

150V, 52mΩ typ., 20A N-Channel MOSFET

General Description

The CMSA600N15 uses advanced SGT technology to provide excellent $R_{DS(on)}$. This device is ideal for high-frequency switching and synchronous rectification.

Product Summary

BVDSS	$R_{DS(on)}$ max.	ID
150V	60mΩ	20A

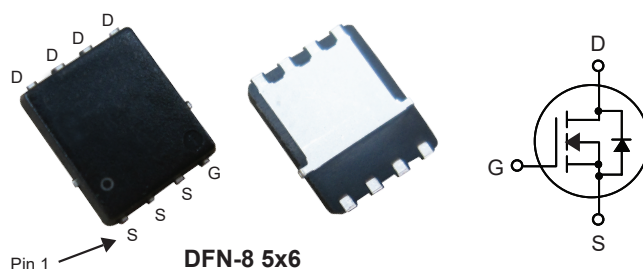
Applications

- AC-DC and DC-DC Converters

Features

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

DFN-8 5x6 Pin Configuration



Type	Package	Marking
CMSA600N15	DFN-8 5x6	CMSA600N15

Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	150	V
V_{GS}	Gate-Source Voltage	±20	V
$I_D@T_C=25^\circ\text{C}$	Continuous Drain Current	20	A
$I_D@T_C=100^\circ\text{C}$	Continuous Drain Current	14	A
I_{DM}	Pulsed Drain Current	80	A
EAS	Single Pulse Avalanche Energy ¹	68	mJ
$P_D@T_C=25^\circ\text{C}$	Total Power Dissipation	65	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 ²	---	50	°C/W
$R_{\theta JC}$	Thermal Resistance Junction-case	---	1.92	°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	$V_{GS}=0V$, $I_D=250\mu A$	150	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	$V_{GS}=10V$, $I_D=10A$	---	52	60	mΩ
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS}=V_{DS}$, $I_D=250\mu A$	2.5	---	4.5	V
I_{DSS}	Drain-Source Leakage Current	$V_{DS}=150V$, $V_{GS}=0V$	---	---	1	μA
I_{GSS}	Gate-Source Leakage Current	$V_{GS}=\pm 20V$, $V_{DS}=0V$	---	---	± 100	nA
g_{fs}	Forward Transconductance	$V_{DS}=10V$, $I_D=10A$	---	7	---	S
R_g	Gate Resistance	$V_{DS}=0V$, $V_{GS}=0V$, $f=1\text{MHz}$	---	2.1	---	Ω
Q_g	Total Gate Charge	$I_D=10A$	---	7	---	nC
Q_{gs}	Gate-Source Charge	$V_{DS}=75V$	---	2.3	---	
Q_{gd}	Gate-Drain Charge	$V_{GS}=10V$ (Note 3)	---	1.9	---	
$T_{d(on)}$	Turn-On Delay Time	$V_{DS}=75V$	---	4	---	ns
T_r	Rise Time	$V_{GS}=10V$	---	3	---	
$T_{d(off)}$	Turn-Off Delay Time	$R_{GEN}=3\Omega$, $I_D=10A$	---	5.9	---	
T_f	Fall Time	(Note 3)	---	2.1	---	
C_{iss}	Input Capacitance	$V_{DS}=25V$, $V_{GS}=0V$, $f=1\text{MHz}$	---	440	---	pF
C_{oss}	Output Capacitance		---	300	---	
C_{rss}	Reverse Transfer Capacitance		---	15	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current	$V_G=V_D=0V$, Force Current	---	---	20	A
I_{SM}	Pulsed Source Current		---	---	80	A
V_{SD}	Diode Forward Voltage	$V_{GS}=0V$, $I_S=10A$, $T_J=25^{\circ}\text{C}$	---	0.87	1.2	V
t_{rr}	Reverse Recovery Time	$di/dt=100A/\mu s$	---	58	---	ns
Q_{rr}	Reverse Recovery Charge	$T_J=25^{\circ}\text{C}$, $I_F=10A$ (Note 3)	---	120	---	nC

