CMSA75N68

N-Channel Enhancement Mode Field Effect Transistor

General Description

The CMSA75N68 uses advanced trench technology to provide excellent RDS (ON), low gate charge and minimize the loss of power conversion applications. This device is suitable to be used as the low side FET in SMPS, load switching and general purpose.

Product Summary

BVDSS	$R_{DS(on)}$ max.	ID
68V	9.0mΩ	50A

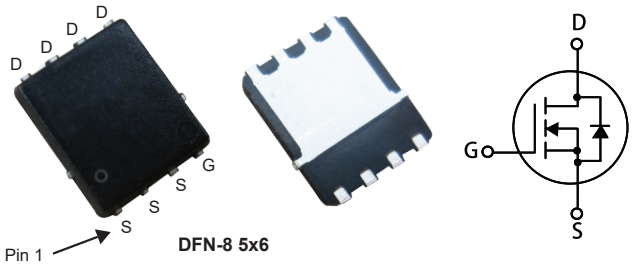
Applications

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

Features

- Low On-Resistance
- 100% avalanche tested
- Small Footprint (5x6 mm) for Compact Design
- Switching losses reduced

DFN-8 5x6 Pin Configuration



Type	Package	Marking
CMSA75N68	DFN-8 5x6	CMSA75N68

Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	68	V
V_{GS}	Gate-Source Voltage	±20	V
I_D@T_C=25℃	Continuous Drain Current	50	A
EAS	Single Pulse Avalanche Energy[1]	110	mJ
I_{DM}	Pulsed Drain Current	200	A
P_D@T_C=25℃	Total Power Dissipation	45	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	---	42	℃/W
$R_{\theta JC}$	Thermal Resistance Junction -Case	---	2.8	℃/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	68	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	V_{GS}=10V , I_D=20A	---	---	9.0	mΩ
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =250μA	2.0	---	4.0	V
I_{DSS}	Drain-Source Leakage Current	V_{DS}=68V , V_{GS}=0V	---	---	1	uA
I_{GSS}	Gate-Source Leakage Current	V_{GS}= ±20V, V_{DS}=0V	---	---	±100	nA
gfs	Forward Transconductance	V_{DS}=10V, I_D=20A	---	16	---	S
Q_g	Total Gate Charge	V_{DS}=54V , I_D=30A V_{GS}=10V (note 2,3)	---	70	---	nC
Q_{gs}	Gate-Source Charge		---	19	---	
Q_{gd}	Gate-Drain Charge		---	26	---	
$T_{d(on)}$	Turn-On Delay Time	V_{DS}=34V , V_{GS}=10V , I_D=30A R_{GEN} =4.7Ω (note 2,3)	---	22	---	ns
T_r	Rise Time		---	58	---	
$T_{d(off)}$	Turn-Off Delay Time		---	56	---	
T_f	Fall Time		---	25	---	
C_{iss}	Input Capacitance	V_{DS}=30V , V_{GS}=0V , f=1MHz	---	3500	---	pF
C_{oss}	Output Capacitance		---	250	---	
C_{rss}	Reverse Transfer Capacitance		---	200	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current	V_G=V_D=0V , Force Current	---	---	50	A
I_{SM}	Pulsed Source Current		---	---	200	A
V_{SD}	Diode Forward Voltage	V_{GS}=0V , I_S=20A ,T_J=25℃	---	0.88	1.2	V
t_{rr}	Reverse Recovery Time	di/dt = 100A/μs V_{GS} = 0V , I_S =30A	---	34	---	ns
Q_{rr}	Reverse Recovery Charge		---	45	---	nC

Note :

