

### General Description

The 50N20 uses advanced planar stripe DMOS 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

### Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
$V_{DS}$	Drain-Source Voltage	200	V
$V_{GS}$	Gate-Source Voltage	$\pm 20$	V
$I_D@T_C=25^\circ C$	Continuous Drain Current	50	A
$I_D@T_C=100^\circ C$	Continuous Drain Current	40	A
$I_{DM}$	Pulsed Drain Current <sup>1</sup>	200	A
EAS	Single Pulse Avalanche Energy <sup>2</sup>	1350	mJ
$P_D@T_C=25^\circ C$	Total Power Dissipation	350	W
$T_{STG}$	Storage Temperature Range	-55 to 175	$^\circ C$
$T_J$	Operating Junction Temperature Range	-55 to 175	$^\circ C$

### Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-ambient	---	60	$^\circ C/W$
$R_{\theta JC}$	Thermal Resistance Junction-case	---	0.4	$^\circ C/W$

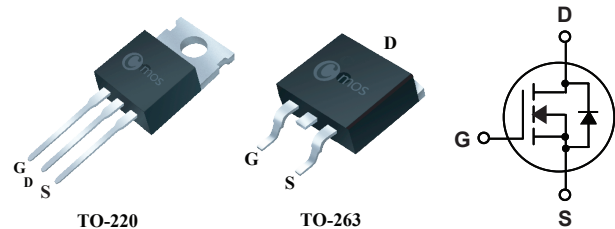
### Product Summary

BVDSS	R <sub>DS(on)</sub> max.	ID
200V	55m $\Omega$	50A

### Applications

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

### TO-220/263 Pin Configuration



Type	Package	Marking
CMP50N20	TO-220	CMP50N20
CMB50N20	TO-263	CMB50N20

**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	$V_{GS}=10V, I_D=25A$	---	---	55	m $\Omega$
$V_{GS(th)}$	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	$\mu A$
$I_{GSS}$	Gate-Source Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	---	---	$\pm 100$	nA
$g_{fs}$	Forward Transconductance	$V_{DS}=10V, I_D=25A$	---	35	---	S
$R_g$	Gate Resistance	$V_{DS}=0V, V_{GS}=0V, f=1\text{MHz}$	---	0.85	---	$\Omega$
$Q_g$	Total Gate Charge	$I_D=52A$	---	50	---	nC
$Q_{gs}$	Gate-Source Charge	$V_{DS}=160V$	---	20	---	
$Q_{gd}$	Gate-Drain Charge	$V_{GS}=10V$	---	25	---	
$T_{d(on)}$	Turn-On Delay Time	$V_{DD}=100V$ $I_D=20A$ $R_G=25\Omega$	---	50	---	ns
$T_r$	Rise Time		---	172	---	
$T_{d(off)}$	Turn-Off Delay Time		---	50	---	
$T_f$	Fall Time		---	30	---	
$C_{iss}$	Input Capacitance	$V_{DS}=25V, V_{GS}=0V, f=1\text{MHz}$	---	3700	---	pF
$C_{oss}$	Output Capacitance		---	550	---	
$C_{rss}$	Reverse Transfer Capacitance		---	65	---	

**Diode Characteristics**

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
$I_S$	Continuous Source Current	$V_G=V_D=0V$ , Force Current	---	---	50	A
$I_{SM}$	Pulsed Source Current		---	---	200	A
$V_{SD}$	Diode Forward Voltage	$V_{GS}=0V, I_F=25A, T_J=25^{\circ}\text{C}$	---	---	1.2	V
$t_{rr}$	Reverse Recovery Time	$V_{GS}=0V, I_F=50A$ $di_F/dt=100A/\mu s$	---	282	---	ns
$Q_{rr}$	Reverse Recovery Charge		---	2.3	---	$\mu C$

Note :

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

2.The test condition is  $V_{DD}=50V, V_{GS}=10V, L=1\text{mH}, I_{AS}=58A$ .

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.