

General Description

The 006N12B uses advanced trench technology and design to provide excellent RDS(ON) . This device is suitable for PWM, load switching and general purpose applications.

Features

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

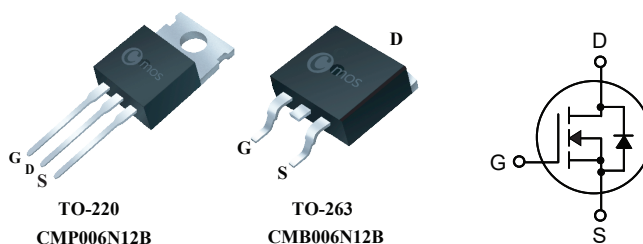
Product Summary

BVDSS	RDSON	ID
120V	7.5mΩ	100A

Applications

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

TO-220/ 263 Pin Configuration



Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	120	V
V_{GS}	Gate-Source Voltage	± 20	V
$I_D@T_C=25^{\circ}C$	Continuous Drain Current	100	A
$I_D@T_C=100^{\circ}C$	Continuous Drain Current	80	A
I_{DM}	Pulsed Drain Current	400	A
EAS	Single Pulse Avalanche Energy ¹	512	mJ
P_D	Total Power Dissipation	250	W
T_{STG}	Storage Temperature Range	-55 to 150	$^{\circ}C$
T_J	Operating Junction Temperature Range	-55 to 150	$^{\circ}C$

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-ambient(Steady State)	---	62.5	$^{\circ}C/W$
$R_{\theta JC}$	Thermal Resistance Junction -Case(Steady State)	---	0.5	$^{\circ}C/W$

Electrical Characteristics ($T_J=25^{\circ}\text{C}$, unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V$, $I_D=250\mu A$	120	---	---	V
$R_{DS(on)}$	Static Drain-Source On-Resistance	$V_{GS}=10V$, $I_D=20A$	---	6.6	7.5	$m\Omega$
		$V_{GS}=4.5V$, $I_D=20A$	---	7.7	10	$m\Omega$
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS}=V_{DS}$, $I_D=150\mu A$	1	---	3	V
I_{DSS}	Drain-Source Leakage Current	$V_{DS}=96V$, $V_{GS}=0V$	---	---	1	μA
I_{GSS}	Gate-Source Leakage Current	$V_{GS}=\pm 20V$, $V_{DS}=0V$	---	---	± 100	nA
g_{fs}	Forward Transconductance	$V_{DS}=10V$, $I_D=18A$	---	34	---	S
R_g	Gate Resistance	$V_{DS}=0V$, $V_{GS}=0V$, $f=1MHz$	---	2	---	Ω
Q_g	Total Gate Charge	$I_D=100A$	---	76	---	nC
Q_{gs}	Gate-Source Charge	$V_{DS}=60V$	---	27	---	
Q_{gd}	Gate-Drain Charge	$V_{GS}=10V$	---	20	---	
$T_{d(on)}$	Turn-On Delay Time	$V_{DD}=60V$	---	25	---	ns
T_r	Rise Time	$I_D=100A$	---	50	---	
$T_{d(off)}$	Turn-Off Delay Time	$V_{GS}=10V$	---	40	---	
T_f	Fall Time	$R_{GEN}=1.6\Omega$	---	10	---	
C_{iss}	Input Capacitance	$V_{DS}=25V$, $V_{GS}=0V$, $f=1MHz$	---	4200	---	pF
C_{oss}	Output Capacitance		---	1700	---	
C_{rss}	Reverse Transfer Capacitance		---	160	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current	$V_G=V_D=0V$, Force Current	---	---	100	A
I_{SM}	Pulsed Source Current		---	---	400	A
V_{SD}	Diode Forward Voltage	$V_{GS}=0V$, $I_S=20A$, $T_J=25^{\circ}\text{C}$	---	0.8	1.2	V

Notes:

