

General Description

The CMSA60R650D is power MOSFET using Cmos's advanced super junction technology that can realize very low on resistance , gate charge and reduced tendency for ringing.As a result, its switching loss is very low,making it optimized for switching applications.Moreover, these user friendly devices offer the advantages of improved ruggedness and remarkable ESD capability by integrated Zener diode, making it an ideal choice for designers.

Features

- Multi-layer Epitaxial Chip Technology
- Low On-Resistance
- 100% Avalanche Tested
- RoHS Compliant

Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	600	V
V_{GS}	Gate-Source Voltage	±30	V
$I_D@T_C=25^{\circ}C$	Continuous Drain Current	7	A
$I_D@T_C=100^{\circ}C$	Continuous Drain Current	4.9	A
I_{DM}	Pulsed Drain Current	28	A
EAS	Single Pulse Avalanche Energy ¹	93	mJ
$P_D@T_C=25^{\circ}C$	Total Power Dissipation	75	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	---	133	°C/W
$R_{\theta JC}$	Thermal Resistance Junction-case	---	1.67	°C/W

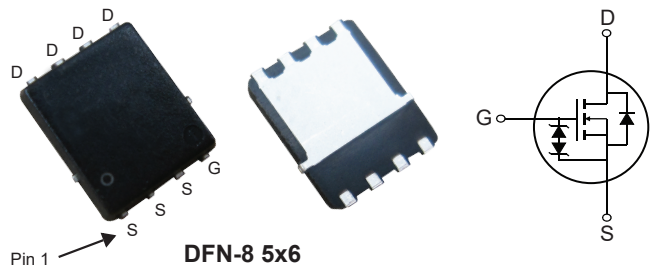
Product Summary

BVDSS	$R_{DS(on)}$ max.	ID
600V	650mΩ	7A

Applications

- Adapter
- PFC power supply stages
- DC-DC converters

DFN-8 5x6 Pin Configuration



Type	Package	Marking
CMSA60R650D	DFN-8 5x6	CMSA60R650D

600V, 590mΩ typ., 7A N-Channel Super Junction Power MOSFET

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

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V$, $I_D=250\mu A$	600	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	$V_{GS}=10V$, $I_D=4.5A$	---	590	650	mΩ
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS}=V_{DS}$, $I_D=250\mu A$	2.0	---	4.0	V
I_{DSS}	Drain-Source Leakage Current	$V_{DS}=600V$, $V_{GS}=0V$	---	---	1	μA
I_{GSS}	Gate-Source Leakage Current	$V_{GS}=\pm 30V$, $V_{DS}=0V$	---	---	±10	μA
g_{fs}	Forward Transconductance	$V_{DS}=20V$, $I_D=4.5A$	---	4.1	---	S
R_g	Gate Resistance	$V_{DS}=0V$, $V_{GS}=0V$, $f=1\text{MHz}$	---	17	---	Ω
Q_g	Total Gate Charge	$I_D=3.2A$ $V_{DD}=480V$ $V_{GS}=0$ to $10V$ (Note 2)	---	22	---	nC
Q_{gs}	Gate-Source Charge		---	3.5	---	
Q_{gd}	Gate-Drain Charge		---	12	---	
$T_{d(on)}$	Turn-On Delay Time	$V_{DS}=400V$ $V_{GS}=10V$ $R_G=10\Omega$ $I_D=3A$ (Note 2)	---	11	---	ns
T_r	Rise Time		---	25	---	
$T_{d(off)}$	Turn-Off Delay Time		---	35	---	
T_f	Fall Time		---	27	---	
C_{iss}	Input Capacitance	$V_{DS}=100V$, $V_{GS}=0V$, $f=1\text{MHz}$	---	300	---	pF
C_{oss}	Output Capacitance		---	22	---	
C_{rss}	Reverse Transfer Capacitance		---	2	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current	$V_G=V_D=0V$, Force Current	---	---	7	A
I_{SM}	Pulsed Source Current		---	---	28	A
V_{SD}	Diode Forward Voltage	$V_{GS}=0V$, $I_S=4.5A$, $T_J=25^{\circ}\text{C}$	---	0.85	1.4	V
t_{rr}	Reverse Recovery Time	$di/dt=100A/\mu s$ $V_{DS}=400V$, $I_S=3A$ (Note 2)	---	190	---	ns
Q_{rr}	Reverse Recovery Charge		---	1.3	---	μC

