CMSA65R300D

650V, 270mΩ typ., 12A N-Channel Super Junction Power MOSFET

General Description

The CMSA65R300D 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.

Product Summary

BVDSS	$R_{DS(on)}$ max.	ID
650V	0.3Ω	12A

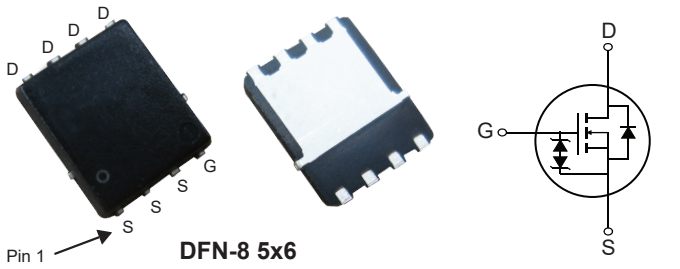
Applications

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

Features

- Multi-layer Epitaxial Chip Technology
- Low On-Resistance
- 100% avalanche tested
- RoHS Compliant

DFN-8 5x6 Pin Configuration



Type	Package	Marking
CMSA65R300D	DFN-8 5x6	CMSA65R300D

Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	650	V
V_{GS}	Gate-Source Voltage	±25	V
I_D@T_C=25℃	Continuous Drain Current	12	A
I_D@T_C=100℃	Continuous Drain Current	7.6	A
I_{DM}	Pulsed Drain Current	48	A
EAS	Single Pulse Avalanche Energy[1]	38	mJ
P_D@T_C=25℃	Total Power Dissipation	100	W
T_{STG}	Storage Temperature Range	-55 to 150	℃
T_J	Operating Junction Temperature Range	150	℃

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-ambient	---	40.6	℃/W
$R_{\theta JC}$	Thermal Resistance Junction-case	---	1.25	℃/W

650V, 270mΩ typ., 12A N-Channel Super Junction Power MOSFET

Electrical Characteristics(T_J=25℃, unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V , I_D=250uA	650	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	V_{GS}=10V , I_D=5.6A	---	270	300	mΩ
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =250uA	2.5	---	4.5	V
I_{DSS}	Drain-Source Leakage Current	V_{DS}=650V , V_{GS} =0V	---	---	1	μA
I_{GSS}	Gate-Source Leakage Current	V_{GS} =±25V , V_{DS}=0V	---	---	±10	μA
gfs	Forward Transconductance	V_{DS}=20V , I_D=5.6A	---	6.8	---	S
R_g	Gate Resistance	V_{DS}=0V , V_{GS}=0V , f=1MHz	---	10	---	Ω
Q_g	Total Gate Charge	I_D=3.8A V_{DD}=400V V_{GS}=10V	---	22.7	---	nC
Q_{gs}	Gate-Source Charge		---	4.6	---	
Q_{gd}	Gate-Drain Charge		---	10.1	---	
$T_{d(on)}$	Turn-On Delay Time	V_{DD}=325V V_{GS}=10V R_G=25Ω , I_D=12A	---	23.7	---	ns
T_r	Rise Time		---	35	---	
$T_{d(off)}$	Turn-Off Delay Time		---	70	---	
T_f	Fall Time		---	12.6	---	
C_{iss}	Input Capacitance	V_{DS}=100V , V_{GS}=0V , f=1MHz	---	900	---	pF
C_{oss}	Output Capacitance		---	37	---	
C_{rss}	Reverse Transfer Capacitance		---	8	---	