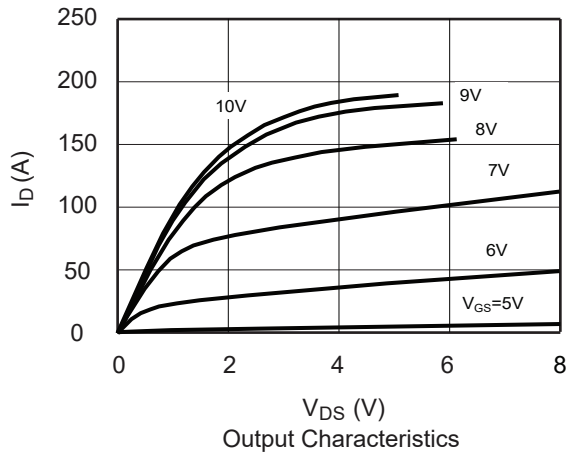
1.The EAS data shows Max. rating . The test condition is V_{DD}=30V , V_{GS}=10V , L=0.5mH , I_{AS}=21A.

2. Pulse Test : Pulse Width ≤ 300us, duty cycle ≤ 2%.

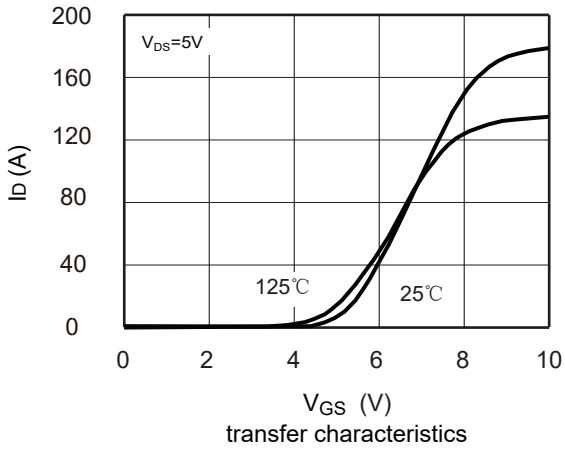
3. Essentially independent of operating temperature.

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Cmos assumes no liability for customers' product design or applications.
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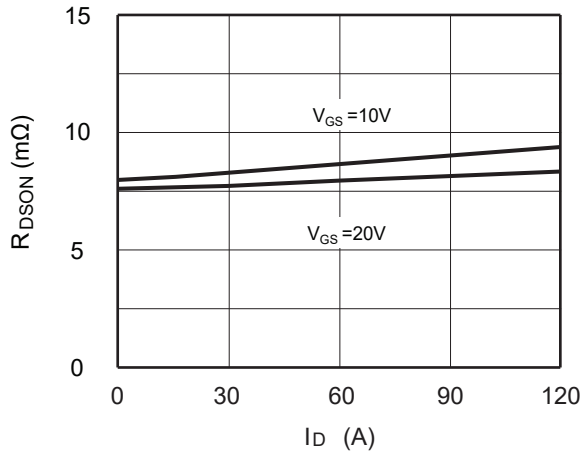
Typical Characteristics



