

General Description

The CMSA40DN045 uses advanced trench technology to provide excellent $R_{DS(ON)}$. This is well suited for use in compact DC/DC converter applications.

Product Summary

BVDSS	$R_{DS(on)}$ max.	ID
45V	15mΩ	40A

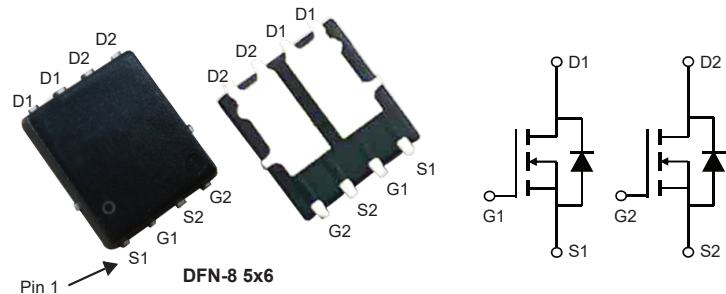
Applications

- DC-DC Converters

DFN-8 5X6 Dual Pin Configuration

Features

- Low On-Resistance
- 100% avalanche tested
- Small Footprint (5x6 mm) for Compact Design
- RoHS Compliant



Type	Package	Marking
CMSA40DN045	DFN-8 5X6 Dual	CMSA40DN045

Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	45	V
V_{GS}	Gate-Source Voltage	±20	V
$I_D@T_C=25^{\circ}C$	Continuous Drain Current	40	A
$I_D@T_C=100^{\circ}C$	Continuous Drain Current	28	A
I_{DM}	Pulsed Drain Current	160	A
EAS	Single Pulse Avalanche Energy ¹	45	mJ
$P_D@T_C=25^{\circ}C$	Total Power Dissipation	45	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)	---	62	°C/W
$R_{\theta JC}$	Thermal Resistance Junction-case	---	2.78	°C/W

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

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V$, $I_D=250\mu A$	45	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	$V_{GS}=10V$, $I_D=10A$	---	13	15	mΩ
		$V_{GS}=4.5V$, $I_D=10A$	---	17	20	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS}=V_{DS}$, $I_D=250\mu A$	1.0	---	2.5	V
I_{DSS}	Drain-Source Leakage Current	$V_{DS}=45V$, $V_{GS}=0V$	---	---	1	μA
I_{GSS}	Gate-Source Leakage Current	$V_{GS}=\pm 20V$, $V_{DS}=0V$	---	---	± 100	nA
g_{fs}	Forward Transconductance	$V_{DS}=5V$, $I_D=10A$	---	13	---	S
R_g	Gate Resistance	$V_{DS}=0V$, $V_{GS}=0V$, $f=1\text{MHz}$	---	1.5	---	Ω
Q_g	Total Gate Charge	$I_D=8.5A$	---	16	---	nC
Q_{gs}	Gate-Source Charge	$V_{DD}=24V$	---	4.5	---	
Q_{gd}	Gate-Drain Charge	$V_{GS}=5V$	---	6	---	
$T_{d(on)}$	Turn-On Delay Time	$V_{DD}=24V$	---	19	---	ns
T_r	Rise Time	$V_{GS}=10V$	---	25	---	
$T_{d(off)}$	Turn-Off Delay Time	$R_G=10\Omega$, $R_L=6.3\Omega$	---	71	---	
T_f	Fall Time	$I_D=4A$	---	24	---	
C_{iss}	Input Capacitance	$V_{DS}=25V$, $V_{GS}=0V$, $f=1\text{MHz}$	---	1100	---	pF
C_{oss}	Output Capacitance		---	70	---	
C_{rss}	Reverse Transfer Capacitance		---	65	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current	$V_G=V_D=0V$, Force Current	---	---	40	A
I_{SM}	Pulsed Source Current		---	---	160	A
V_{SD}	Diode Forward Voltage	$V_{GS}=0V$, $I_S=10A$, $T_J=25^{\circ}\text{C}$	---	0.86	1.2	V

Note :

