

CMSA3R19

30V, 10mΩ typ., 40A N-Channel MOSFET and -30V, 13mΩ typ., -40A P-Channel MOSFET

General Description

The CMSA3R19 uses advanced trench technology to provide excellent RDS(ON).It can be used in a wide variety of applications.

Product Summary

	BVDSS	RDS(on) max.	ID
N-Channel	30V	11mΩ	40A
P-Channel	-30V	15mΩ	-40A

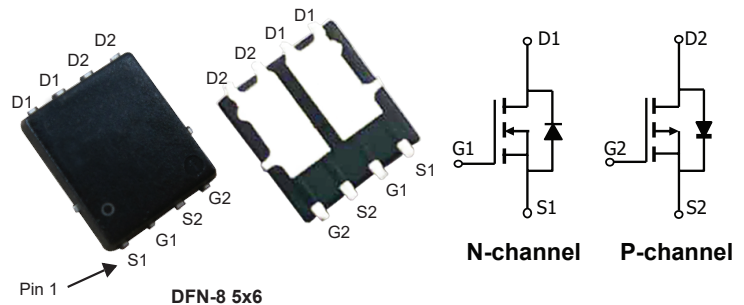
Applications

- Motor Drive

Features

- Dual N- and P-Channel MOSFET
- Low On-Resistance
- 100% avalanche tested
- RoHS Compliant

DFN-8 5x6 Pin Configuration



Type	Package	Marking
CMSA3R19	DFN- 8 5x6	CMSA3R19

Absolute Maximum Ratings

Symbol	Parameter	Max n-ch	Max p-ch	Units
V _{DS}	Drain-Source Voltage	30	-30	V
V _{GS}	Gate-Source Voltage	±20	±20	V
I _D @T _C =25°C	Continuous Drain Current	40	-40	A
I _D @T _C =100°C	Continuous Drain Current	28	-28	A
I _{DM}	Pulsed Drain Current	160	-160	A
EAS	Single Pulse Avalanche Energy ¹	48	72	mJ
P _D @T _C =25°C	Total Power Dissipation	35	35	W
T _{STG}	Storage Temperature Range	-55 to 150	-55 to 150	°C
T _J	Operating Junction Temperature Range	-55 to 150	-55 to 150	°C

Thermal Characteristics: n-channel

Symbol	Parameter	Typ.	Max.	Unit
R _{θJA}	Thermal Resistance Junction-ambient ²	---	40	°C/W
R _{θJC}	Thermal Resistance Junction-case	---	3.57	°C/W

30V, 10mΩ typ., 40A N-Channel MOSFET and -30V, 13mΩ typ., -40A P-Channel MOSFET
Thermal Characteristics: p-channel

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-ambient ²	---	40	°C/W
$R_{\theta JC}$	Thermal Resistance Junction -Case	---	3.57	°C/W

N Channel Electrical Characteristics (T_J=25 °C unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V$, $I_D=250\mu A$	30	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	$V_{GS}=10V$, $I_D=10A$	---	10	11	mΩ
		$V_{GS}=4.5V$, $I_D=5A$	---	13	16	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS}=V_{DS}$, $I_D=250\mu A$	1	---	3	V
I_{DSS}	Drain-Source Leakage Current	$V_{DS}=30V$, $V_{GS}=0V$	---	---	1	μA
I_{GSS}	Gate-Source Leakage Current	$V_{GS}=\pm 20V$, $V_{DS}=0V$	---	---	±100	nA
g_{fs}	Forward Transconductance	$V_{DS}=10V$, $I_D=5A$	---	13	---	S
R_g	Gate Resistance	$V_{DS}=0V$, $V_{GS}=0V$, $f=1MHz$	---	4.5	---	Ω
Q_g	Total Gate Charge	$V_{DD}=15V$, $I_D=15A$ $V_{GS}=0$ to $5V$	---	8	---	nC
Q_{gs}	Gate-Source Charge		---	3.3	---	
Q_{gd}	Gate-Drain Charge		---	2.1	---	
$T_{d(on)}$	Turn-On Delay Time	$V_{DD}=15V$, $I_D=15A$ $R_G=2.7\Omega$, $V_{GS}=10V$	---	3.8	---	ns
T_r	Rise Time		---	3.4	---	
$T_{d(off)}$	Turn-Off Delay Time		---	15	---	
T_f	Fall Time		---	2.6	---	
C_{iss}	Input Capacitance	$V_{DS}=25V$, $V_{GS}=0V$, $f=1MHz$	---	1000	---	pF
C_{oss}	Output Capacitance		---	120	---	
C_{rss}	Reverse Transfer Capacitance		---	90	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Diode continuous forward current	$V_G=V_D=0V$, Force Current	---	---	40	A
$I_{S,pulse}$	Diode pulse current		---	---	160	A
V_{SD}	Diode Forward Voltage	$V_{GS}=0V$, $I_F=1A$, $T_J=25^\circ C$	---	0.73	1.2	V