Diode Characteristics

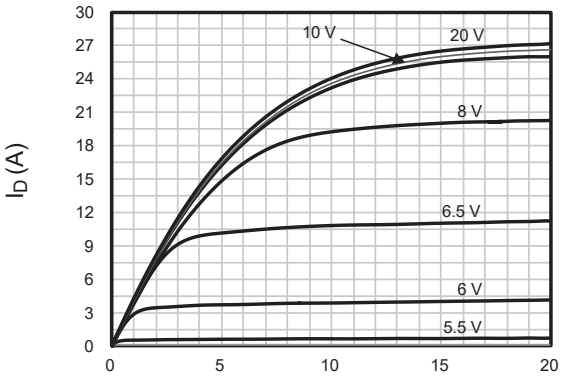
Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current	V_G=V_D=0V , Force Current	---	---	12	A
I_{SM}	Pulsed Source Current		---	---	48	A
V_{SD}	Diode Forward Voltage	V_{GS}=0V , I_S=5.6A	---	0.82	1.4	V
t_{rr}	Reverse Recovery Time	I_S =3.8A , V_{DD}=400V di/dt =100A/μs	---	214	---	ns
Q_{rr}	Reverse Recovery Charge		---	1.8	---	μC

Note :

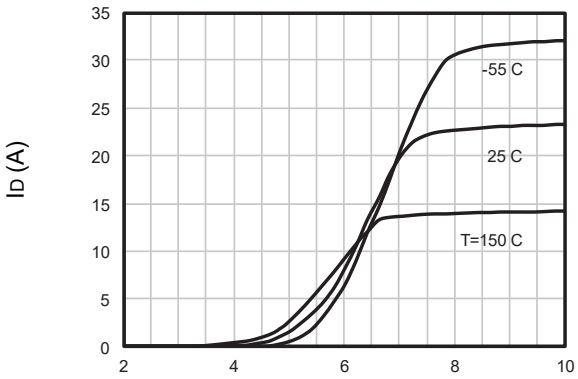
1.The EAS data shows Max. rating . The test condition is V_{DD}=80V , V_{GS}=10V , L=30mH , I_{AS}=1.6A.

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Cmos reserver the right to improve product design ,functions and reliability wihtout notice.Please refer to the latest version of specification.