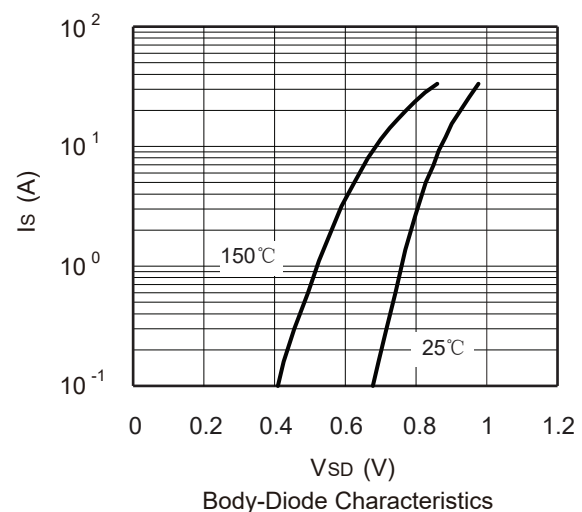
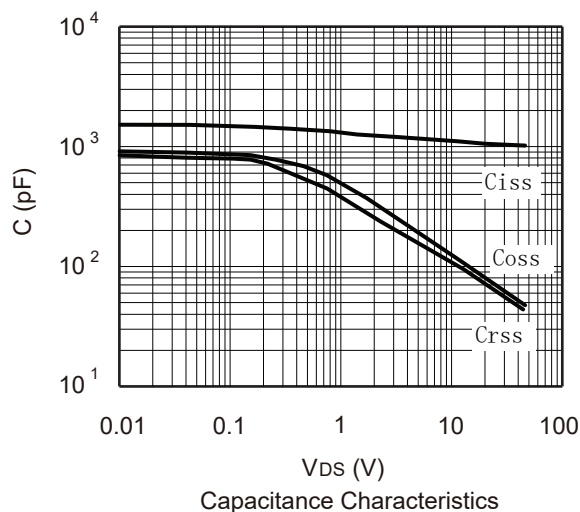
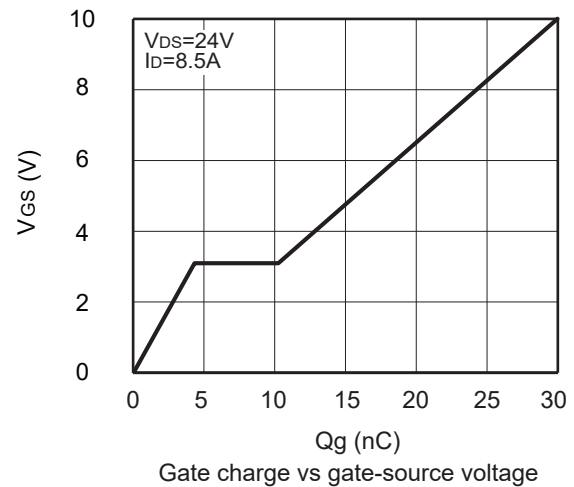
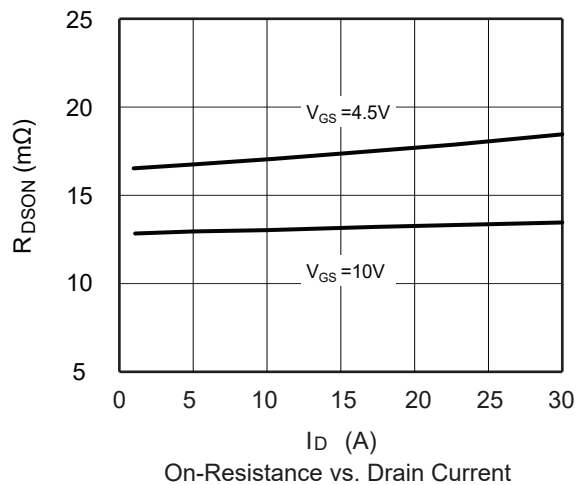
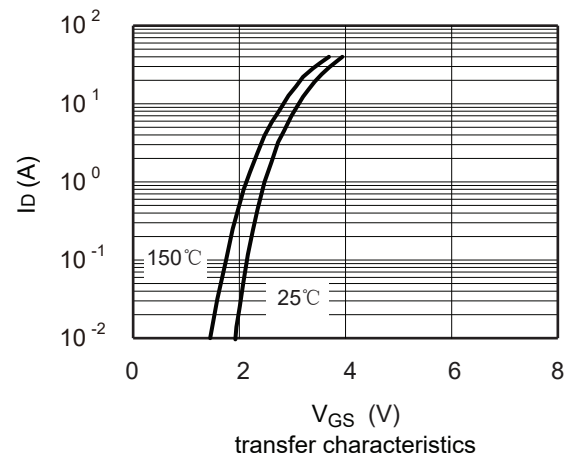
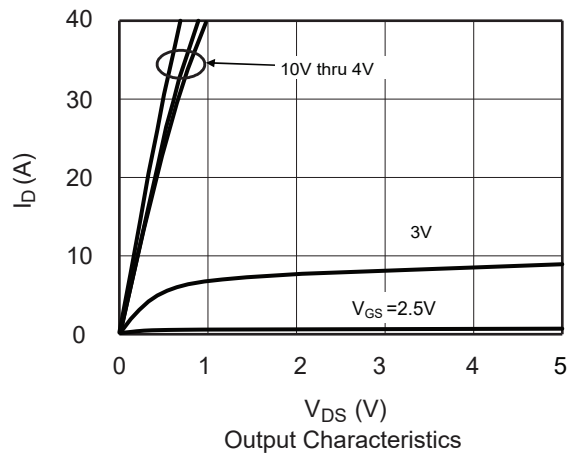
1. The EAS data shows Max. rating . The test condition is $V_{DD}=30V$, $V_{GS}=10V$, $L=0.5\text{mH}$, $I_{AS}=13.5A$.