Note :

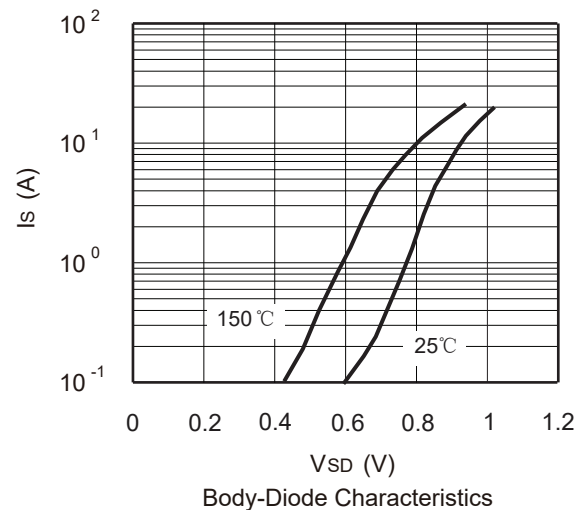
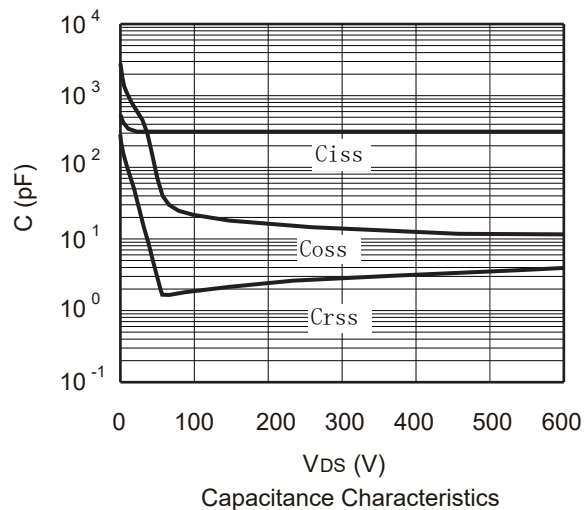
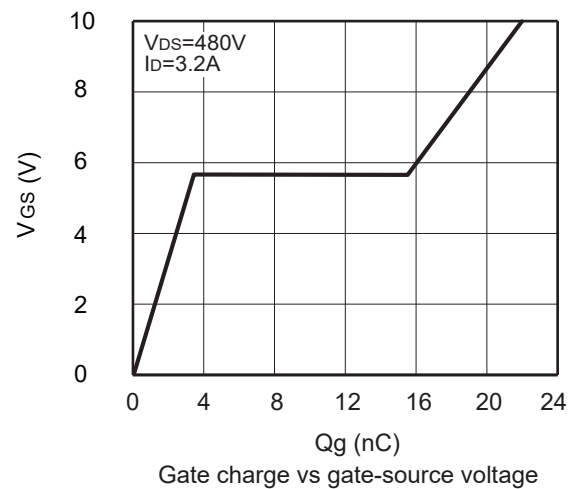
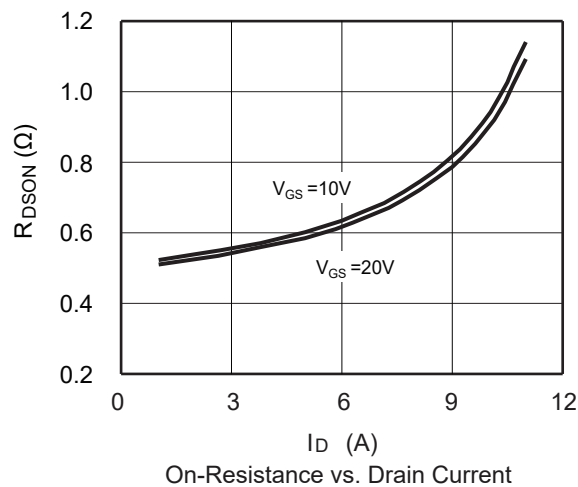
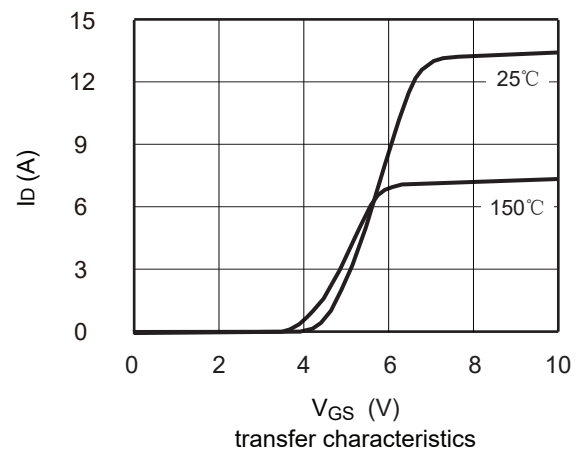
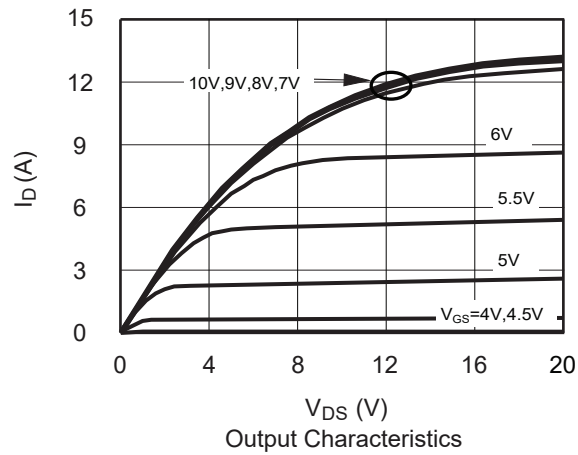
- 1.The EAS data shows Max. rating . The test condition is $V_{DD}=80V$, $V_{GS}=10V$, $L=30mH$, $I_{AS}=2.5A$.
- 2.Guaranteed by design, not subject to production testing.

