CMP20N60/CMB20N60/CMI20N60/CMF20N60

600V N-Channel MOSFET

General Description

The 20N60 have been fabricated using an advanced high voltage MOSFET process that is designed to deliver high levels of performance and robustness in popular AC-DC applications.These parts can be adopted quickly into new and existing offline power supply designs.

Product Summary

BVDSS	RDSON	ID
600V	0.37Ω	20A

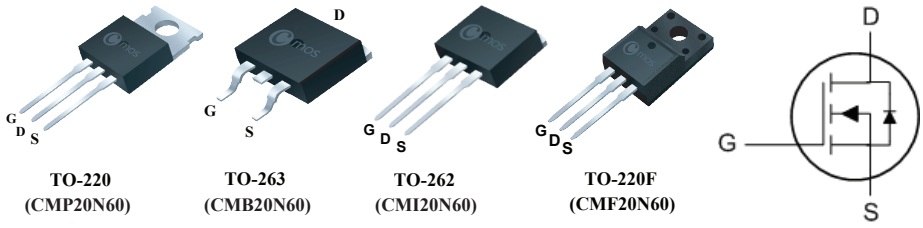
Applications

- Charger
- Adaptor
- Power Supply

Features

- Fast switching
- 100% avalanche tested
- RoHS Compliant

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



Absolute Maximum Ratings

Symbol	Parameter		220/263/262	220F	Units
V_{DS}	Drain-Source Voltage		600		V
V_{GS}	Gate-Source Voltage		±30		V
I_D@T_C=25℃	Continuous Drain Current		20	20*	A
I_D@T_C=100℃	Continuous Drain Current		11.5	11.5*	A
I_{DM}	Pulsed Drain Current	(Note 1)	80	80*	A
EAS	Single Pulse Avalanche Energy	(Note 2)	880		mJ
P_D@T_C=25℃	Total Power Dissipation		400	45	W
T_{STG}	Storage Temperature Range		-55 to 150		℃
T_J	Operating Junction Temperature Range		-55 to 150		℃

Thermal Data

Symbol	Parameter		220/263/262	220F	Unit
$R_{\theta JA}$	Thermal Resistance Junction-ambient	(Note 3,4)	65	65	℃/W
$R_{\theta JC}$	Thermal Resistance Junction-case		0.3	2.5	℃/W

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	600	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	V_{GS}=10V , I_D=9A	---	---	0.37	Ω
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =250uA	3	---	5	V
I_{DSS}	Drain-Source Leakage Current	V_{DS}=600V , V_{GS}=0V	---	---	1	uA
		V_{DS}=480V , T_C=125℃	---	---	10	
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±30V , V_{DS}=0V	---	---	±100	nA
gfs	Forward Transconductance	V_{DS}=10V , I_D=15A	---	30	---	S
Q_g	Total Gate Charge	I_D=20A V_{DS}=480V V_{GS}=10V	---	56	---	nC
Q_{gs}	Gate-Source Charge		---	22	---	
Q_{gd}	Gate-Drain Charge		---	20	---	
$T_{d(on)}$	Turn-On Delay Time	V_{DS}=300V V_{GS}=10V I_D=18A R_G=25Ω	---	200	---	ns
T_r	Rise Time		---	145	---	
$T_{d(off)}$	Turn-Off Delay Time		---	430	---	
T_f	Fall Time		---	80	---	
C_{iss}	Input Capacitance	V_{DS}=25V , V_{GS}=0V , f=1MHz	---	4000	---	pF
C_{oss}	Output Capacitance		---	260	---	
C_{rss}	Reverse Transfer Capacitance		---	24	---	

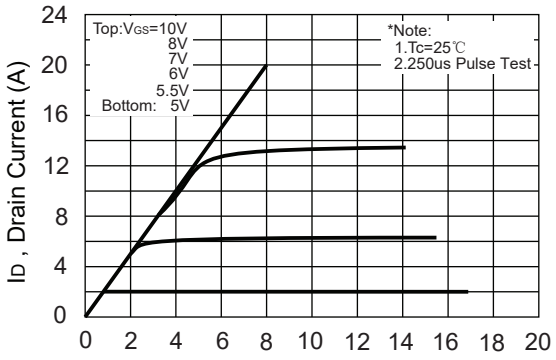
Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current	V_G=V_D=0V , Force Current	---	---	20	A
I_{SM}	Pulsed Source Current		---	---	80	A
V_{SD}	Diode Forward Voltage	V_{GS}=0V , I_S=15A	---	---	1.2	V

