

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

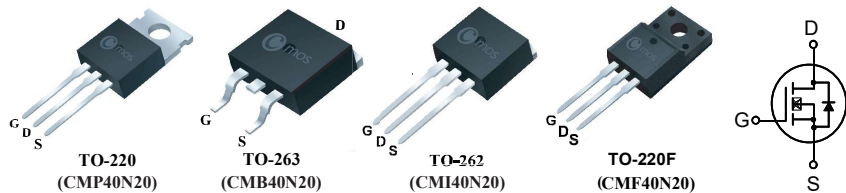
Product Summary

BVDSS	RDSON	ID
200V	70mΩ	40A

Applications

- UPS
- Inverter
- Lighting

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



Absolute Maximum Ratings

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

* Drain current limited by maximum junction temperature

Thermal Data

Symbol	Parameter	220/263/262	220F	Unit
$R_{\theta JA}$	Thermal Resistance Junction-ambient	62.5	62.5	$^\circ\text{C/W}$
$R_{\theta JC}$	Thermal Resistance Junction-case	0.78	3.1	$^\circ\text{C/W}$

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	$V_{GS}=10V$, $I_D=20A$	---	---	70	m Ω
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS}=V_{DS}$, $I_D=250\mu A$	2	---	4	V
I_{DSS}	Drain-Source Leakage Current	$V_{DS}=200V$, $V_{GS}=0V$	---	---	1	μA
		$V_{DS}=200V$, $V_{GS}=0V$, $T_C=125^{\circ}\text{C}$	---	---	10	
I_{GSS}	Gate-Source Leakage Current	$V_{GS}=\pm 20V$, $V_{DS}=0V$	---	---	± 100	nA
g_{fs}	Forward Transconductance	$V_{DS}=10V$, $I_D=20A$	---	50	---	S
R_g	Gate Resistance	$V_{DS}=0V$, $V_{GS}=0V$, $f=1\text{MHz}$	---	0.25	---	Ω
Q_g	Total Gate Charge	$I_D=20A$	---	70	---	nC
Q_{gs}	Gate-Source Charge	$V_{DD}=100V$	---	17	---	
Q_{gd}	Gate-Drain Charge	$V_{GS}=10V$	---	15	---	
$T_{d(on)}$	Turn-On Delay Time	$V_{DD}=100V$	---	20	---	ns
T_r	Rise Time	$I_D=20A$	---	35	---	
$T_{d(off)}$	Turn-Off Delay Time	$R_G=3.9\Omega$	---	70	---	
T_f	Fall Time	$V_{GS}=10V$	---	25	---	
C_{iss}	Input Capacitance	$V_{DS}=25V$, $V_{GS}=0V$, $f=1\text{MHz}$	---	3400	---	pF
C_{oss}	Output Capacitance		---	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	$V_{GS}=0V$, $I_S=40A$, $T_J=25^{\circ}\text{C}$	---	---	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 $V_{DD}=50V$, $V_{GS}=10V$, $L=1.0\text{mH}$, $I_{AS}=26A$

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