

General Description

The CMP90N20 uses advanced trench technology and design to provide excellent RDS(ON). These devices are well suited for high efficient switching mode power supplies and active power factor correction.

Features

- Fast switching
- 100% avalanche tested
- Improve dv/dt capability
- RoHS compliant

Product Summary

BVDSS	R _{DS(on)} max.	ID
200V	24mΩ	90A

Applications

- Uninterruptible power supplies
- DC/DC converter
- DC/AC inverter

TO-220 Pin Configuration



Type	Package	Marking
CMP90N20	TO-220	CMP90N20

Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V _{DS}	Drain-Source Voltage	200	V
V _{GS}	Gate-Source Voltage	±20	V
I _D @T _C =25°C	Continuous Drain Current	90	A
I _D @T _C =100°C	Continuous Drain Current	55	A
I _{DM}	Pulsed Drain Current ¹	360	A
EAS	Single Pulse Avalanche Energy ²	1000	mJ
P _D @T _C =25°C	Total Power Dissipation	350	W
T _{STG}	Storage Temperature Range	-55 to 175	°C
T _J	Operating Junction Temperature Range	-55 to 175	°C

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
R _{θJA}	Thermal Resistance Junction-ambient	---	40	°C/W
R _{θJC}	Thermal Resistance Junction-case	---	0.4	°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	$V_{GS}=0V$, $I_D=250\mu A$	200	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	$V_{GS}=10V$, $I_D=3A$	---	22	24	mΩ
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS}=V_{DS}$, $I_D=250\mu A$	2	---	4	V
I_{DSS}	Drain-Source Leakage Current	$V_{DS}=160V$, $V_{GS}=0V$	---	---	1	μA
I_{GSS}	Gate-Source Leakage Current	$V_{GS}=\pm 20V$, $V_{DS}=0V$	---	---	±100	nA
g_{fs}	Forward Transconductance	$V_{DS}=20V$, $I_D=3A$	---	13	---	S
R_g	Gate Resistance	$V_{DS}=0V$, $V_{GS}=0V$, $f=1\text{MHz}$	---	2	---	Ω
Q_g	Total Gate Charge	$I_D=60A$	---	60	---	nC
Q_{gs}	Gate-Source Charge	$V_{DD}=100V$	---	18	---	
Q_{gd}	Gate-Drain Charge	$V_{GS}=10V$	---	17	---	
$T_{d(on)}$	Turn-On Delay Time	$V_{DD}=100V$, $V_{GS}=10V$	---	15	---	ns
T_r	Rise Time	$R_L=1.66\Omega$	---	130	---	
$T_{d(off)}$	Turn-Off Delay Time	$I_D=60A$	---	30	---	
T_f	Fall Time	$R_G=1\Omega$	---	90	---	
C_{iss}	Input Capacitance	$V_{DS}=25V$, $V_{GS}=0V$, $f=1\text{MHz}$	---	6000	---	pF
C_{oss}	Output Capacitance		---	480	---	
C_{rss}	Reverse Transfer Capacitance		---	270	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current	$V_G=V_D=0V$, Force Current	---	---	90	A
I_{SM}	Pulsed Source Current		---	---	360	A
V_{SD}	Diode Forward Voltage	$V_{GS}=0V$, $I_S=1A$, $T_J=25^{\circ}\text{C}$	---	---	1.5	V

Note :

1.Repetitive rating; pulse width limited by maximum junction temperature.