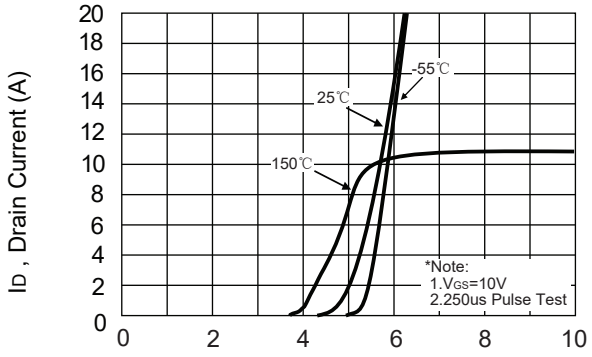
Notes:

1. Repetitive Rating : Pulse width limited by maximum junction temperature.
2. L=4.4mH, I_{AS}=20A, V_{DD}=50V, R_G=25Ω, Starting T_J=25℃.
3. The value of $R_{\theta JA}$ is measured with the device in a still air environment with T_A=25℃.
4. The $R_{\theta JA}$ is the sum of the thermal impedance from junction to case $R_{\theta JC}$ and case to ambient.

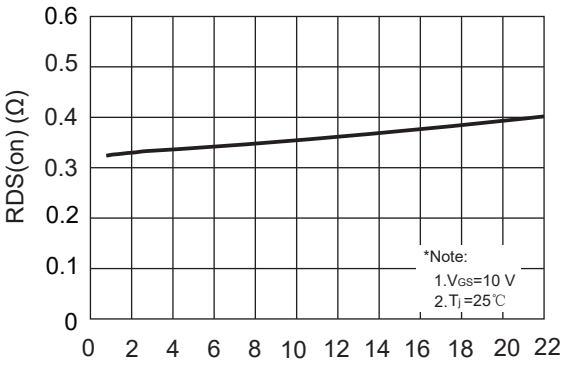
Typical Characteristics



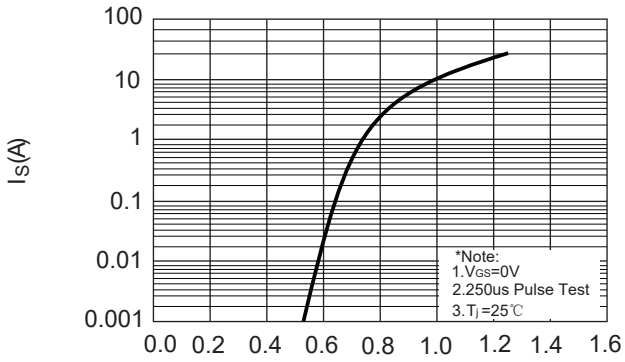
VDS , Drain-to-Source Voltage (V)
Output Characteristics



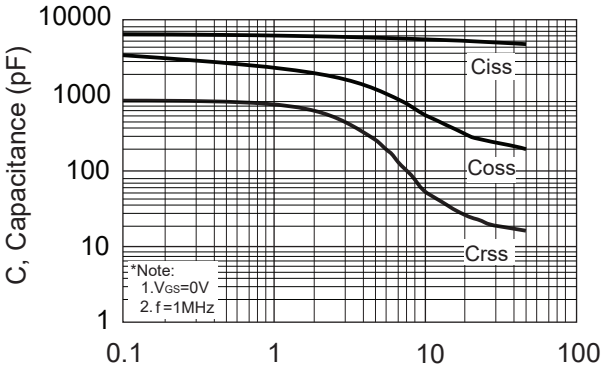
VGS , Gate-to-Source Voltage (V)
Transfer Characteristics



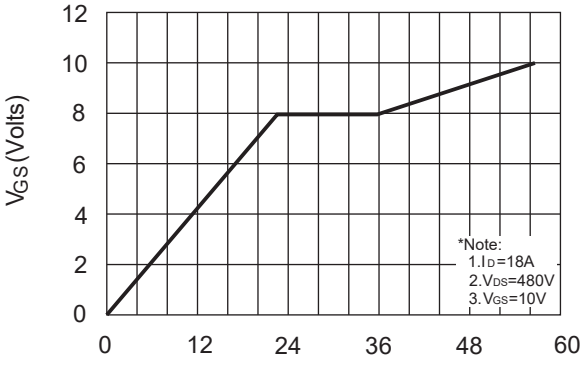
ID(A)
On-Resistance vs. Drain Current and Gate Voltage



