CMP006N12/CMB006N12

120V N-Channel MOSFET

General Description

The 006N12 uses advanced trench technology and design to provide excellent RDS(ON) . This device is suitable for PWM, load switching and general purpose applications.

Product Summary

BVDSS	RDSON	ID
120V	5.8mΩ	120A

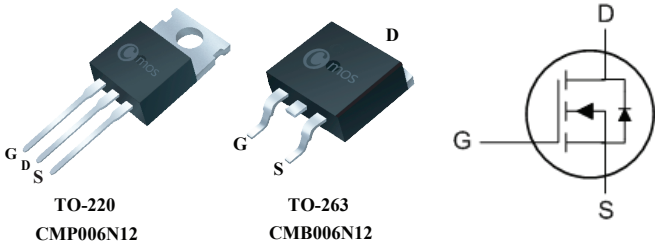
Applications

- Synchronous Rectification
- Power Management in Inverter Systems
- Motor Driver

Features

- Low On-Resistance
- Reliable and Rugged
- RoHS Compliant

TO-220/263 Pin Configuration



TO-220
CMP006N12

TO-263
CMB006N12

Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	120	V
V_{GS}	Gate-Source Voltage	±20	V
I_D@T_C=25℃	Continuous Drain Current	120	A
I_D@T_C=100℃	Continuous Drain Current	96	A
I_{DM}	Pulsed Drain Current	360	A
EAS	Single Pulse Avalanche Energy [1]	480	mJ
P_D	Total Power Dissipation	250	W
T_{STG}	Storage Temperature Range	-55 to 150	℃
T_J	Operating Junction Temperature Range	-55 to 150	℃

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-ambient(Steady State)	---	62.5	℃/W
$R_{\theta JC}$	Thermal Resistance Junction -Case(Steady State)	---	0.5	℃/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=250μA	120	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	V_{GS}=10V , I_D=20A	---	5.1	5.8	mΩ
		V_{GS}=4.5V , I_D=20A	---	6.3	7	mΩ
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =150uA	1	---	3	V
I_{DSS}	Drain-Source Leakage Current	V_{DS}=100V, V_{GS} =0V	---	---	1	μA
I_{GSS}	Gate-Source Leakage Current	V_{GS} =±20V, V_{DS}=0V	---	---	±100	nA
gfs	Forward Transconductance	V_{DS}=10V,I_D=18A	---	34	---	S
R_g	Gate Resistance	V_{DS}=0V , V_{GS}=0V , f=1MHz	---	1.5	---	Ω
Q_g	Total Gate Charge	I_D=20A V_{DS} =50 V V_{GS} =10V	---	60	---	nC
Q_{gs}	Gate-Source Charge		---	7	---	
Q_{gd}	Gate-Drain Charge		---	9	---	
$T_{d(on)}$	Turn-On Delay Time	V_{DD} =50 V I_D =20A V_{GS} =10V R_{GEN}= 10Ω	---	14	---	ns
T_r	Rise Time		---	5	---	
$T_{d(off)}$	Turn-Off Delay Time		---	41	---	
T_f	Fall Time		---	7	---	
C_{iss}	Input Capacitance	V_{DS}=25V , V_{GS}=0V , f=1MHz	---	4000	---	pF
C_{oss}	Output Capacitance		---	400	---	
C_{rss}	Reverse Transfer Capacitance		---	15	---	

Diode Characteristics

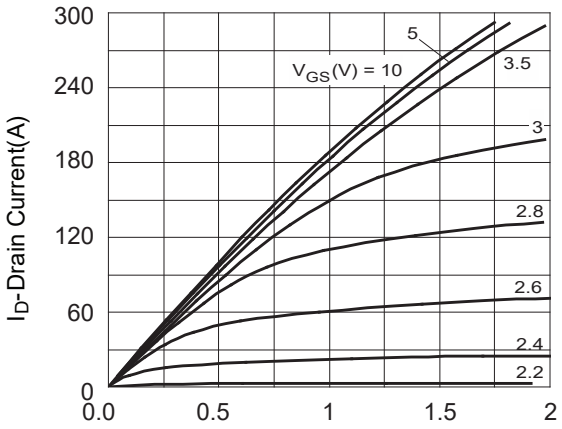
Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current	V_G=V_D=0V , Force Current	---	---	120	A
I_{SM}	Pulsed Source Current		---	---	360	A
V_{SD}	Diode Forward Voltage	V_{GS}=0V , I_S=20 A , T_J=25℃	---	---	1.2	V

Notes:

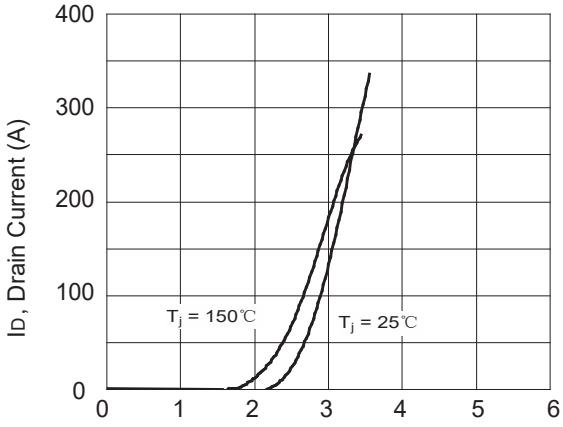
1.Starting T_J = 25 ℃, L = 1mH, I_D =31A, V_{DD} = 50V, V_{GS} = 10V.

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.

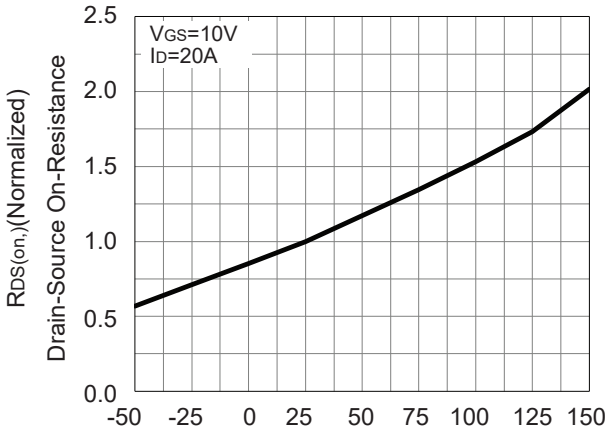
Typical Characteristics



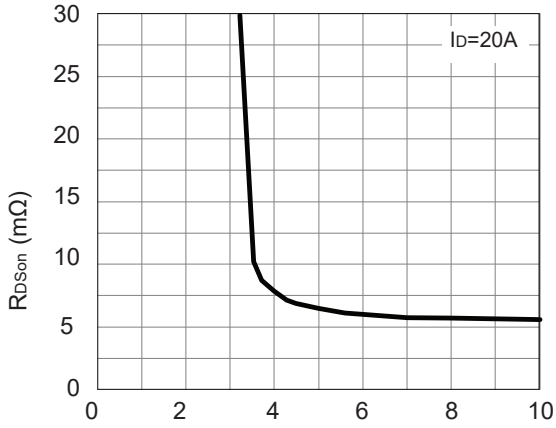
On-Region Characteristics



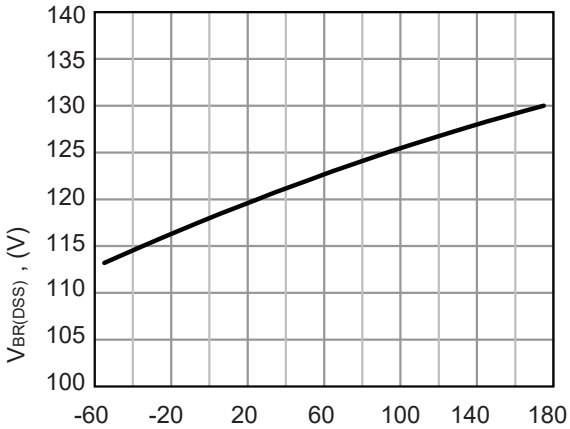
Transfer Characteristics



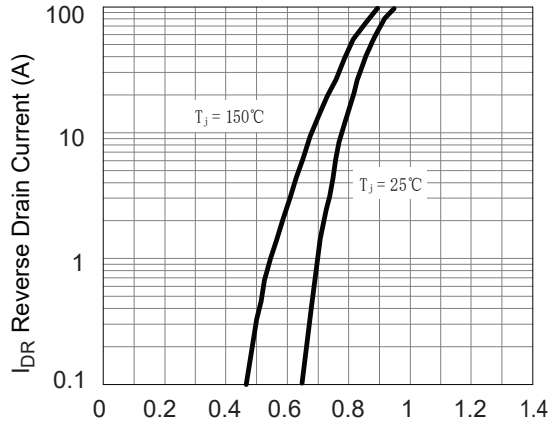
On-Resistance Variation with Temperature



