

General Description

The 100N04 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

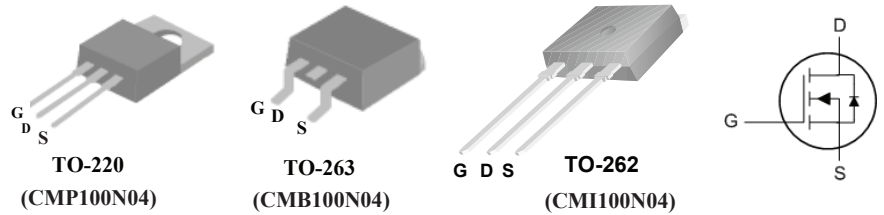
Product Summary

BVDSS	R _{DS(on)}	I _D
40V	< 3.8mΩ	100A

Applications

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

TO220 / TO263 / TO-262 Pin Configuration



Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V _{DS}	Drain-Source Voltage	40	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	480	mJ
I _{AS}	Avalanche Current	56	A
P _D	Total Power Dissipation	260	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 °C, unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250uA	40	---	---	V
ΔBV _{DSS} /ΔT _J	BVDSS Temperature Coefficient	Reference to 25 °C, I _D =1mA	---	0.035	---	V/°C
R _{DS(ON)}	Static Drain-Source On-Resistance ²	V _{GS} =10V, I _D =40A	---	3.4	3.8	mΩ
		V _{GS} =4.5V, I _D =40A	---	4.2	5.2	
V _{GS(th)}	Gate Threshold Voltage	V _{GS} =V _{DS} , I _D =250uA	1	---	3	V
I _{DSS}	Drain-Source Leakage Current	V _{DS} =30V, V _{GS} =0V	---	---	1	uA
		V _{DS} =30V, V _{GS} =0V, TC=125°C	---	---	10	
I _{GSS}	Gate-Source Leakage Current	V _{GS} =±20V, V _{DS} =0V	---	---	±100	nA
g _{fs}	Forward Transconductance	V _{DS} >I _{D(on)} × R _{DS(on)max} , I _D =15A	---	50	---	S
R _g	Gate Resistance	V _{DS} =0V, V _{GS} =0V, f=1MHz	---	---	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	---	144	---	
T _f	Fall Time	V _{GS} =4.5V	---	85	---	
C _{iss}	Input Capacitance	V _{DS} =25V, V _{GS} =0V, f=1MHz	---	---	5600	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°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 ≤ 300us, duty cycle ≤ 2%

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