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. Please refer to the latest version of specification.

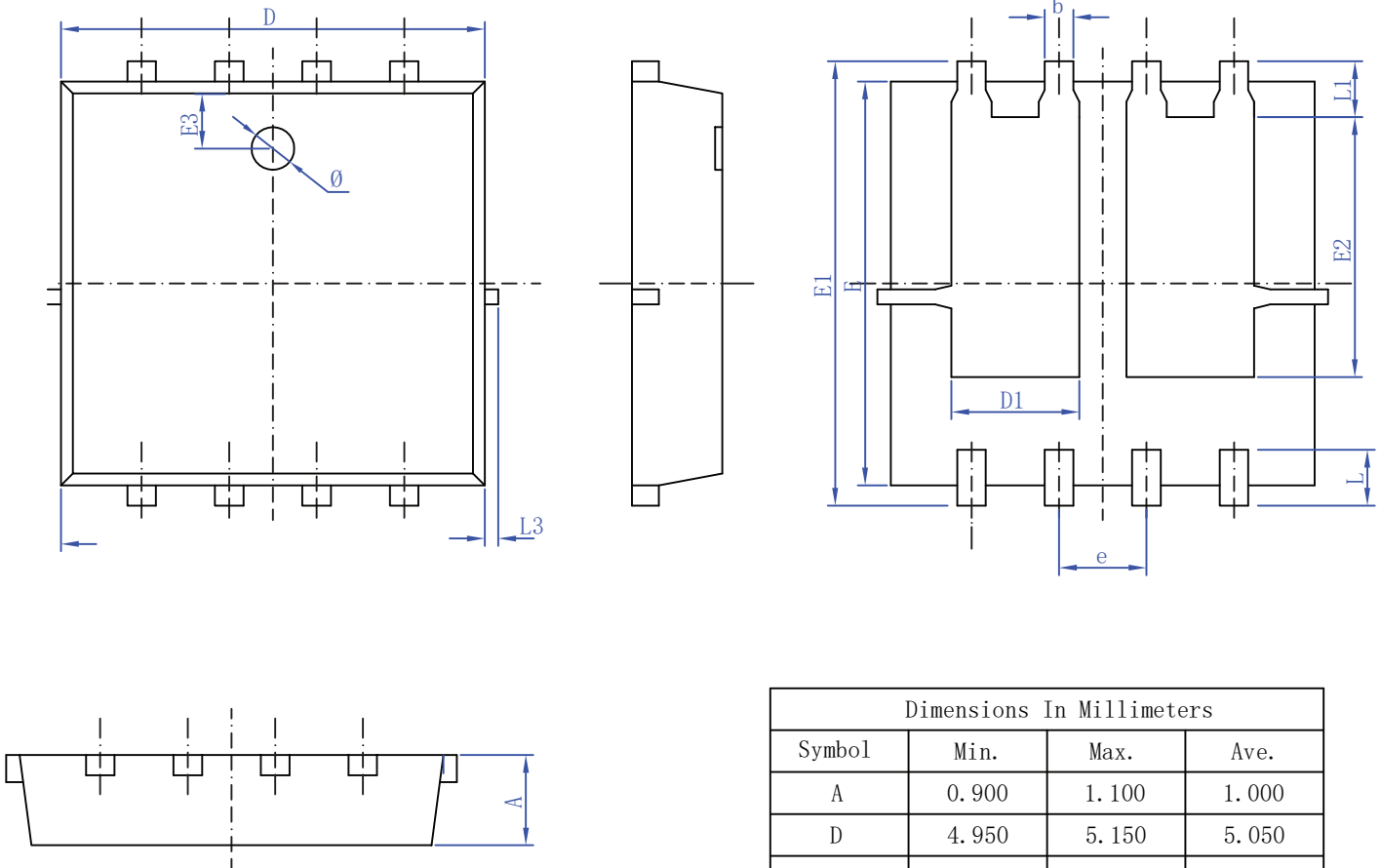
Typical Characteristics



Package Dimension

DFN-8 5X6 Dual

Unit :mm



Dimensions In Millimeters			
Symbol	Min.	Max.	Ave.
A	0.900	1.100	1.000
D	4.950	5.150	5.050
D1	1.505	1.905	1.7050
E	5.750	5.950	5.850
E1	5.950	6.350	6.150
E2	3.300	3.700	3.500
E3	0.900	1.300	1.100
b	0.250	0.350	0.300
e	1.220	1.320	1.270
L	0.585	0.785	0.685
L1	0.525	0.725	0.625
Ø	1.000	1.400	1.200
L2	0~0.100		
L3	0~0.100		