

# CMSA050N10

100V, 4.1mΩ typ., 100A N-Channel MOSFET

## General Description

The CMSA050N10 uses advanced SGT technology to provide excellent RDS(ON). This process has been optimized for the on-state resistance and yet maintain superior switching performance.

## Features

- Low ON-resistance
- Low Gate Charge
- Surface Mount Package
- RoHS Compliant

## Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
$V_{DS}$	Drain-Source Voltage	100	V
$V_{GS}$	Gate-Source Voltage	±20	V
$I_D@T_C=25^\circ C$	Continuous Drain Current	100	A
$I_D@T_C=100^\circ C$	Continuous Drain Current	85	A
$I_{DM}$	Pulsed Drain Current	400	A
EAS	Single Pulse Avalanche Energy <sup>1</sup>	156	mJ
$P_D@T_C=25^\circ C$	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
$R_{\theta JA}$	Thermal Resistance Junction-ambient	---	62	°C/W
$R_{\theta JC}$	Thermal Resistance Junction-case	---	0.83	°C/W

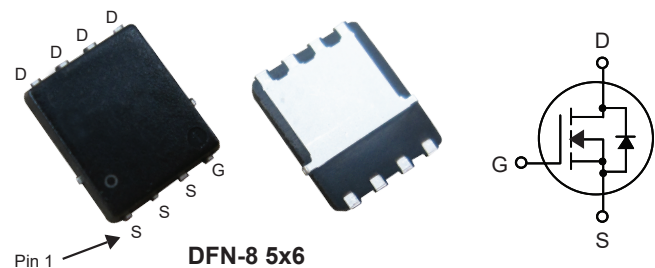
## Product Summary

BVDSS	R <sub>DS(on)</sub> max.	ID
100V	4.8mΩ	100A

## Applications

- Load Switch
- Secondary Synchronous Rectifier

## DFN-8 5x6 Pin Configuration



Type	Package	Marking
CMSA050N10	DFN-8 5x6	CMSA050N10

**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	$V_{GS}=10V$ , $I_D=20A$	---	4.1	4.8	mΩ
		$V_{GS}=6V$ , $I_D=15A$	---	5.5	6.5	
$V_{GS(th)}$	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
$I_{GSS}$	Gate-Source Leakage Current	$V_{GS}=\pm 20V$ , $V_{DS}=0V$	---	---	±100	nA
$g_{fs}$	Forward Transconductance	$V_{DS}=10V$ , $I_D=20A$	---	30	---	S
$R_g$	Gate Resistance	$V_{DS}=0V$ , $V_{GS}=0V$ , $f=1\text{MHz}$	---	1.2	---	Ω
$Q_g$	Total Gate Charge	$I_D=16A$	---	47	---	nC
$Q_{gs}$	Gate-Source Charge	$V_{DS}=50V$	---	14	---	
$Q_{gd}$	Gate-Drain Charge	$V_{GS}=0V$ to $10V$	---	9.7	---	
$T_{d(on)}$	Turn-On Delay Time	$V_{DD}=50V$	---	21	---	ns
$T_r$	Rise Time	$V_{GS}=10V$	---	8.6	---	
$T_{d(off)}$	Turn-Off Delay Time	$R_{GEN}=6\Omega$	---	28	---	
$T_f$	Fall Time	$I_D=16A$	---	6	---	
$C_{iss}$	Input Capacitance	$V_{DS}=25V$ , $V_{GS}=0V$ , $f=1\text{MHz}$	---	3900	---	pF
$C_{oss}$	Output Capacitance		---	1800	---	
$C_{rss}$	Reverse Transfer Capacitance		---	170	---	