P Channel Electrical Characteristics (T_J=25°C unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =-250μA	-30	---	---	V
R _{DS(ON)}	Static Drain-Source On-Resistance	V _{GS} =-10V, I _D =-10A	---	13	15	mΩ
		V _{GS} =-4.5V, I _D =-5A	---	17.3	21	
V _{GS(th)}	Gate Threshold Voltage	V _{GS} =V _{DS} , I _D =-250μA	-1	---	-3	V
I _{DSS}	Drain-Source Leakage Current	V _{DS} =-30V, V _{GS} =0V	---	---	1	μA
I _{GSS}	Gate-Source Leakage Current	V _{GS} =±20V, V _{DS} =0V	---	---	±100	nA
g _{fs}	Forward Transconductance	V _{DS} =-5V, I _D =-10A	---	18.5	---	S
R _g	Gate Resistance	V _{DS} =0V, V _{GS} =0V, f=1MHz	---	14	---	Ω
Q _g	Total Gate Charge	V _{DS} =-15V, I _D =-9A V _{GS} =-10V	---	37	---	nC
Q _{gs}	Gate-Source Charge		---	7	---	
Q _{gd}	Gate-Drain Charge		---	9	---	
T _{d(on)}	Turn-On Delay Time	V _{DD} =-15V, V _{GEN} =-10V, R _G =3Ω R _L =1.67Ω	---	12.5	---	ns
T _r	Rise Time		---	15	---	
T _{d(off)}	Turn-Off Delay Time		---	43	---	
T _f	Fall Time		---	19.5	---	
C _{iss}	Input Capacitance	V _{DS} =-25V, V _{GS} =0V, f=1MHz	---	1500	---	pF
C _{oss}	Output Capacitance		---	180	---	
C _{rss}	Reverse Transfer Capacitance		---	130	---	

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 =-1A, T _J =25°C	---	-0.75	-1.2	V

Note:

