

General Description

The CMSA046N10A uses trench MOSFET technology that is uniquely optimized to provide the most efficient high frequency switching performance. Both conduction and switching power losses are minimized due to an extremely low combination of RDS(ON), Ciss and Coss. This device is ideal for boost converters and synchronous rectifiers for consumer, telecom, industrial power supplies and LED backlighting.

Features

- RDS(ON)<5mΩ @ VGS=10V
- Optimized for dc-dc conversion
- Very low on-resistance R DS(on)
- RoHS Compliant

Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V _{DS}	Drain-Source Voltage	100	V
V _{GS}	Gate-Source Voltage	±20	V
I _D @T _C =25°C	Continuous Drain Current	100	A
I _D @T _C =100°C	Continuous Drain Current	80	A
I _{DM}	Pulsed Drain Current	300	A
EAS	Single Pulse Avalanche Energy	220	mJ
P _D @T _C =25°C	Total Power Dissipation	150	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 _{θJA}	Thermal Resistance, Junction-to-Ambient	---	62	°C/W
R _{θJC}	Thermal Resistance Junction -Case	---	0.8	°C/W

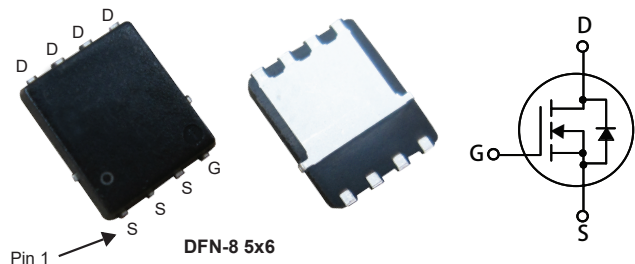
Product Summary

BVDSS	RDSON	ID
100V	5mΩ	100A

Applications

- DC-DC Converter
- Motor Drive
- Powertrain Management

DFN-8 5x6 Pin Configuration



Type	Package	Marking
CMSA046N10A	DFN-8 5*6	046N10A

N-Channel Enhancement Mode Field Effect Transistor

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

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	100	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	$V_{GS}=10V, I_D=28A$	---	---	5	m Ω
		$V_{GS}=6V, I_D=25A$	---	---	7	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS}=V_{DS}, I_D=250\mu A$	2	---	4	V
I_{DSS}	Drain-Source Leakage Current	$V_{DS}=100V, V_{GS}=0V$	---	---	1	μA
		$V_{DS}=100V, V_{GS}=0V, T_J=125^{\circ}\text{C}$	---	---	100	μA
I_{GSS}	Gate-Source Leakage Current	$V_{GS}=20V, V_{DS}=0V$	---	---	100	nA
Q_g	Total Gate Charge	$V_{DD}=50V, I_D=50A$ $V_{GS}=0$ to 10 V	---	65	---	nC
Q_{gs}	Gate-Source Charge		---	20	---	
Q_{gd}	Gate-Drain Charge		---	10	---	
$T_{d(on)}$	Turn-On Delay Time	$V_{DD}=50V, V_{GS}=10V, I_D=25A$ $R_G=1.6\Omega$	---	15	---	ns
T_r	Rise Time		---	14	---	
$T_{d(off)}$	Turn-Off Delay Time		---	40	---	
T_f	Fall Time		---	10	---	
C_{iss}	Input Capacitance	$V_{DS}=50V, V_{GS}=0V, f=1\text{MHz}$	---	5300	---	pF
C_{oss}	Output Capacitance		---	800	---	
C_{rss}	Reverse Transfer Capacitance		---	30	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current	$V_G=V_D=0V, \text{Force Current}$	---	---	100	A
I_{SM}	Pulsed Source Current		---	---	300	A
V_{SD}	Diode Forward Voltage	$V_{GS}=0V, I_F=50A, T_J=25^{\circ}\text{C}$	---	---	1.2	V
t_{rr}	Reverse Recovery Time	$V_R=50V, I_F=25A,$ $di_F/dt=100A/\mu s$	---	56	---	ns
Q_{rr}	Reverse Recovery Charge		---	101	---	nC

Note :

This product has been designed and qualified for the consumer market.
Cmos assumes no liability for customers' product design or applications.
Cmos reserves the right to improve product design, functions and reliability without notice.