**Diode Characteristics**

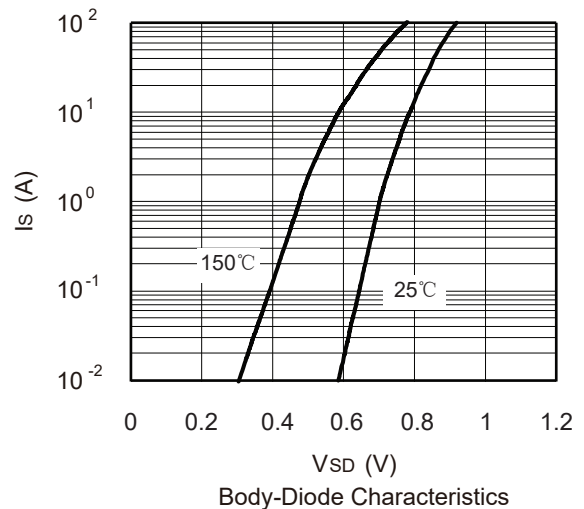
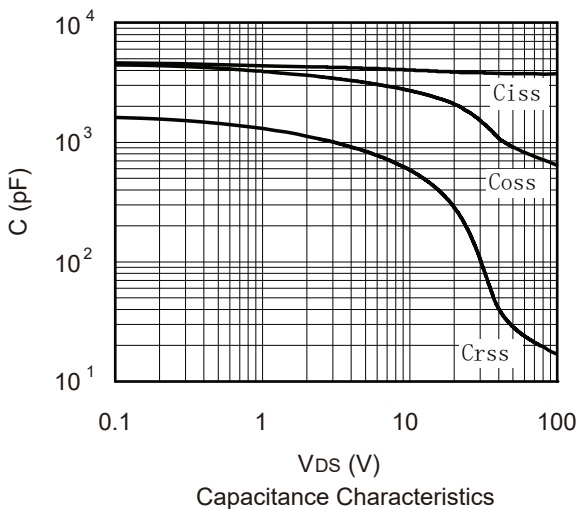
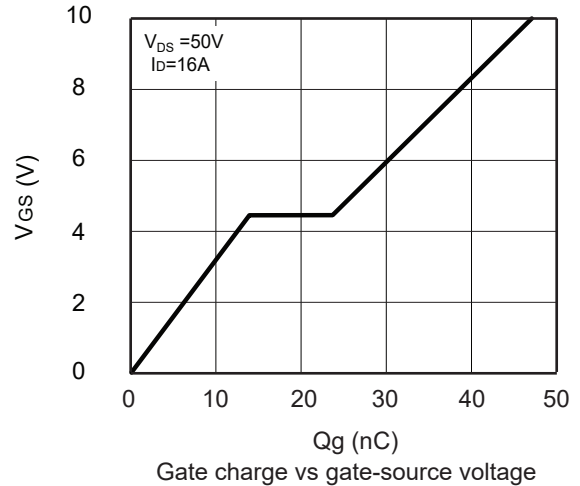
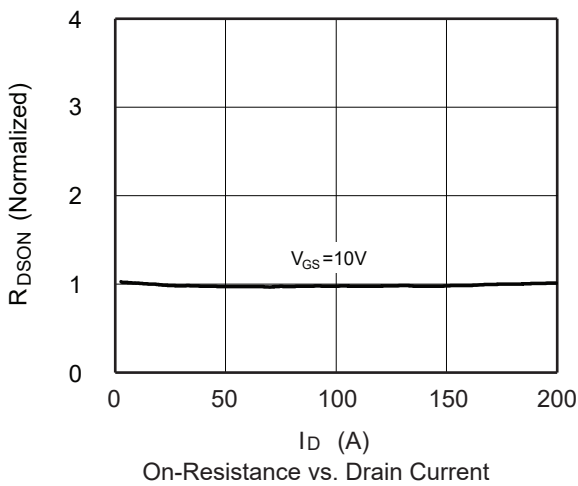
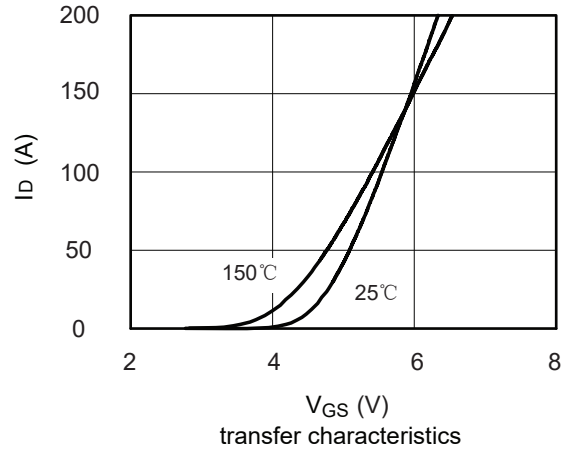
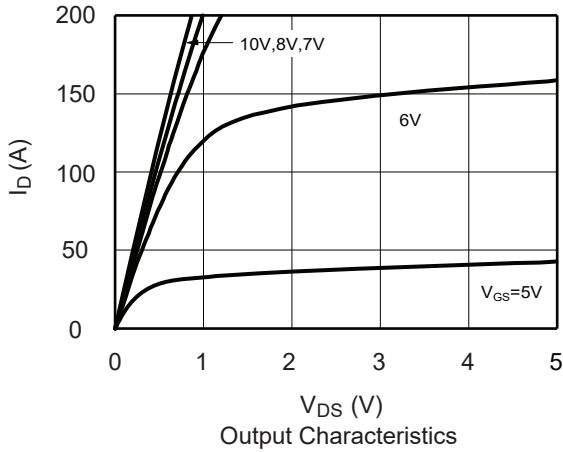
Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
$I_S$	Continuous Source Current	$V_G=V_D=0V$ , Force Current	---	---	100	A
$I_{SM}$	Pulsed Source Current		---	---	400	A
$V_{SD}$	Diode Forward Voltage	$V_{GS}=0V$ , $I_S=20A$ , $T_J=25^{\circ}\text{C}$	---	0.82	1.4	V