1. Starting $T_J = 25^{\circ}\text{C}$, $L = 1mH$, $I_D = 32A$, $V_{DD} = 50V$, $V_{GS} = 10V$.

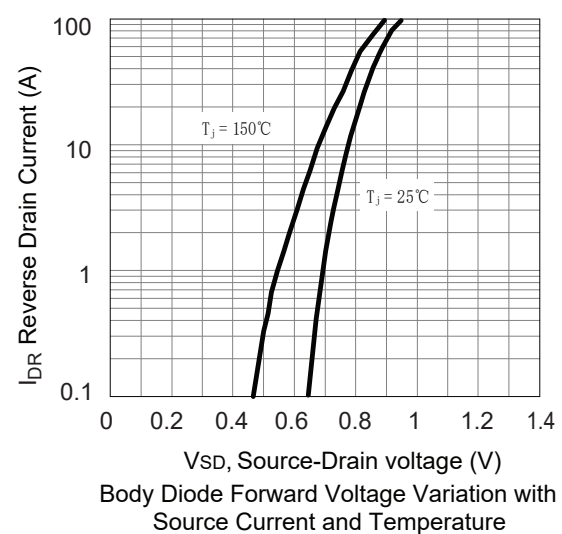
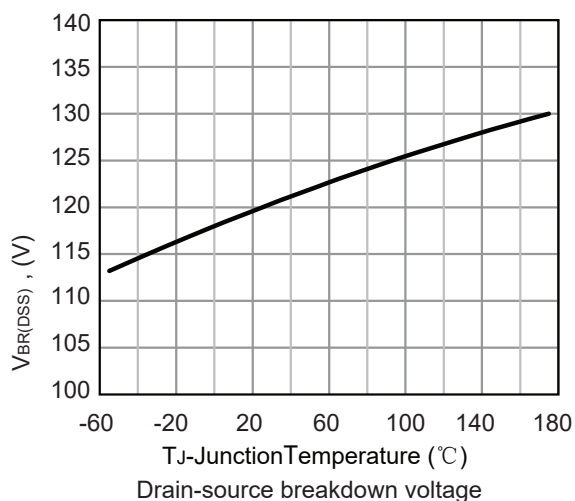
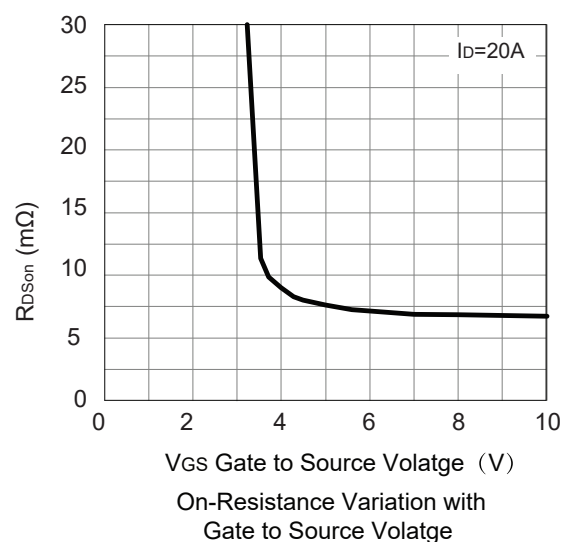
