CMP40N20/CMB40N20/CMI40N20/CMF40N20

Cmos

200V N-Channel MOSFET

General Description

The 40N20 uses advanced trench technology and design to provide excellent RDS(ON) with low gate charge. It can be used in a wide variety of applications.

Features

- Low Gate Charge
- Fast Switching
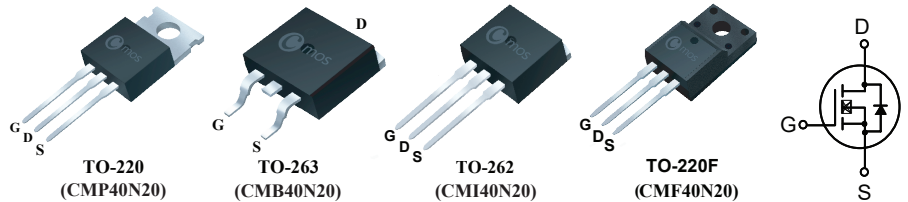- 100% Single Pulse avalanche energy Tested

Product Summary

BVDSS	RDSON	ID
200V	70mΩ	40A

Applications

- UPS
- Inverter
- Lighting

TO-220/263/262/220F Pin Configuration

TO-220 (CMP40N20) TO-263 (CMB40N20) TO-262 (CMI40N20) TO-220F (CMF40N20)

Absolute Maximum Ratings

Symbol	Parameter	220/263/262	220F	Units
V_{DS}	Drain-Source Voltage	200		V
V_{GS}	Gate-Source Voltage	±20		V
$I_D@T_C=25℃$	Continuous Drain Current	40	40*	A
$I_D@T_C=100℃$	Continuous Drain Current	25	25*	A
I_{DM}	Pulsed Drain Current[1]	120	120*	A
EAS	Single Pulse Avalanche Energy[2]	340		mJ
$P_D@T_C=25℃$	Total Power Dissipation	160	40	W
T_{STG}	Storage Temperature Range	-55 to 150		℃
T_J	Operating Junction Temperature Range	-55 to 150		℃

* Drain current limited by maximum junction temperature

Thermal Data

Symbol	Parameter	220/263/262	220F	Unit
$R_{θJA}$	Thermal Resistance Junction-ambient	62.5	62.5	℃/W
$R_{θJC}$	Thermal Resistance Junction-case	0.78	3.1	℃/W

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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	200	---	---	V
R$_{DS(ON)}$	Static Drain-Source On-Resistance	V$_{GS}$=10V , I$_D$=20A	---	---	70	mΩ
V$_{GS(th)}$	Gate Threshold Voltage	V$_{GS}$=V$_{DS}$, I$_D$=250uA	2	---	4	V
I$_{DSS}$	Drain-Source Leakage Current	V$_{DS}$=200V , V$_{GS}$=0V	---	---	1	uA
		V$_{DS}$=200V, V$_{GS}$=0V , T$_C$=125℃	---	---	10	
I$_{GSS}$	Gate-Source Leakage Current	V$_{GS}$=±20V , V$_{DS}$=0V	---	---	±100	nA
gfs	Forward Transconductance	V$_{DS}$=10V , I$_D$=20A	---	50	---	S
R$_g$	Gate Resistance	V$_{DS}$=0V , V$_{GS}$=0V , f=1MHz	---	0.25	---	Ω
Q$_g$	Total Gate Charge	I$_D$=20 A	---	70	---	nC
Q$_{gs}$	Gate-Source Charge	V$_{DD}$=100 V	---	17	---	
Q$_{gd}$	Gate-Drain Charge	V$_{GS}$=10 V	---	15	---	
T$_{d(on)}$	Turn-On Delay Time	V$_{DD}$=100 V	---	20	---	ns
T$_r$	Rise Time	I$_D$=20A	---	35	---	
T$_{d(off)}$	Turn-Off Delay Time	R$_G$=3.9Ω	---	70	---	
T$_f$	Fall Time	V$_{GS}$=10V	---	25	---	
C$_{iss}$	Input Capacitance		---	3400	---	pF
C$_{oss}$	Output Capacitance	V$_{DS}$=25V , V$_{GS}$=0V , f=1MHz	---	500	---	
C$_{rss}$	Reverse Transfer Capacitance		---	70	---	

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		---	---	120	A
V$_{SD}$	Diode Forward Voltage	V$_{GS}$=0V , I$_S$=40 A, T$_J$=25℃	---	---	1.5	V

Note :

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

2.The EAS data shows Max. rating . The test condition is V$_{DD}$=50V,V$_{GS}$=10V,L=1.0mH,I$_{AS}$=26A

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