Note :

1.The EAS data shows Max. rating . The test condition is  $V_{DD}=50V$  ,  $V_{GS}=10V$  ,  $L=0.5\text{mH}$  ,  $I_{AS}=25A$ .

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.

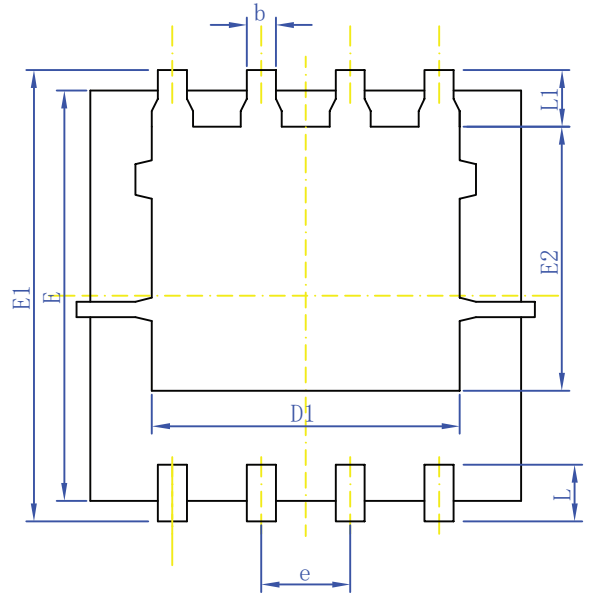
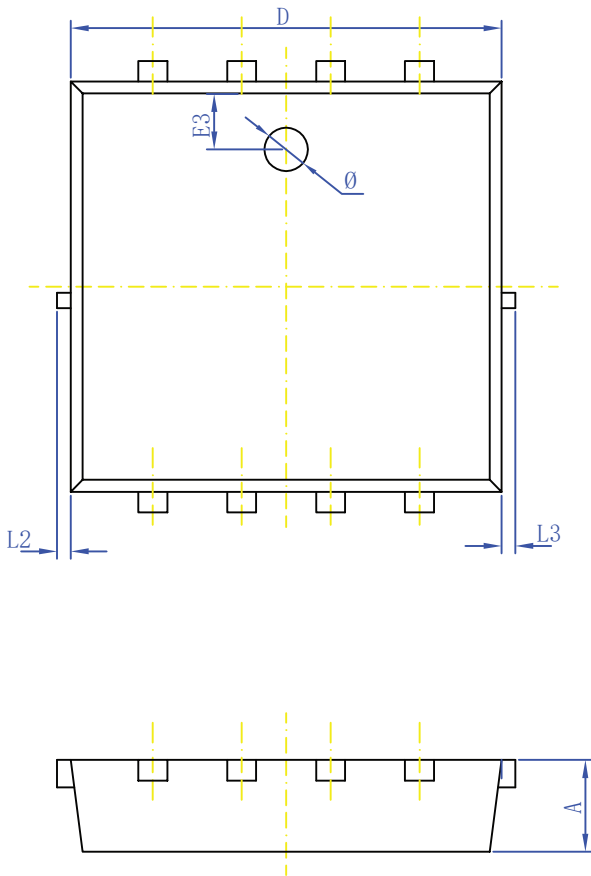
Typical Characteristics



### Package Dimension

DFN-8 5x6

Unit :mm



Dimensions In Millimeters

Symbol	Min.	Max.	Ave.
A	0.900	1.100	1.000
D	4.950	5.150	5.050
D1	3.850	4.250	4.050
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		

注:

1. 未注公差±0.05未标注圆角R max=0.25