Note :

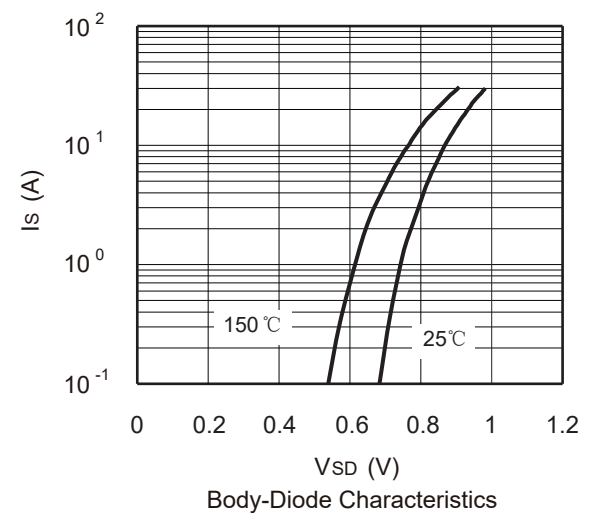
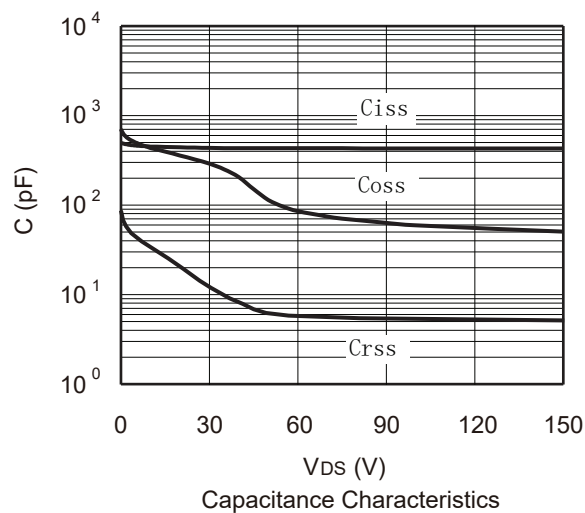
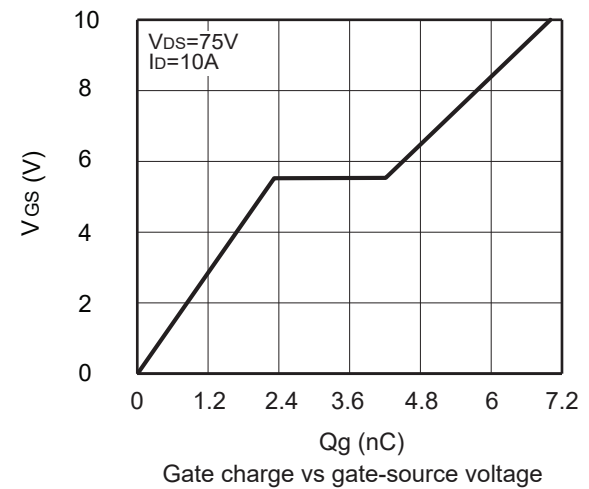
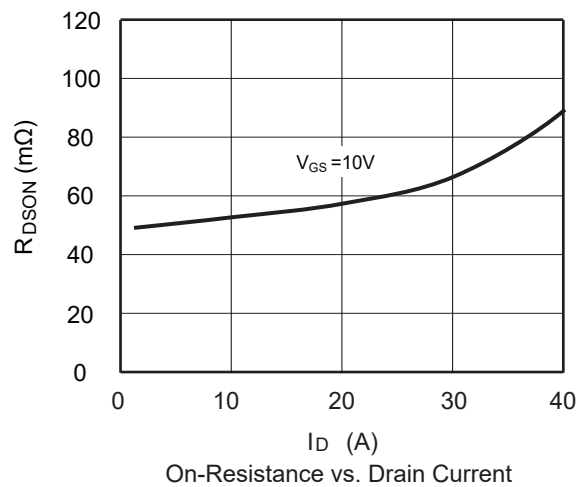
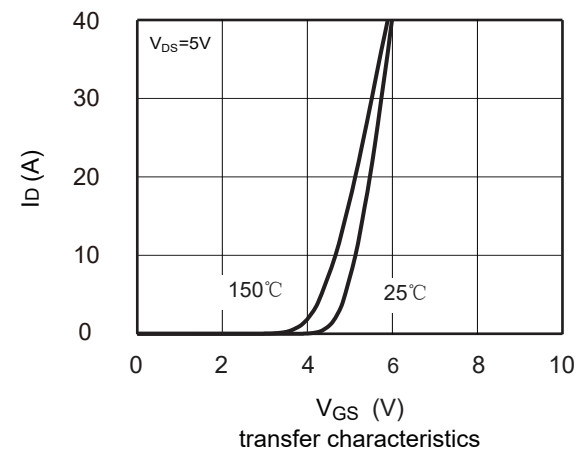
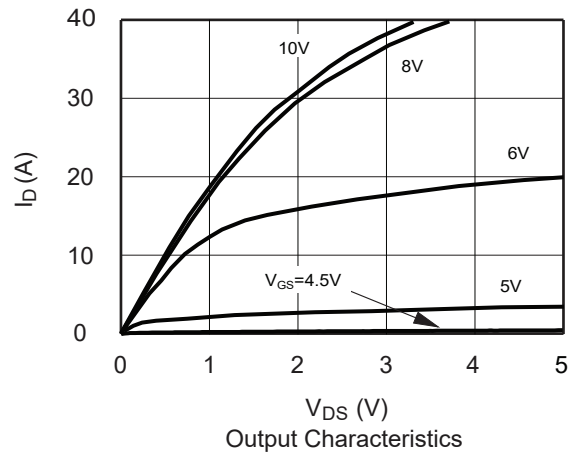
1. The EAS data shows Max. rating . The test condition is $V_{DD}=50V$, $V_{GS}=10V$, $L=0.5\text{mH}$, $I_{AS}=16.5A$.
2. Device mounted on FR-4 substrate PC board with 2oz copper in 1inch square cooling area.
3. Defined by design, not subject to production.