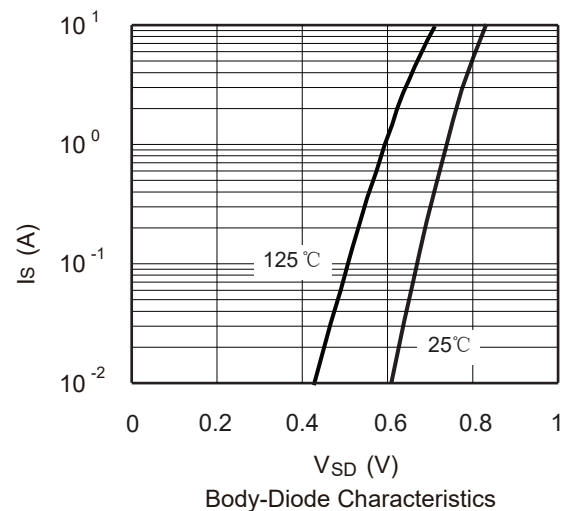
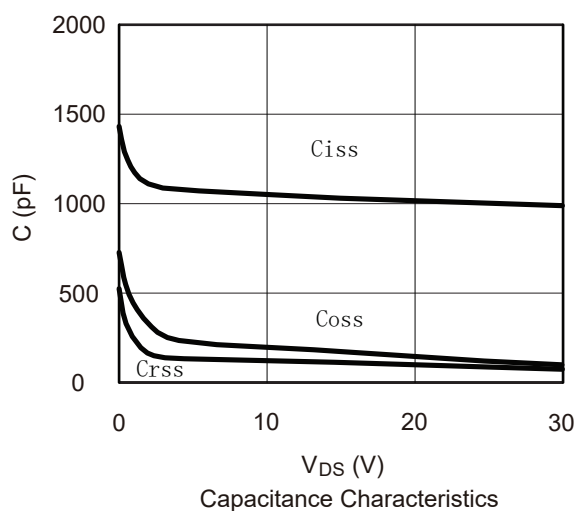
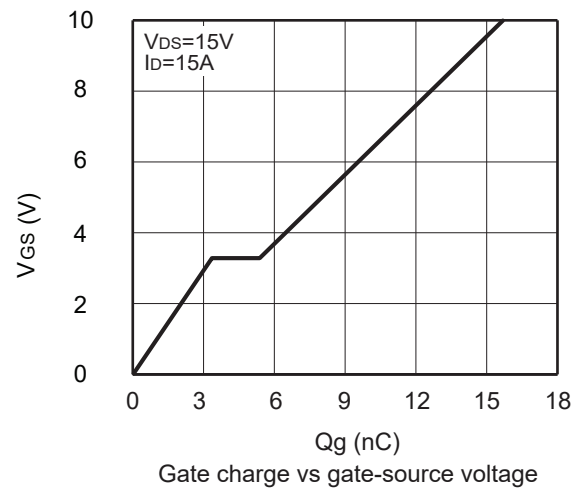
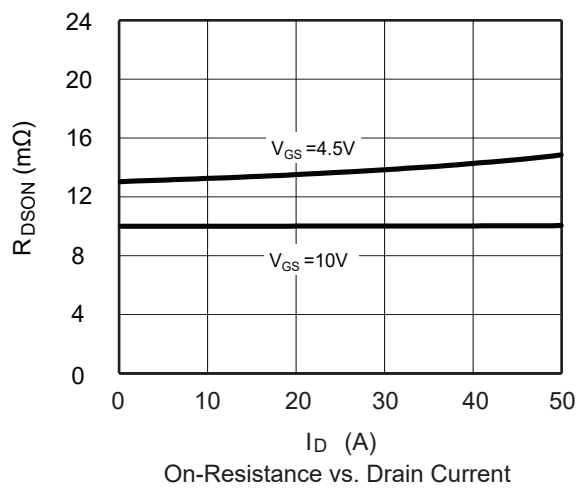
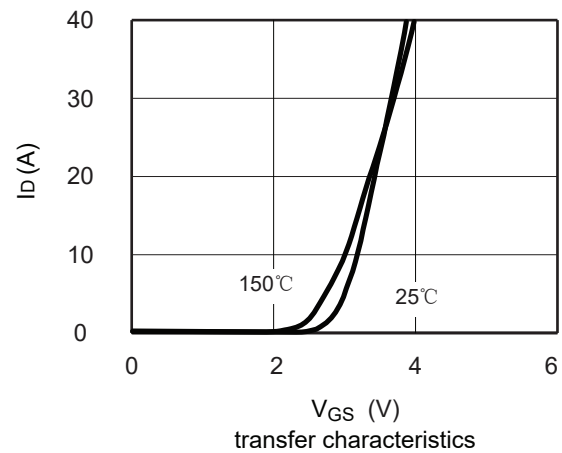
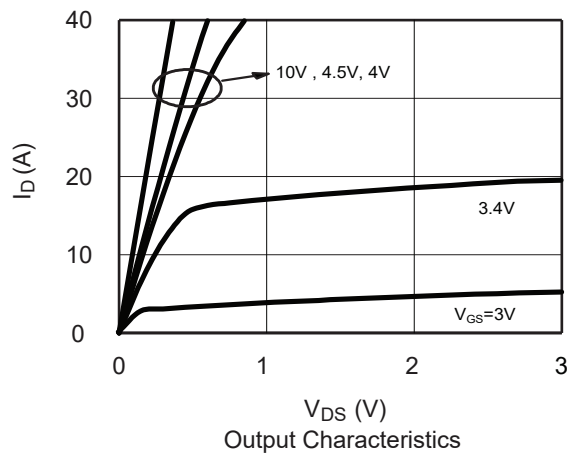
- The EAS data shows Max. rating. The N-Channel test condition is V_{DD}=25V, V_{GS}=10V, L=0.3mH, I_{AS}=18A.
The P-Channel test condition is V_{DD}=-25V, V_{GS}=-10V, L=0.3mH, I_{AS}=-22A
- Surface Mounted on FR4 Board, t<10 sec.

This product has been designed and qualified for the consumer market.