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

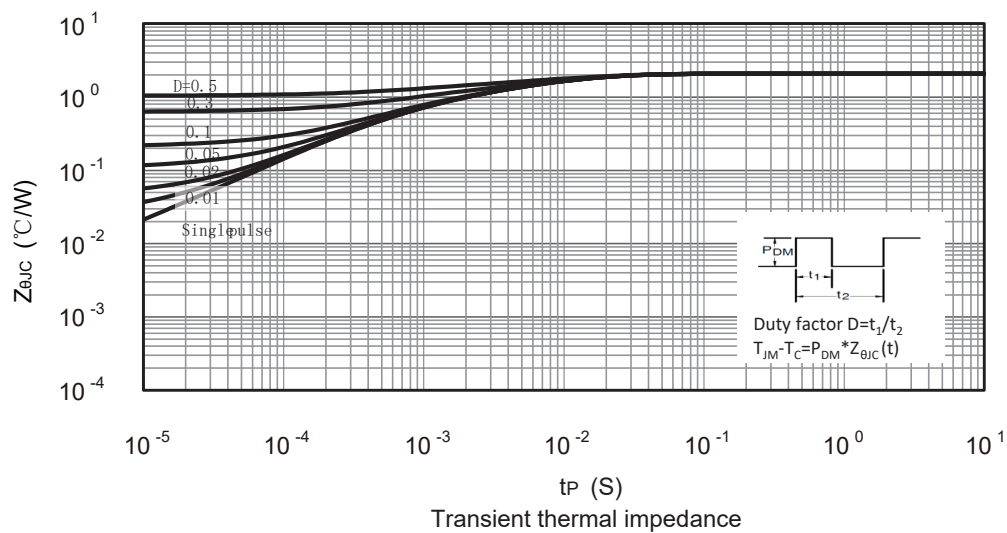
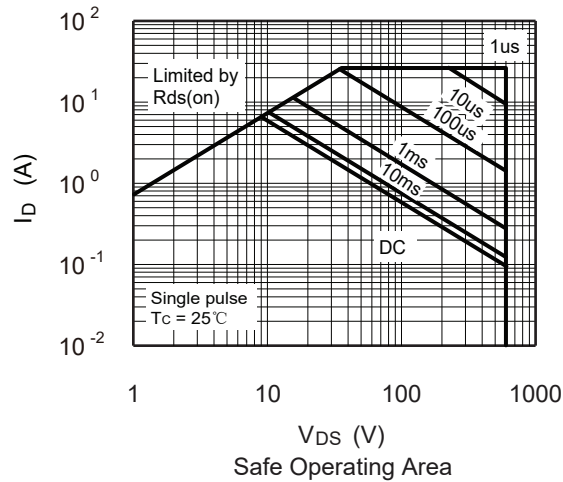
Cmos assumes no liability for customers' product design or applications.