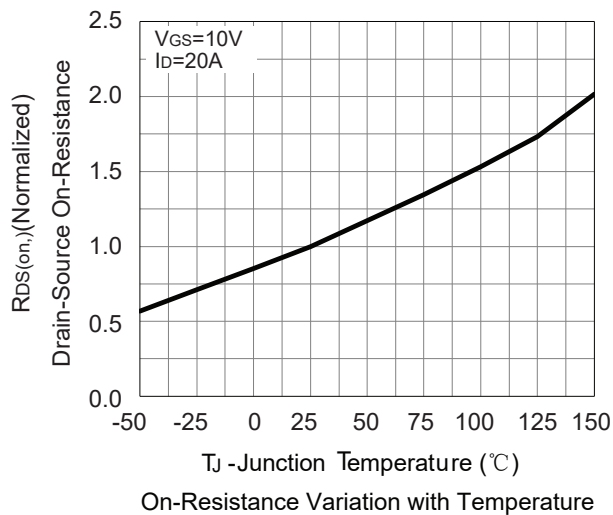
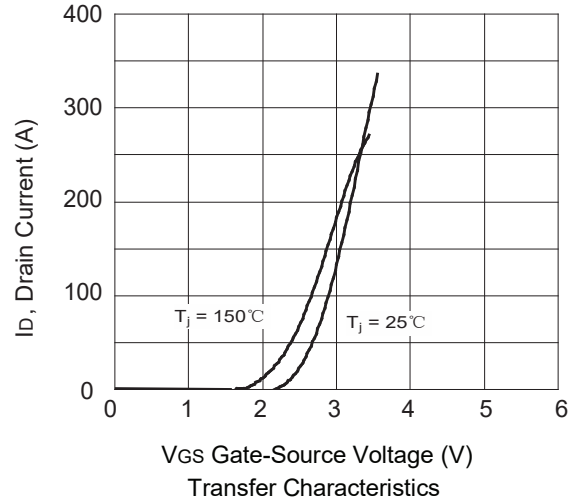
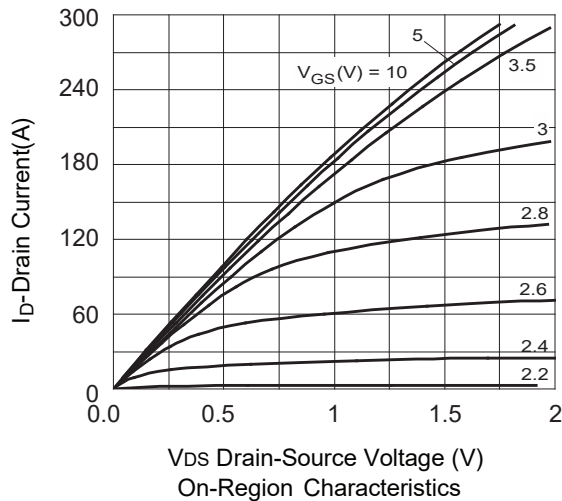
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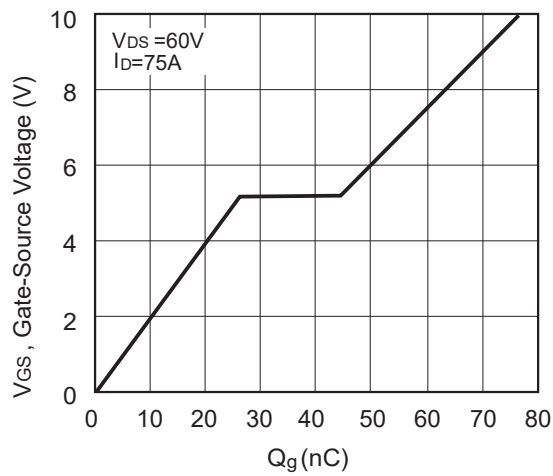
Typical Characteristics