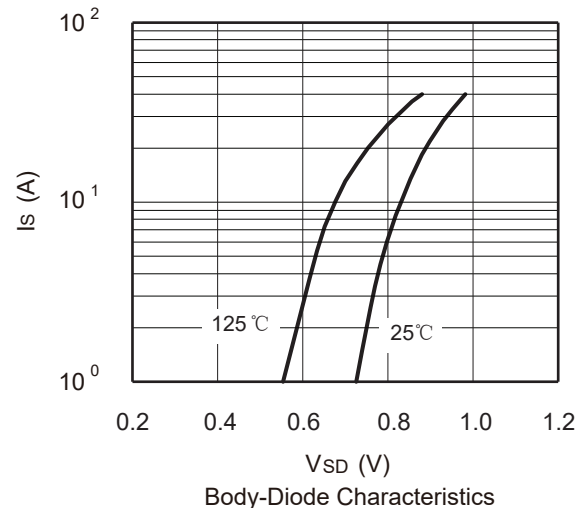
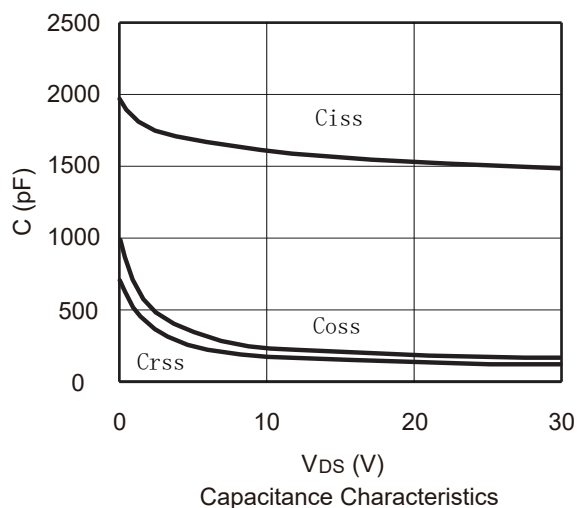
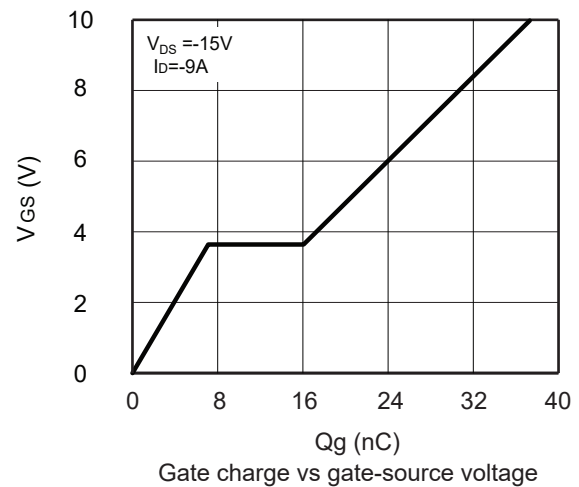
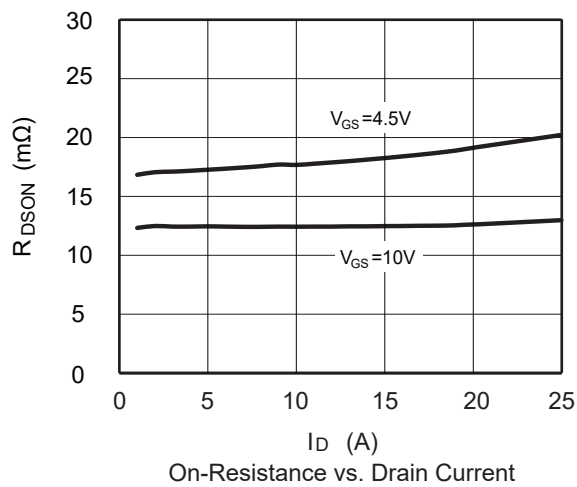
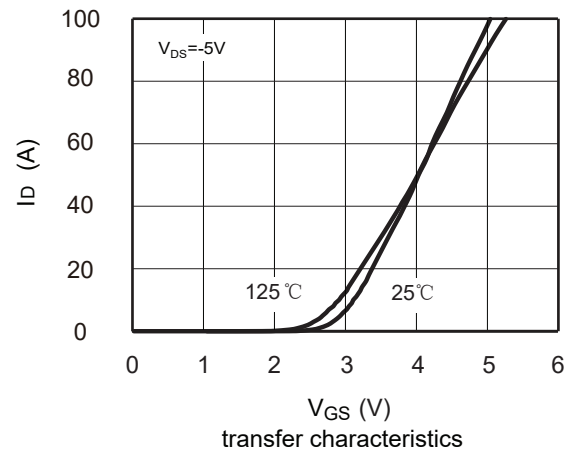
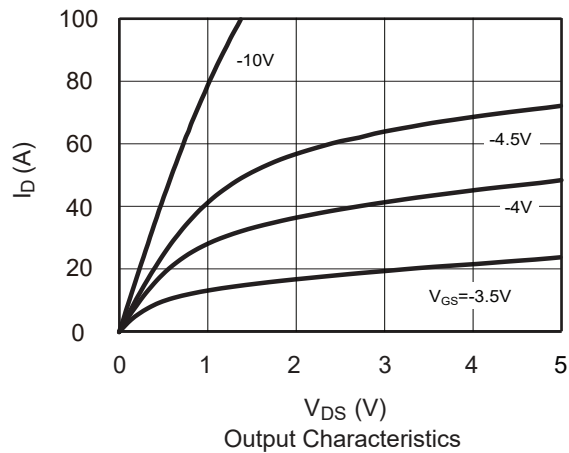
Cmos assumes no liability for customers' product design or applications.

