

N-Channel Super Junction Power MOSFET

General Description

The CMSA6N70 is power MOSFET using Cmos's advanced super junction technology that can realize very low on resistance. These user friendly devices give an advantage of low EMI to designers as well as low switching loss.

Features

- Low On-Resistance
- 100% avalanche tested
- Surface Mount Package
- ROHS compliant

Product Summary

BVDSS	RDSON	ID
700V	1.5Ω	6A

Applications

- Flyback for SMPS
- Charger, Adapter, lighting

DFN-8 5x6 Pin Configuration



Type	Package	Marking
CMSA6N70	DFN-8 5*6	CMSA6N70

Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	700	V
V_{GS}	Gate-Source Voltage	±30	V
$I_D@T_C=25^{\circ}C$	Continuous Drain Current	6	A
$I_D@T_C=100^{\circ}C$	Continuous Drain Current	4.2	A
I_{DM}	Pulsed Drain Current	24	A
EAS	Single Pulse Avalanche Energy ¹	16	mJ
$P_D@T_C=25^{\circ}C$	Total Power Dissipation	78	W
T_{STG}	Storage Temperature Range	-55 to 150	°C
T_J	Operating Junction Temperature Range	-55 to 150	°C

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-ambient(Steady-State) ^{2,3}	---	55	°C/W
$R_{\theta JC}$	Thermal Resistance Junction -Case	---	1.6	°C/W

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

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DS}	Drain-Source Breakdown Voltage	$V_{GS}=0V$, $I_D=250\mu A$	700	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	$V_{GS}=10V$, $I_D=3A$	---	1.3	1.5	Ω
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}$, $I_D=250\mu A$	2.5	---	4.5	V
I_{DSS}	Drain-Source Leakage Current	$V_{DS}=700V$, $V_{GS}=0V$, $T_J=25^\circ\text{C}$	---	---	1	μA
I_{GSS}	Gate-Source Leakage Current	$V_{GS}=\pm 20V$, $V_{DS}=0V$	---	---	± 100	nA
g_{fs}	Forward Transconductance	$V_{DS}=20V$, $I_D=3A$	---	2.6	---	S
R_g	Gate Resistance	$V_{DS}=10V$, $V_{GS}=0V$, $f=1\text{MHz}$	---	8.3	---	Ω
Q_g	Total Gate Charge	$V_{DS}=480V$, $V_{GS}=10V$, $I_D=1.9A$	---	8	---	nC
Q_{gs}	Gate-Source Charge		---	2	---	
Q_{gd}	Gate-Drain Charge		---	2	---	
$T_{d(on)}$	Turn-On Delay Time	$V_{DS}=400V$, $R_G=5\Omega$ $I_D=1.9A$ $V_{GS}=10V$	---	15	---	ns
T_r	Rise Time		---	8	---	
$T_{d(off)}$	Turn-Off Delay Time		---	32	---	
T_f	Fall Time		---	14	---	
C_{iss}	Input Capacitance	$V_{DS}=25V$, $V_{GS}=0V$, $f=1\text{MHz}$	---	400	---	pF
C_{oss}	Output Capacitance		---	50	---	
C_{rss}	Reverse Transfer Capacitance		---	0.15	---	

