

General Description

The 3803 is N-ch MOSFETs with extreme high cell density, which provide excellent RDS(on) and gate charge for most of the synchronous buck converter applications.

Features

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

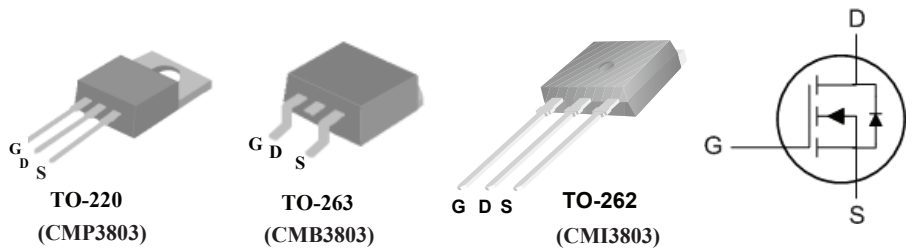
Product Summary

BVDSS	RDS(on)	ID
30V	< 4mΩ	150A

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	150	A
I _D @T _C =100°C	Continuous Drain Current ¹	85	A
I _{DM}	Pulsed Drain Current ²	450	A
EAS	Single Pulse Avalanche Energy ³	600	mJ
I _{AS}	Avalanche Current	85	A
P _D	Total Power Dissipation	240	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

N-Ch 30V Fast Switching MOSFETs

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	30	---	---	V
R _{DS(ON)}	Static Drain-Source On-Resistance ²	V _{GS} =10V, I _D =40A	---	---	4	mΩ
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	---	85	120	nC
Q _{gs}	Gate-Source Charge	V _{DD} =24V	---	26	---	
Q _{gd}	Gate-Drain Charge	V _{GS} =4.5V	---	40	---	
T _{d(on)}	Turn-On Delay Time	V _{DD} =15V	---	42	---	ns
T _r	Rise Time	I _D =40A	---	110	---	
T _{d(off)}	Turn-Off Delay Time	R _G =4.7Ω	---	150	---	
T _f	Fall Time	V _{GS} =4.5V	---	80	---	
C _{iss}	Input Capacitance	V _{DS} =25V, V _{GS} =0V, f=1MHz	---	4500	---	pF
C _{oss}	Output Capacitance		---	1000	---	
C _{rss}	Reverse Transfer Capacitance		---	420	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I _S	Continuous Source Current ¹	V _G =V _D =0V, Force Current	---	---	150	A
I _{SM}	Pulsed Source Current ²		---	---	450	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 inch²FR-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

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Typical Characteristics