Cmos reserves the right to improve product design, functions and reliability without notice. Please refer to the latest version of specification.

Typical Characteristics



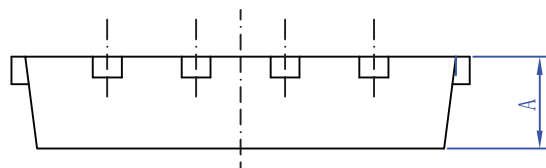
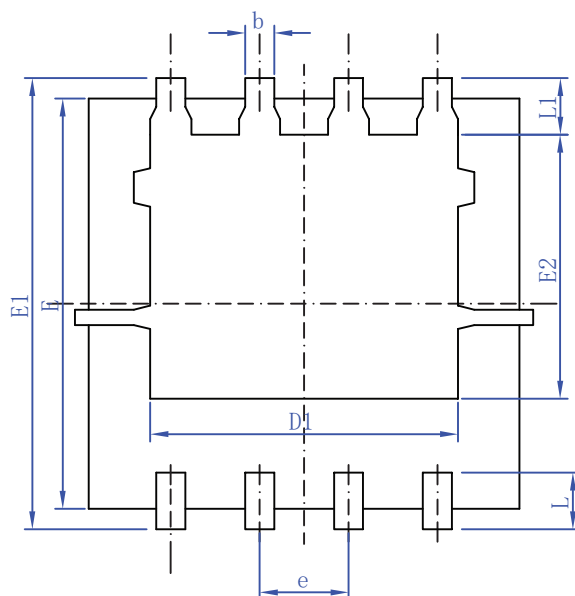
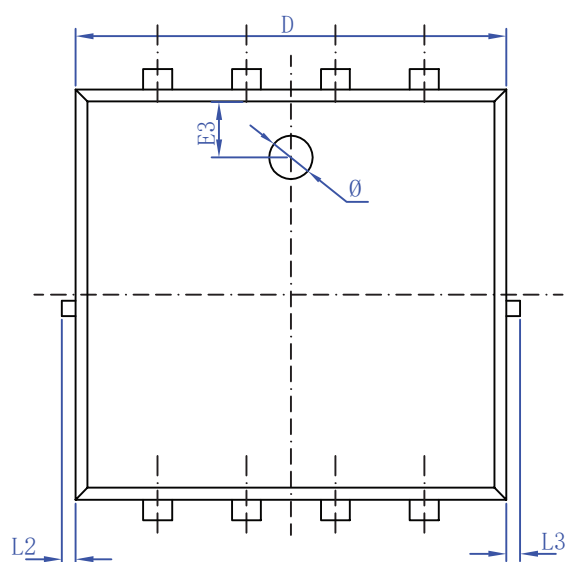
Typical Characteristics



Package Dimension

DFN-8 5x6

Unit :mm



注:

1. 未注公差 ± 0.05 未标注圆角 $R_{\max} = 0.25$

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		