CMP107N20/CMB107N20/CMI107N20/CMF107N20

200V, 8.5mΩ typ., 105A N-Channel MOSFET

General Description

The 107N20 uses advanced SGT technology to provide excellent RDS(ON).This device is ideal for high-frequency switching and synchronous rectification.

Product Summary

BVDSS	$R_{DS(on)}$ max.	ID
200V	10mΩ	105A

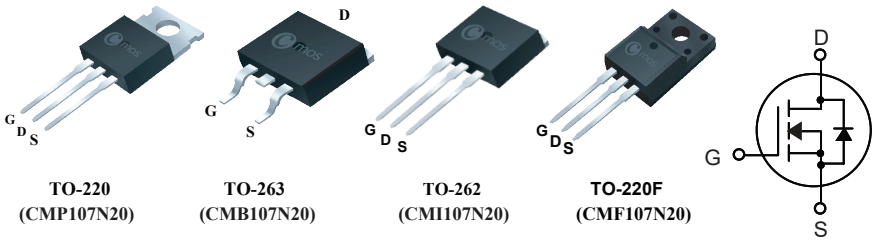
Applications

- Motor control and drive
- Battery management
- Uninterruptible Power Supply

Features

- Low On-Resistance
- 100% avalanche tested
- Low Gate Charge
- RoHS Compliant

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



TO-220 (CMP107N20) | TO-263 (CMB107N20) | TO-262 (CMI107N20) | TO-220F (CMF107N20)

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	105	105*	A
I_D@T_C=100℃	Continuous Drain Current	67	67*	A
I_{DM}	Pulsed Drain Current	420	420*	A
EAS	Single Pulse Avalanche Energy (Note 1)	2311		mJ
P_D@T_C=25℃	Total Power Dissipation	300	65	W
T_{STG}	Storage Temperature Range	-55 to 150		℃
T_J	Operating Junction Temperature Range	150		℃

* Drain current limited by maximum junction temperature.

Thermal Data

Symbol	Parameter	220/263/262	220F	Unit
$R_{\theta JA}$	Thermal Resistance Junction-ambient Max.(min. footprint)	62.5	62.5	℃/W
$R_{\theta JC}$	Thermal Resistance Junction-case Max.	0.42	1.92	℃/W

200V, 8.5mΩ typ., 105A N-Channel MOSFET

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=50A (TO-220)	---	8.5	10	mΩ
		V_{GS}=10V , I_D=50A (TO-263)	---	8.3	9.5	
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =250μA	2	---	4	V
I_{DSS}	Drain-Source Leakage Current	V_{DS}=200V , V_{GS}=0V	---	---	1	uA
I_{GSS}	Gate-Source Leakage Current	V_{GS}= ±20V , V_{DS}=0V	---	---	±100	nA
gfs	Forward Transconductance	V_{DS}=10V, I_D =20A	---	46	---	S
R_g	Gate Resistance	V_{DS}=0V , V_{GS}=0V , f=1MHz	---	3.2	---	Ω
Q_g	Total Gate Charge	V_{DS}=100V , I_D=50A V_{GS}=10V	---	69	---	nC
Q_{gs}	Gate-Source Charge		---	25	---	
Q_{gd}	Gate-Drain Charge		---	16	---	
$T_{d(on)}$	Turn-On Delay Time	V_{DS}=100V , V_{GS}=10V , I_D=50A R_G =2.7Ω	---	16	---	ns
T_r	Rise Time		---	82	---	
$T_{d(off)}$	Turn-Off Delay Time		---	55	---	
T_f	Fall Time		---	84	---	
C_{iss}	Input Capacitance	V_{DS}=25V , V_{GS}=0V , f=1MHz	---	5450	---	pF
C_{oss}	Output Capacitance		---	3150	---	
C_{rss}	Reverse Transfer Capacitance		---	140	---	

Diode Characteristics

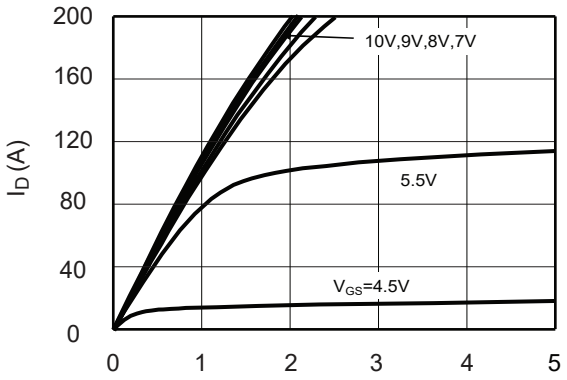
Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Diode continuous forward current	V_G=V_D=0V , Force Current	---	---	105	A
$I_{S,pulse}$	Diode pulse current		---	---	420	A
V_{SD}	Diode Forward Voltage	V_{GS}=0V , I_F=50A , Tj=25 ℃	---	0.83	1.4	V