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

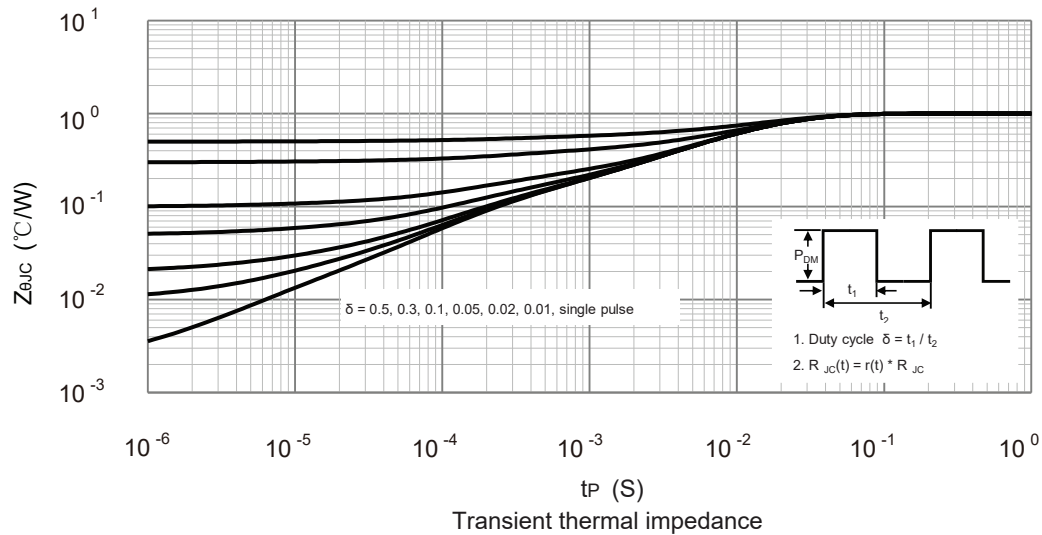
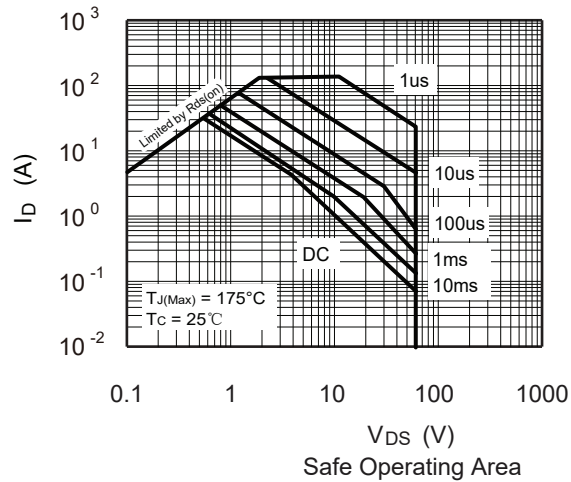
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Cmos reserves the right to improve product design, functions and reliability without notice. Please refer to the latest version of specification.