Diode Characteristics

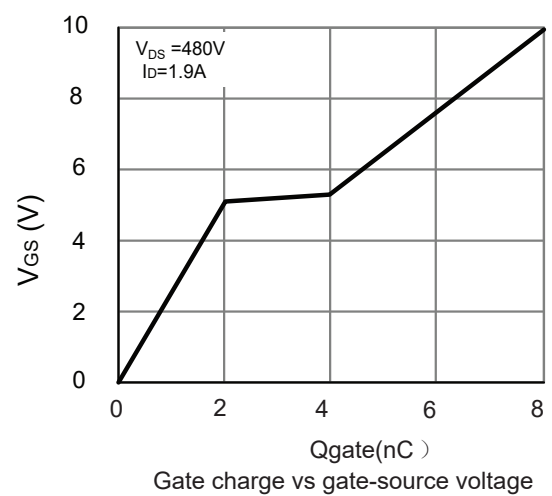
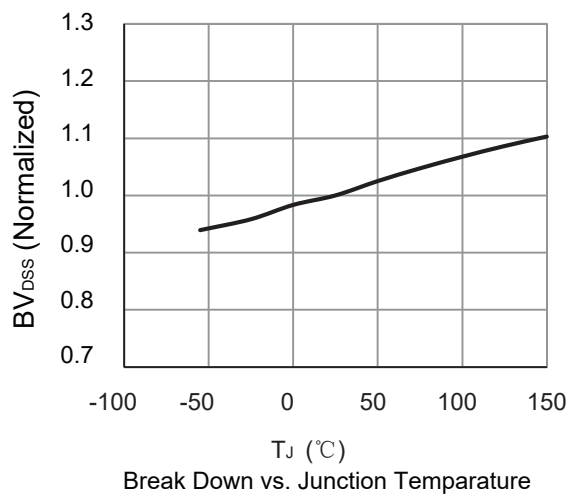
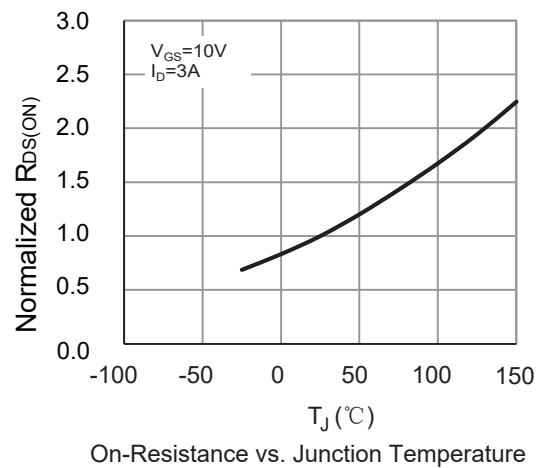
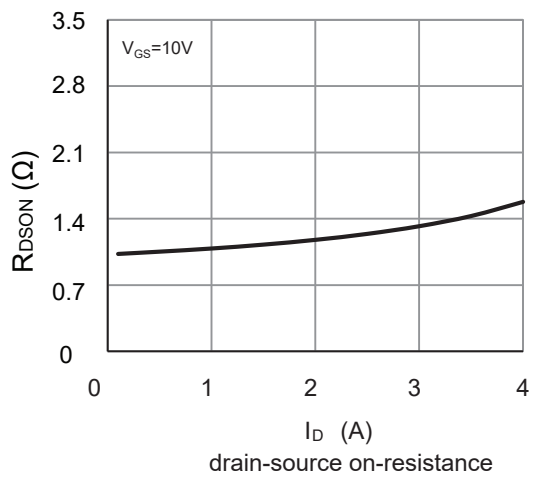
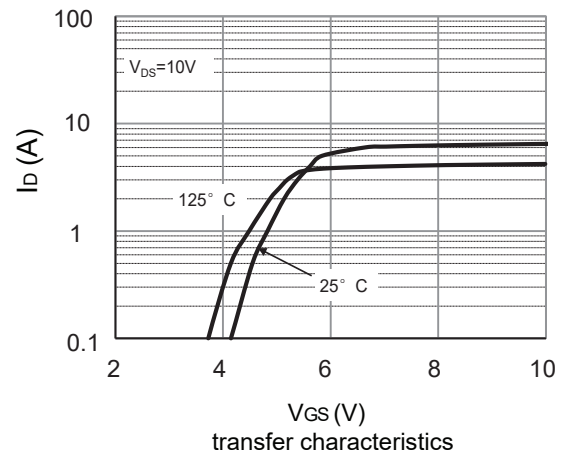
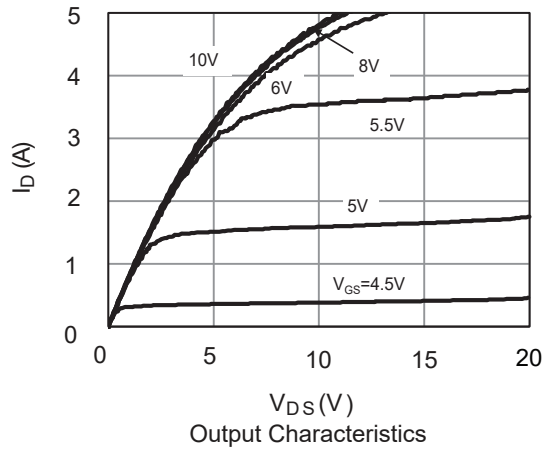
Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current	$V_G=V_D=0V$, Force Current	---	---	6	A
I_{SM}	Pulsed Source Current		---	---	24	A
V_{SD}	Diode Forward Voltage	$V_{GS}=0V$, $I_S=6A$, $T_J=25^\circ\text{C}$	---	0.97	1.2	V

Notes:

- The EAS data shows Max. rating .The test condition is $V_{DS}=80V$, $V_{GS}=10V$, $L=10\text{mH}$, $I_{AS}=1.8A$.
- The value of $R_{\theta JA}$ is measured with the device mounted on 1in^2 FR-4 board with 2oz. Copper, in a still air environment with $T_A=25^\circ\text{C}$. The Power dissipation P_{DSM} is based on $R_{\theta JA} \leq 10\text{s}$ and the maximum allowed junction temperature of 150°C . The value in any given application depends on the user's specific board design.
- The $R_{\theta JA}$ is the sum of the thermal impedance from junction to case $R_{\theta JC}$ and case to ambient.

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 Cmos reserves the right to improve product design, functions and reliability without notice.

Typical Characteristics



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