Note :

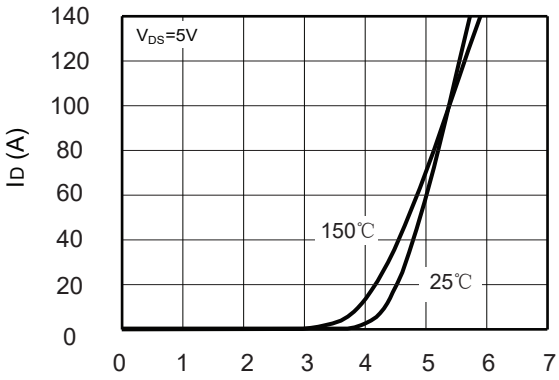
1.The EAS data shows Max. rating .The test condition is V_{DS}=80V , V_{GS}=10V , L=10mH , I_{AS}=21.5A.

This product has been designed and qualified for the counsumer market.
Cmos assumes no liability for customers' product design or applications.
Cmos reserver the right to improve product design ,functions and reliability wihtout notice.

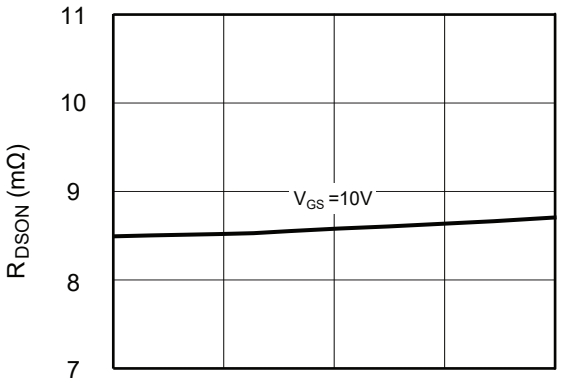
Typical Characteristics



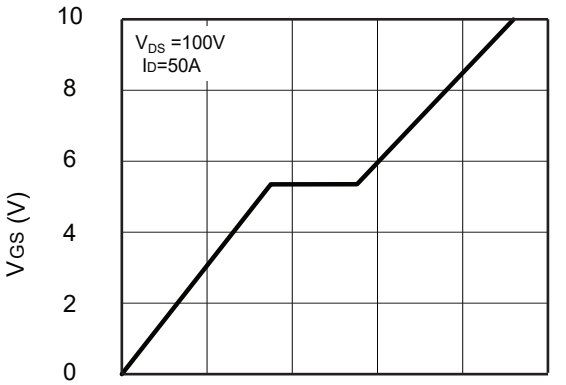
Output Characteristics



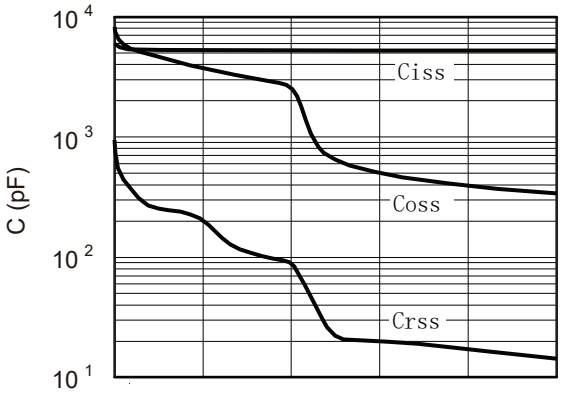
transfer characteristics



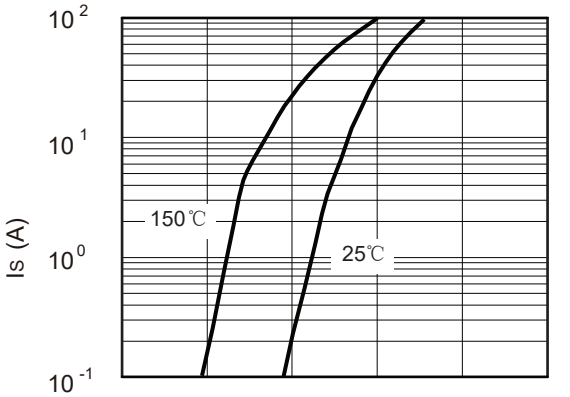
drain-source on-resistance



Gate charge vs gate-source voltage



Capacitance Characteristics



Body-Diode Characteristics