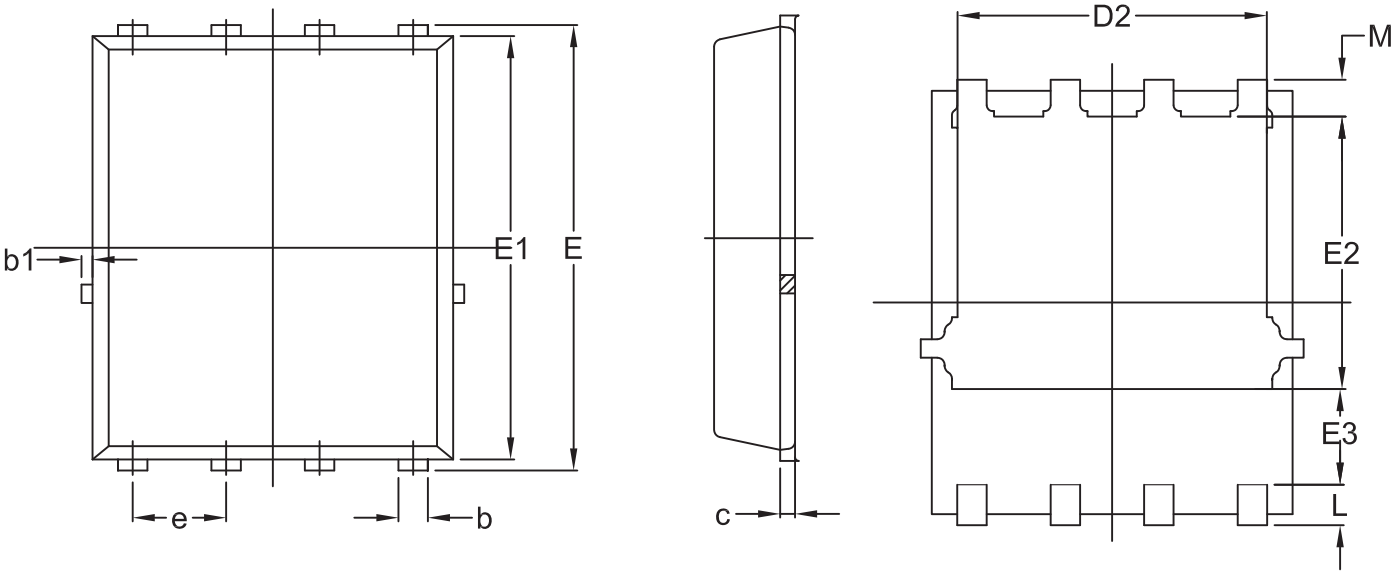
Capacitance Characteristics

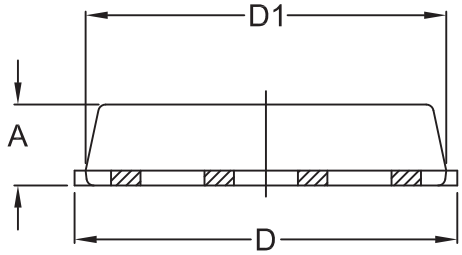


Safe Operating Area

Package Dimension

DFN-8 5x6 Unit :mm





DIM	MILLIMETERS		
	MIN	NOM	MAX
A	1.00	1.10	1.20
b	0.30	0.40	0.50
b1	0.02	0.15	0.22
c	0.15	0.20	0.35
D	4.95	5.15	5.35
D1	4.80	4.90	5.00
D2	4.00	4.20	4.40
E	5.95	6.05	6.25
E1	5.65	5.75	5.85
E2	3.50	3.70	3.90
E3	1.10	/	/
e		1.27	
L	0.40	0.55	0.70
M	0.35	0.50	0.65