CMSA6404

N-Channel Enhancement Mode MOSFET

General Description

The CMSA6404 combines advanced trench MOSFET technology with a low resistance package to provide extremely low $R_{DS(ON)}$. This device is ideal for load switch and battery protection applications.

Product Summary

BVDSS	RDSON	ID
30V	2.3mΩ	85A

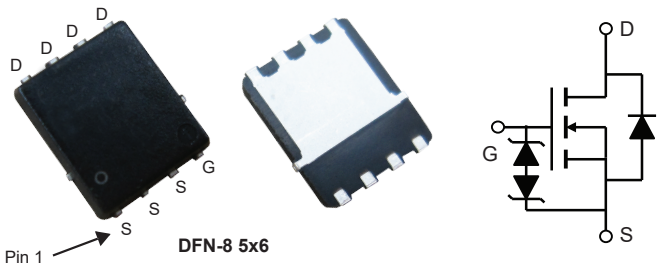
Applications

- DC/DC Converters in Computing, Servers, and POL
- Isolated DC/DC Converters in Telecom and Industrial

Features

- Low ON-resistance
- 100% avalanche tested
- ESD protected
- Small Footprint (5x6mm) for Compact Design
- RoHS Compliant

DFN-8 5x6 Pin Configuration



Type	Package	Marking
CMSA6404	DFN-8 5*6	CMSA6404

Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	30	V
V_{GS}	Gate-Source Voltage	±20	V
I_D@T_C=25℃	Continuous Drain Current	85	A
I_D@T_C=100℃	Continuous Drain Current	67	A
I_{DM}	Pulsed Drain Current	280	A
EAS	Single Pulse Avalanche Energy [1]	334	mJ
P_D@T_C=25℃	Total Power Dissipation	83	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-to-Ambient (Steady-State) [2,3]	---	55	℃/W
$R_{\theta JC}$	Thermal Resistance Junction -Case (Steady-State)	---	1.5	℃/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	30	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	V_{GS}=10V , I_D=20A	---	1.9	2.3	mΩ
		V_{GS}=4.5V , I_D=20A	---	2.4	3	
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =250μA	1.0	---	2.5	V
I_{DSS}	Drain-Source Leakage Current	V_{DS}= 30V ,V_{GS}=0V	---	---	1	uA
I_{GSS}	Gate-Source Leakage Current	V_{GS}= ±16V, V_{DS}=0V	---	---	±10	μA
gfs	Forward Transconductance	V_{DS}=5V, I_D=20A	---	75	---	S
Q_g	Total Gate Charge	V_{DS}=15V , I_D=20A V_{GS}=10V	---	71	---	nC
Q_{gs}	Gate-Source Charge		---	10	---	
Q_{gd}	Gate-Drain Charge		---	16	---	
$T_{d(on)}$	Turn-On Delay Time	V_{DS}=15V , V_{GS}=10V , R_L=0.75Ω R_{GEN} =3Ω	---	10	---	ns
T_r	Rise Time		---	7	---	
$T_{d(off)}$	Turn-Off Delay Time		---	76	---	
T_f	Fall Time		---	18	---	
C_{iss}	Input Capacitance	V_{DS}=15V , V_{GS}=0V , f=1MHz	---	4300	---	pF
C_{oss}	Output Capacitance		---	700	---	
C_{rss}	Reverse Transfer Capacitance		---	430	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Diode continuous forward current	V_G=V_D=0V , Force Current	---	---	85	A
I_{SM}	Pulsed Source Current		---	---	280	A
V_{SD}	Diode Forward Voltage	V_{GS}=0V , I_F=20A , Tj=25℃	---	0.79	1.2	V

Note:

1.The EAS data shows Max. rating . The test condition is V_{DD}=20V , V_{GS}=10V , L=0.5mH , I_{AS}=28A.

2. 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℃. The Power dissipation P_{DSM} is based on $R_{\theta JA}$ and the maximum allowed junction temperature of 150℃. The value in any given application depends on the user's specific board design, and the maximum temperature of 150℃ may be used if the PCB allows it.

