

General Description

The 100N03 is N-ch MOSFETs with extreme high cell density, which provide excellent R_{DS(on)} and gate charge for most of the synchronous buck converter applications.

Features

- Simple Drive Requirement
- Fast Switching
- Low On-Resistance

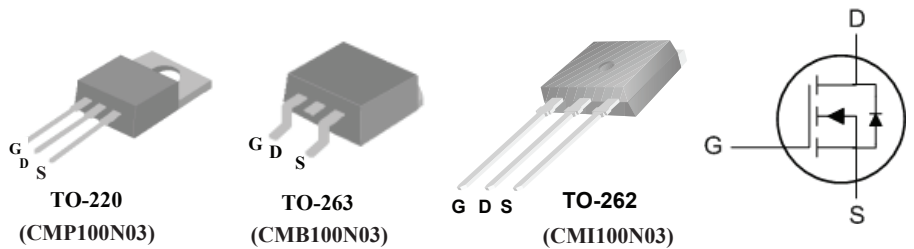
Product Summary

BVDSS	R _{DS(on)}	I _D
30V	< 4mΩ	100A

Applications

- HIGH CURRENT, HIGH SPEED SWITCHING
- DC-DC & DC-AC CONVERTERS
- MOTOR CONTROL, AUDIO AMPLIFIERS
- SOLENOID AND RELAY DRIVERS
- AUTOMOTIVE ENVIRONMENT

TO220 / TO263 / TO262 Pin Configuration



Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V _{DS}	Drain-Source Voltage	30	V
V _{GS}	Gate-Source Voltage	±20	V
I _D @T _C =25°C	Continuous Drain Current ¹	100	A
I _D @T _C =100°C	Continuous Drain Current ¹	56	A
I _{DM}	Pulsed Drain Current ²	320	A
EAS	Single Pulse Avalanche Energy ³	600	mJ
I _{AS}	Avalanche Current	56	A
P _D	Total Power Dissipation	210	W
T _{STG}	Storage Temperature Range	-65 to 175	°C
T _J	Operating Junction Temperature Range	-65 to 175	°C

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
R _{θJA}	Thermal Resistance Junction-ambient ¹	---	62.5	°C/W
R _{θJC}	Thermal Resistance Junction-case	---	0.7	°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	$V_{GS}=0V, I_D=250\mu A$	30	---	---	V
$\Delta BV_{DSS}/\Delta T_J$	BVDSS Temperature Coefficient	Reference to 25°C , $I_D=1\text{mA}$	---	0.035	---	V/ $^\circ\text{C}$
$R_{DS(ON)}$	Static Drain-Source On-Resistance ²	$V_{GS}=10V, I_D=40A$	2.7	3	3.8	m Ω
		$V_{GS}=4.5V, I_D=40A$	---	4	5.5	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS}=V_{DS}, I_D=250\mu A$	1	---	3	V
I_{DSS}	Drain-Source Leakage Current	$V_{DS}=30V, V_{GS}=0V$	---	---	1	μA
		$V_{DS}=30V, V_{GS}=0V, TC=125^\circ\text{C}$	---	---	10	
I_{GSS}	Gate-Source Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	---	---	± 100	nA
g_{fs}	Forward Transconductance	$V_{DS}>I_{D(on)} \times R_{DS(on)max}, I_D=15A$	---	50	---	S
R_g	Gate Resistance	$V_{DS}=0V, V_{GS}=0V, f=1\text{MHz}$	---	---	4.7	Ω
Q_g	Total Gate Charge	$I_D=100A$	---	84	114	nC
Q_{gs}	Gate-Source Charge	$V_{DD}=24V$	---	21	---	
Q_{gd}	Gate-Drain Charge	$V_{GS}=4.5V$	---	36	---	
$T_{d(on)}$	Turn-On Delay Time	$V_{DD}=15V$	---	40	---	ns
T_r	Rise Time	$I_D=40A$	---	112	---	
$T_{d(off)}$	Turn-Off Delay Time	$R_G=4.7\Omega$	---	144	---	
T_f	Fall Time	$V_{GS}=4.5V$	---	85	---	
C_{iss}	Input Capacitance	$V_{DS}=25V, V_{GS}=0V, f=1\text{MHz}$	---	---	4900	pF
C_{oss}	Output Capacitance		---	---	1300	
C_{rss}	Reverse Transfer Capacitance		---	---	490	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current ¹	$V_G=V_D=0V$, Force Current	---	---	100	A
I_{SM}	Pulsed Source Current ²		---	---	320	A
V_{SD}	Diode Forward Voltage ²	$V_{GS}=0V, I_S=100A, T_J=25^\circ\text{C}$	---	---	1.5	V

Note :

1.The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.

2.The data tested by pulsed , pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$

3.The EAS data shows Max. rating . The test condition is $V_{DD}=25V, V_{GS}=10V, L=0.1\text{mH}, I_{AS}=56A$