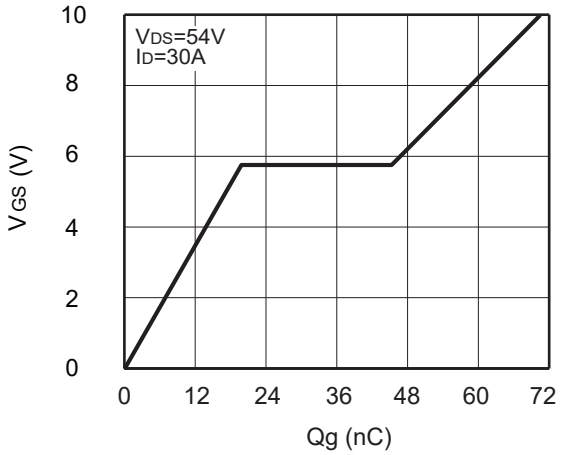
Output Characteristics



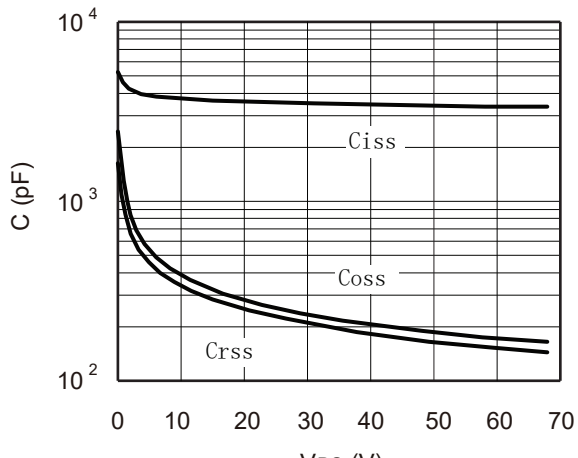
transfer characteristics



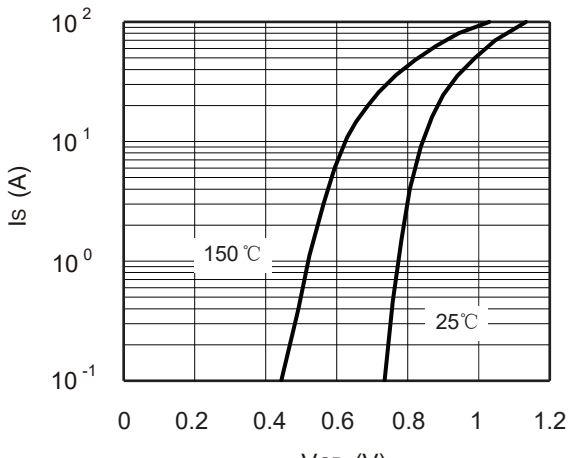
On-Resistance vs. Drain Current



Gate charge vs gate-source voltage

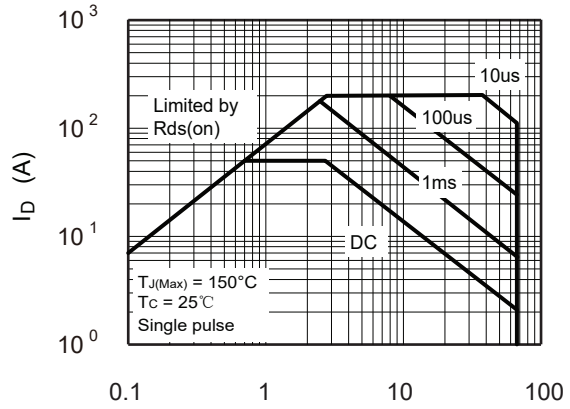


Capacitance Characteristics

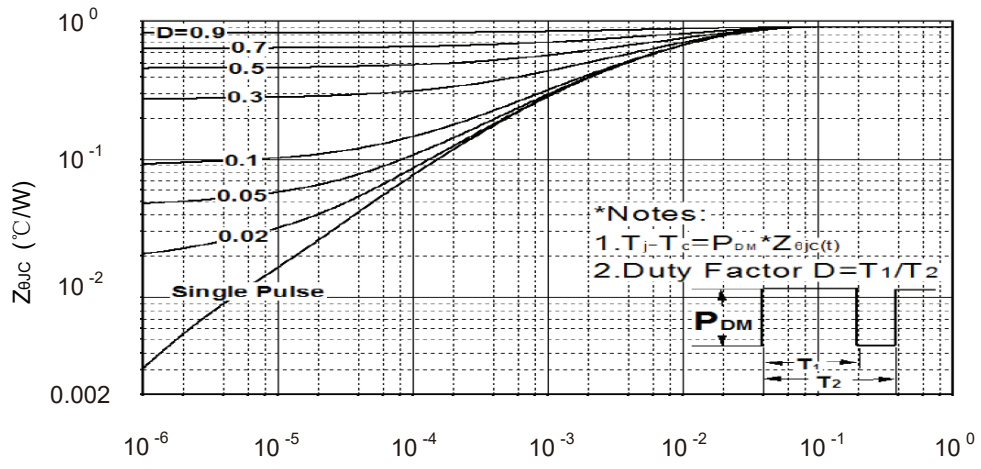


Body-Diode Characteristics

Typical Characteristics



Safe Operating Area



Transient thermal impedance