3. The $R_{\theta JA}$ is the sum of the thermal impedence from junction to case $R_{\theta JC}$ and case to ambient.

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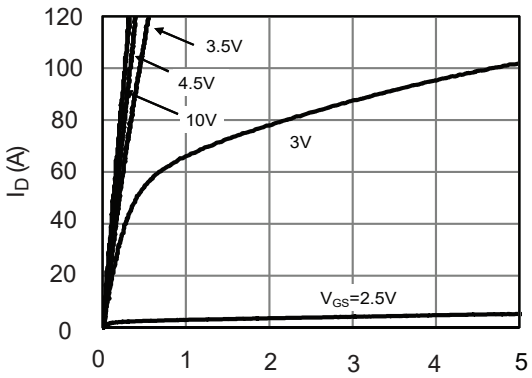
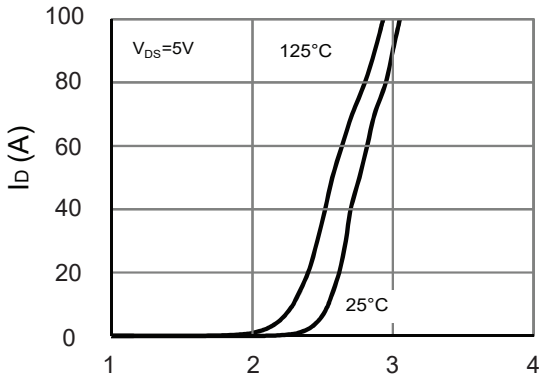
Cmos reserver the right to improve product design ,functions and reliability wihtout notice.