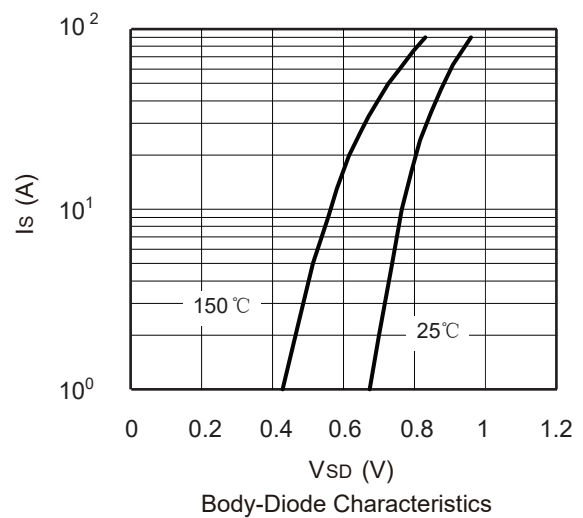
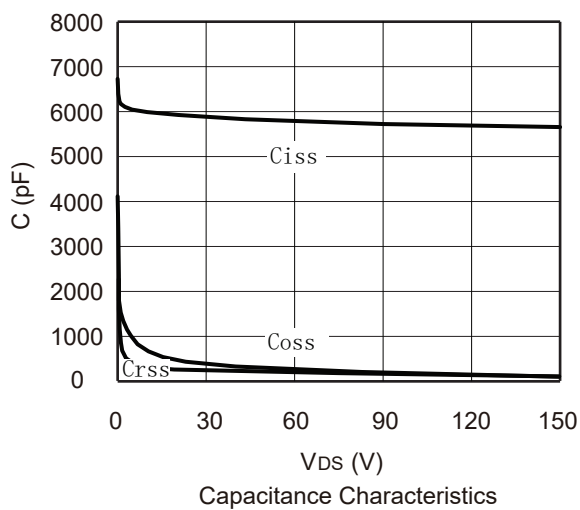
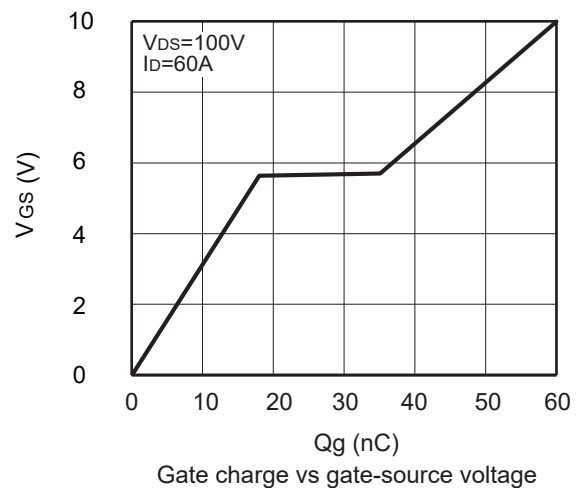
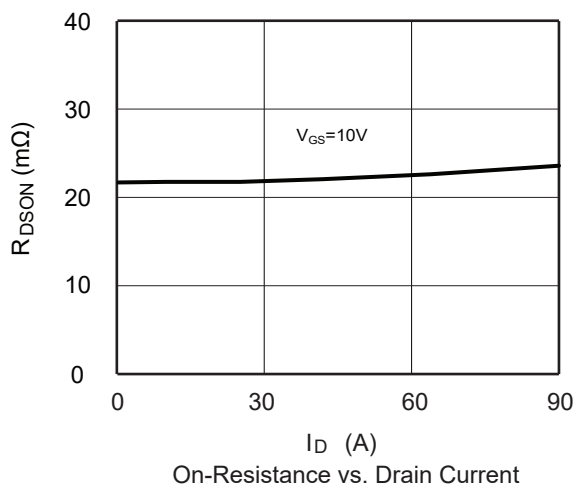
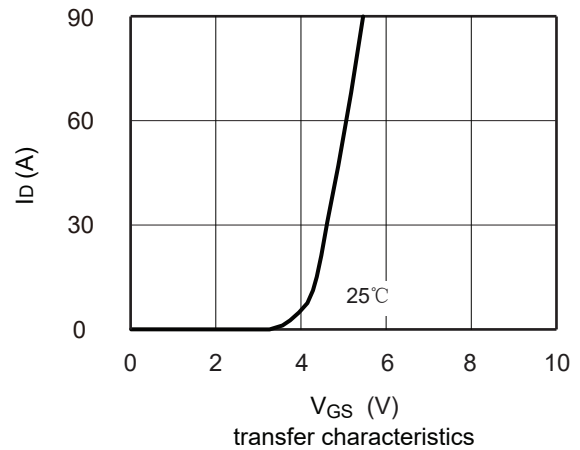
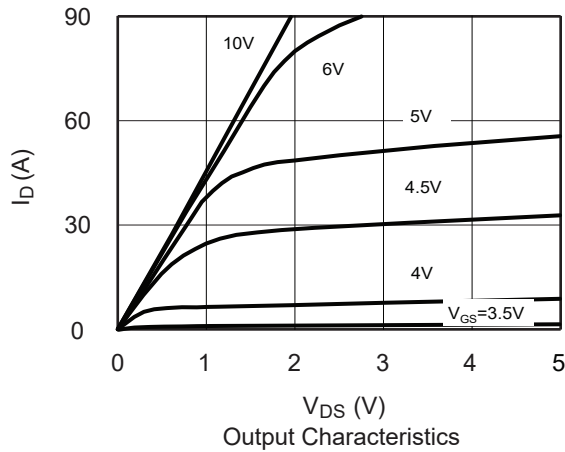
2.The test condition is $V_{DD}=50V$, $V_{GS}=10V$, $L=1\text{mH}$, $I_{AS}=45A$.