On-Resistance Variation with Gate to Source Volatge

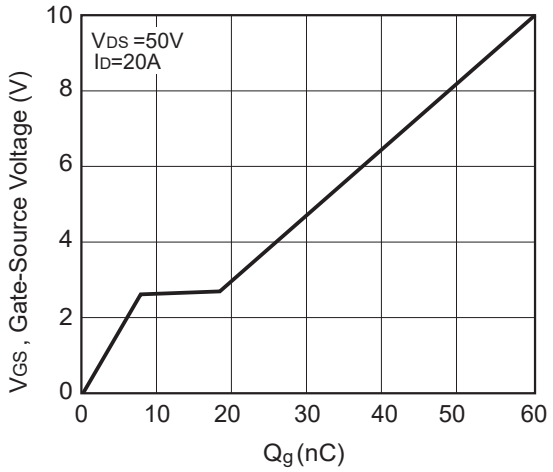


Drain-source breakdown voltage

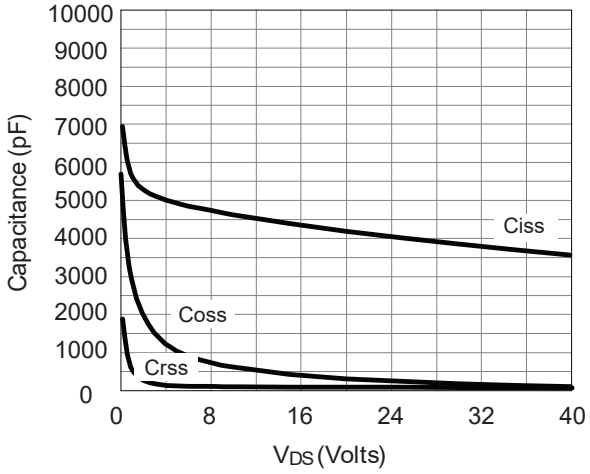


Body Diode Forward Voltage Variation with Source Current and Temperature

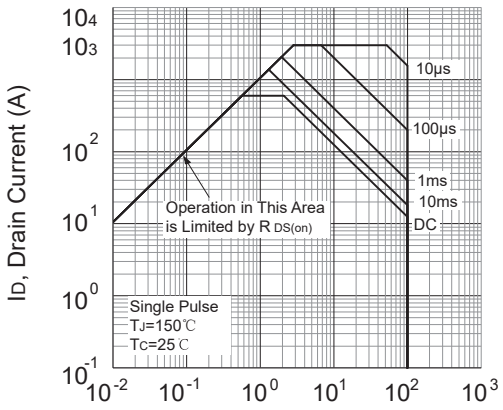
Typical Characteristics



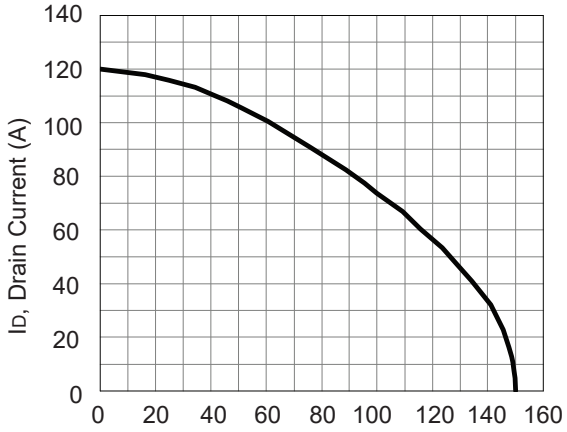
Gate Charge Characteristics



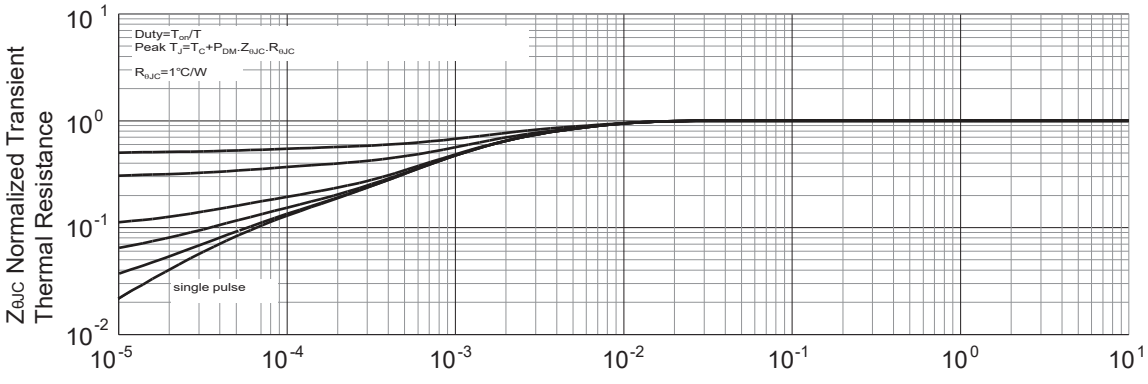
Capacitance Characteristics



Maximum Safe Operating Area



forward transconductance



Normalized Maximum Transient Thermal Impedance, Junction-to-Case