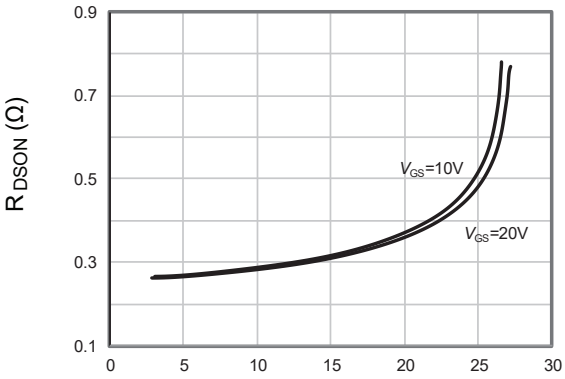
Typical Characteristics



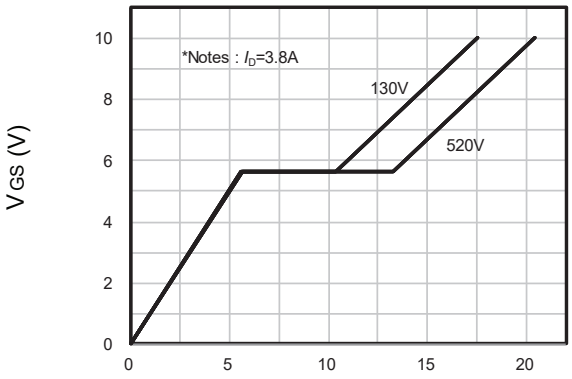
Output Characteristics



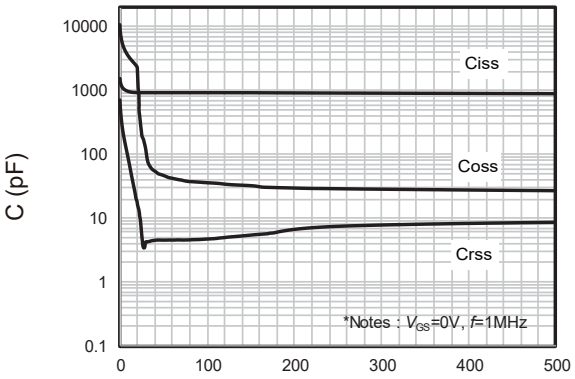
transfer characteristics



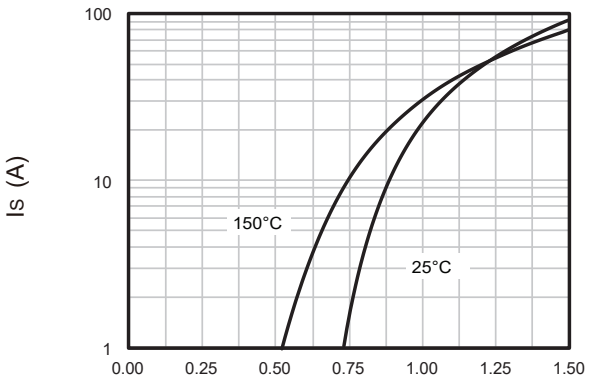
On-Resistance vs. Drain Current



Gate charge vs gate-source voltage



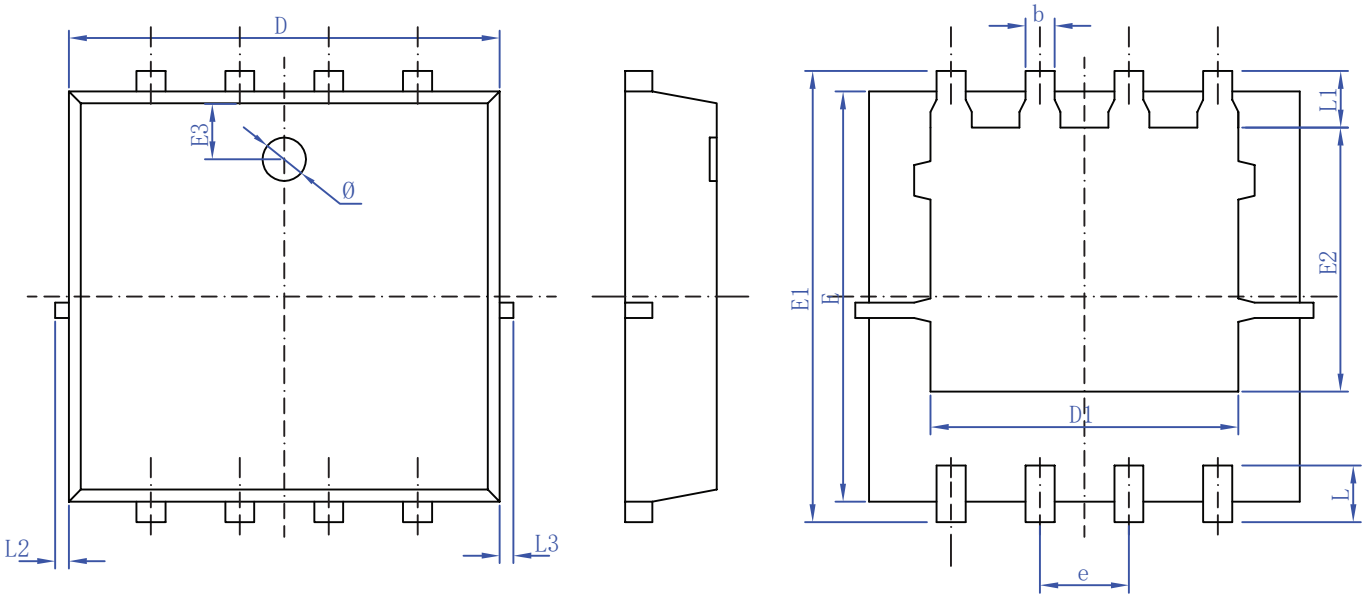
Capacitance Characteristics

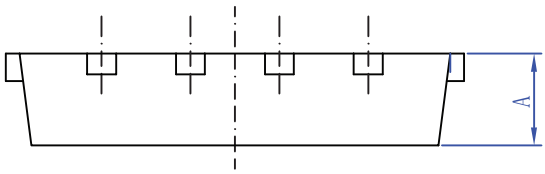


Body-Diode Characteristics

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