VSD(Volts)
Body-Diode Characteristics

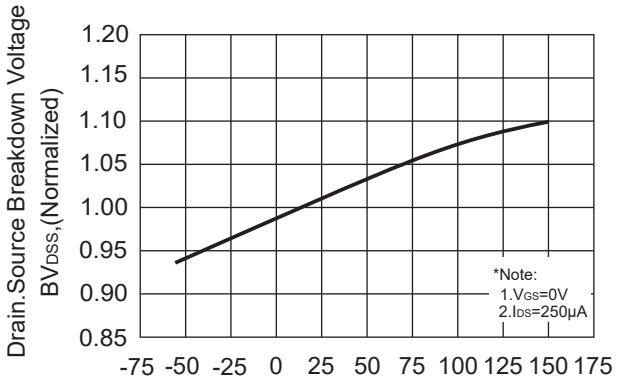


VDS (Volts)
Capacitance Characteristics

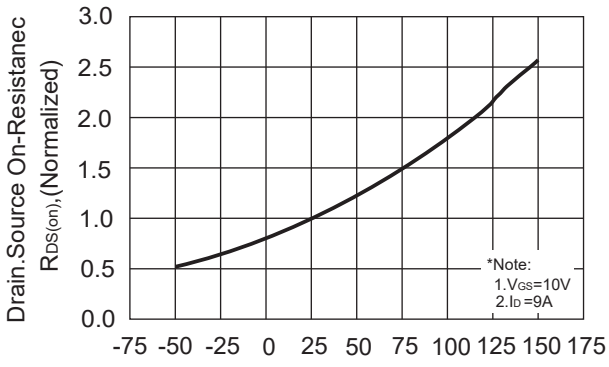


Qg(nC)
Gate-Charge Characteristics

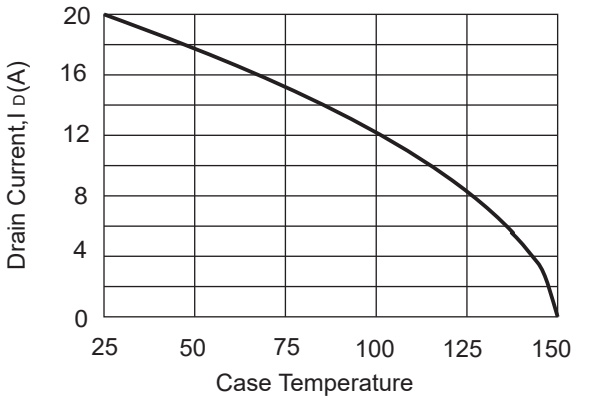
Typical Characteristics



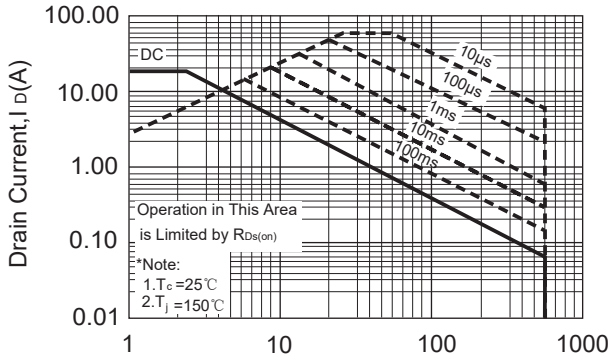
Breakdown Voltage Variation vs, Temperature



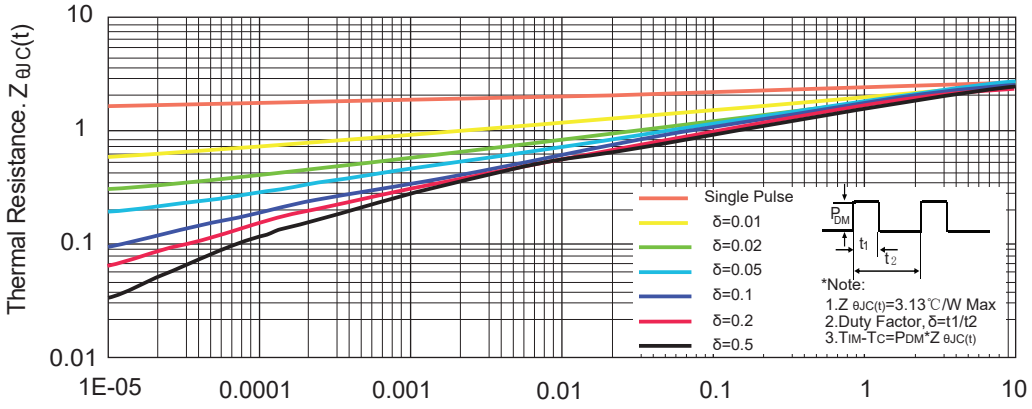
On-Resistance Variation vs. Temperature



Maximum Drain Current vs.Case Temperature



Maximum Safe Operating Area



Transient Thermal Impedance