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.

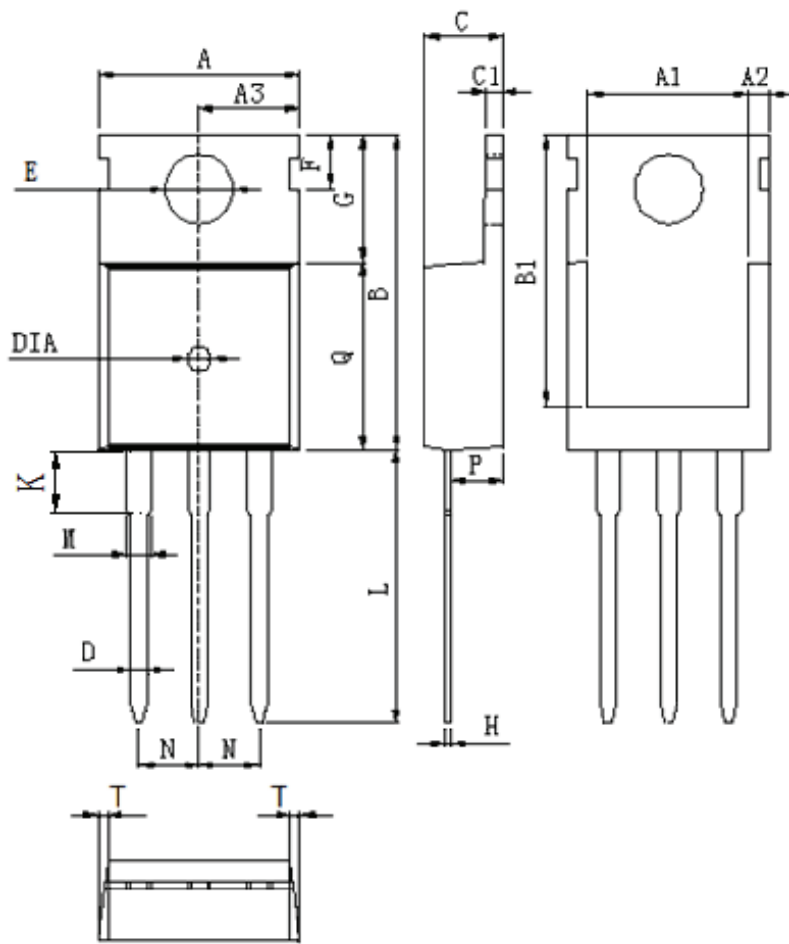
Typical Characteristics



Package Dimension

TO-220

Unit :mm



DIM	MILLIMETERS
A	10.0±0.3
A1	8.64±0.2
A2	1.15±0.1
A3	5.0±0.2
B	15.8±0.4
B1	13.2±0.3
C	4.56±0.1
C1	1.3±0.2
D	0.8±0.2
E	3.6±0.2
F	2.95±0.3
G	6.5±0.3
H	0.5±0.1
K	3.1±0.2
L	13.2±0.4
M	1.25±0.1
N	2.54±0.1
P	2.4±0.3
Q	9.0±0.3
T	W:0.35
DIA	⊙1.5 (deep 0.2)