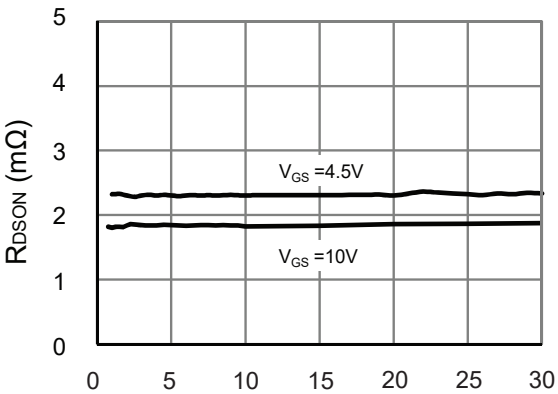
Typical Characteristics



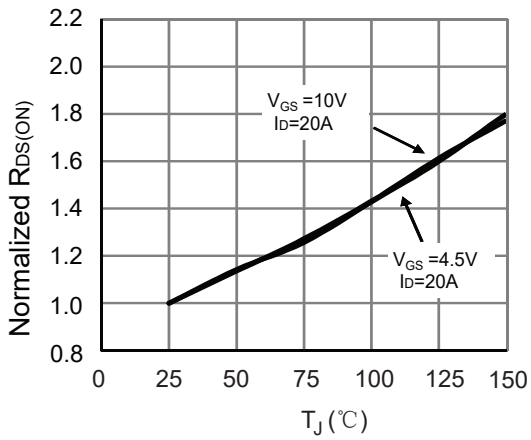
Output Characteristics



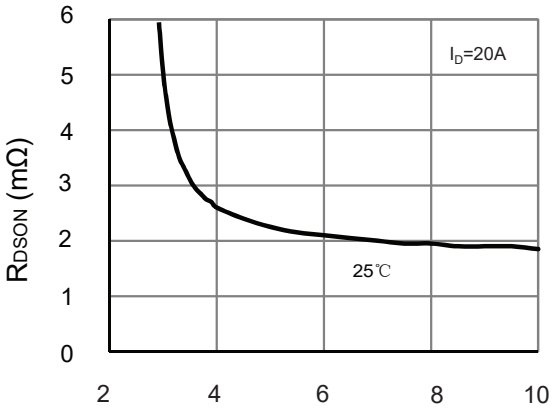
transfer characteristics



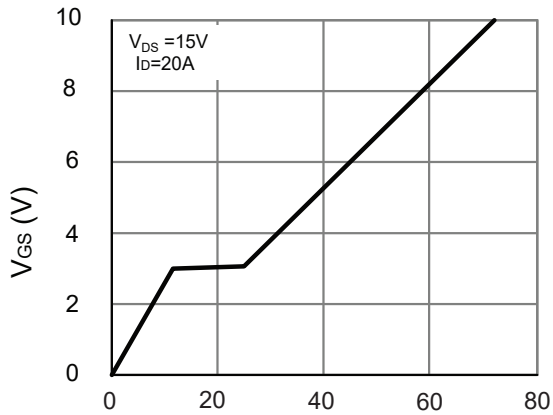
drain-source on-resistance



On-Resistance vs. Junction Temperature

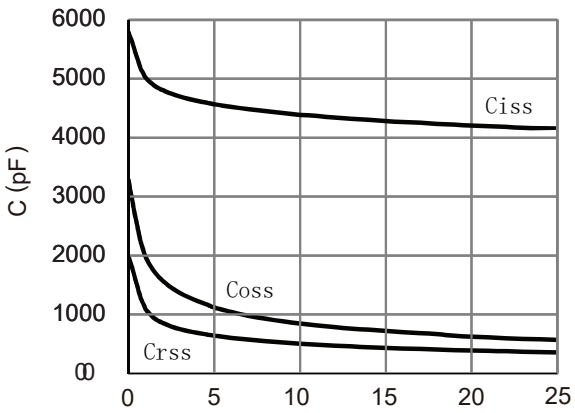


On-Resistance vs. Gate-Source Voltage

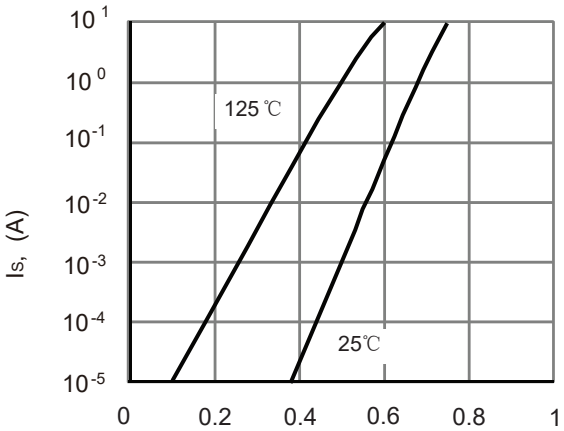


Gate charge vs gate-source voltage

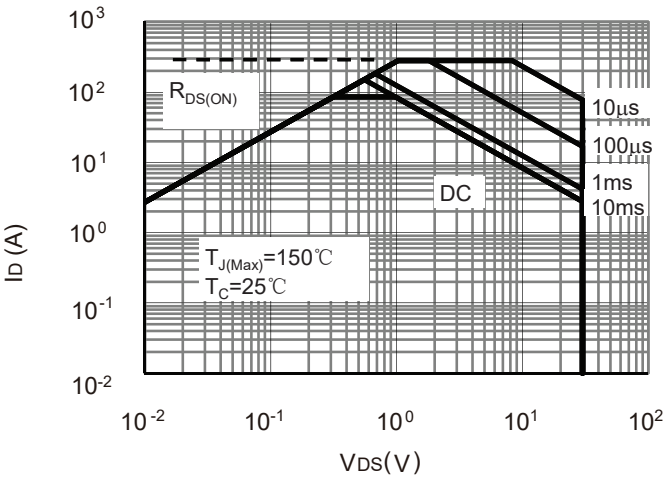
Typical Characteristics



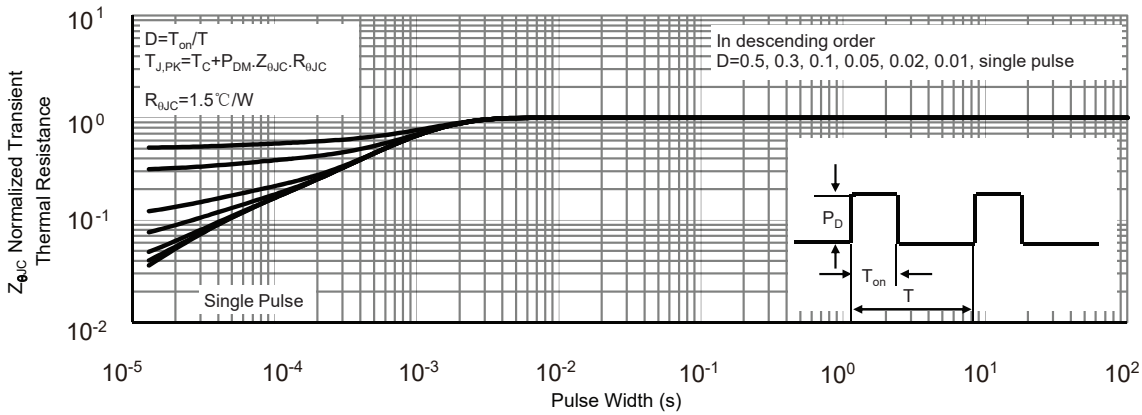
Capacitance Characteristics



Body-Diode Characteristics



Maximum Forward Biased Safe Operating Area



Normalized Maximum Transient Thermal Impedance