Typical Characteristics



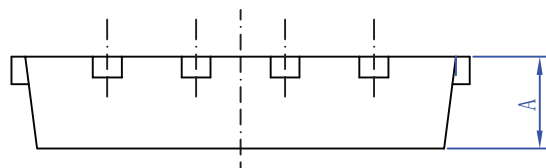
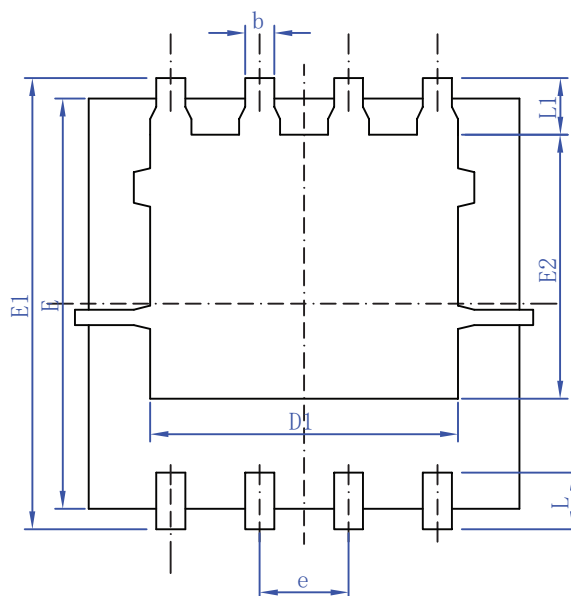
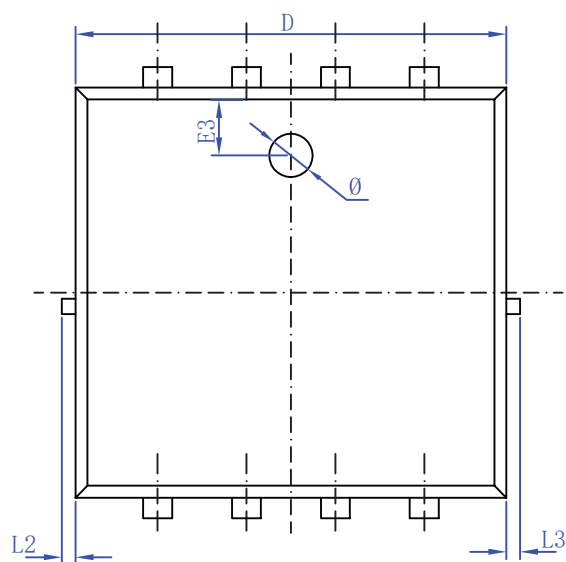
Typical Characteristics



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		