120V N-Channel MOSFET

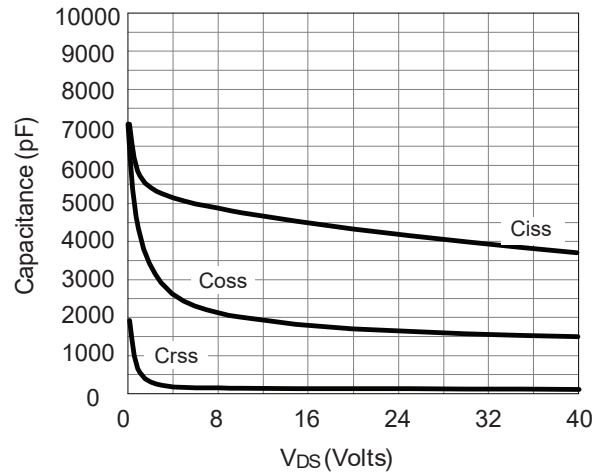


Typical Characteristics

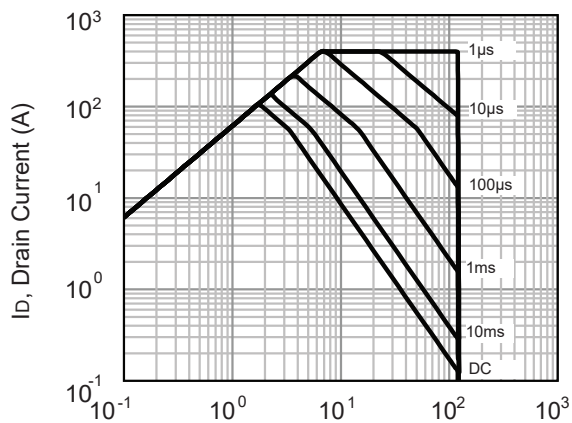
120V N-Channel MOSFET



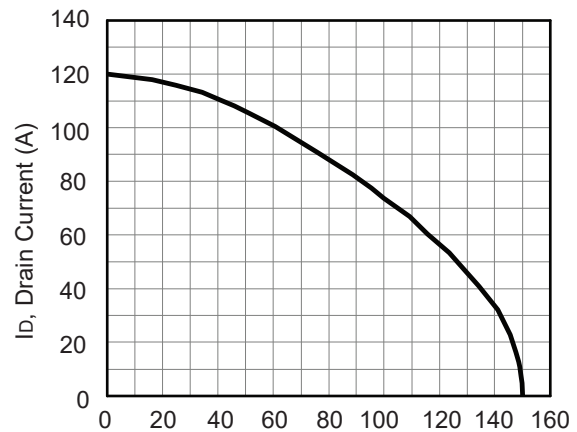
Gate Charge Characteristics



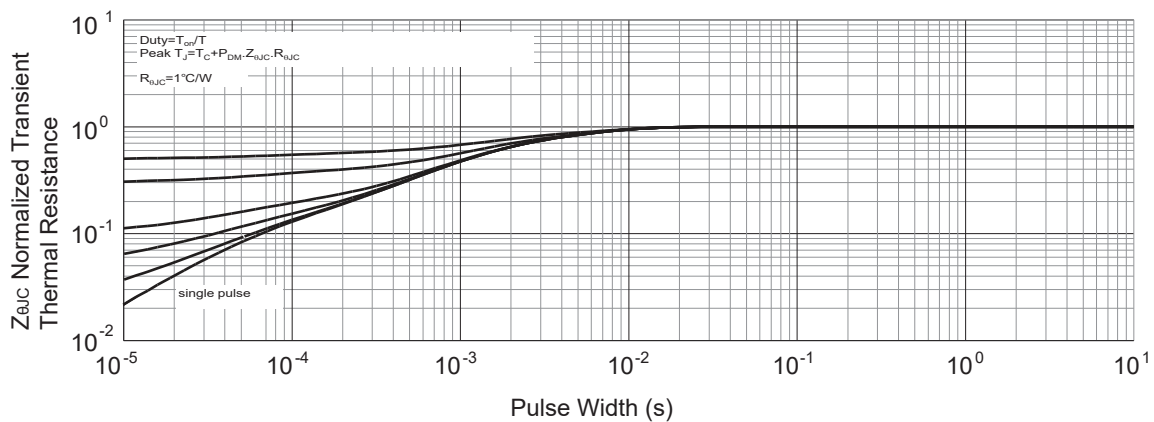
Capacitance Characteristics



V_{DS} Drain-to-Source Voltage(V)
Maximum Safe Operating Area



T_J , Junction Temperature ($^{\circ}C$)
forward transconductance



Normalized Maximum Transient Thermal Impedance, Junction-to-Case