Cmos reserves the right to improve product design, functions and reliability without notice.

N-Channel: Typical Characteristics



P-Channel: Typical Characteristics



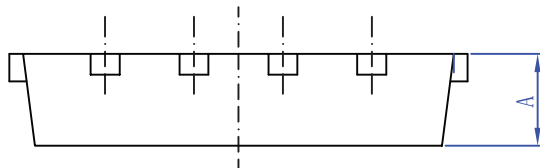
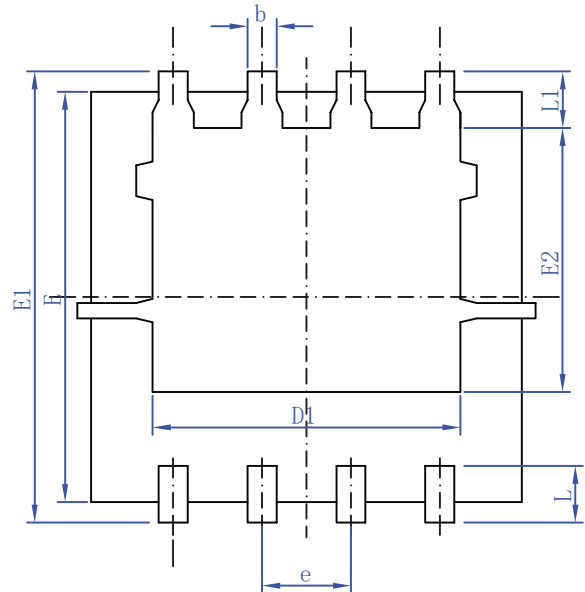
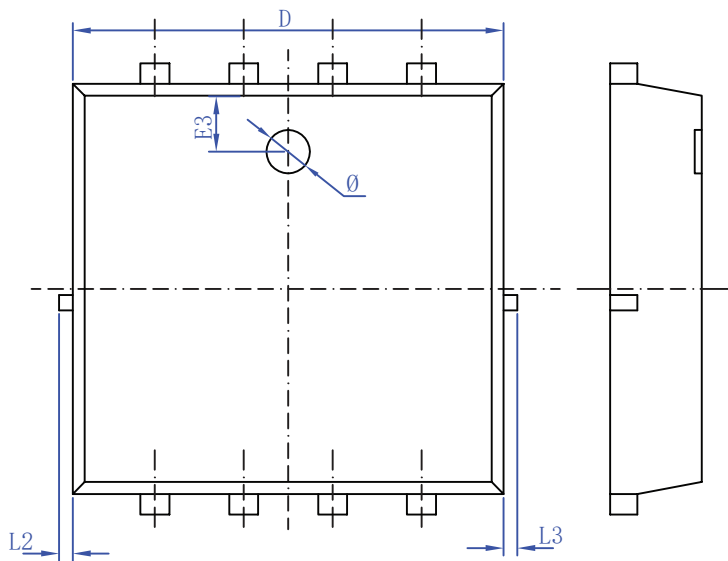
CMSA3R19

30V, 10mΩ typ., 40A N-Channel MOSFET and -30V, 13mΩ typ., -40A P-Channel MOSFET

Package Dimension

DFN-8 5x6

Unit :mm



注:

1. 未注公差±0.05未标注圆角R max=0.25
2. 标注单位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		