

General Description

The 3803 is the highest performance trench N-ch MOSFETs with extreme high cell density ,which provide excellent RDSON and gate charge for most of the synchronous buck converter applications.

Features

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

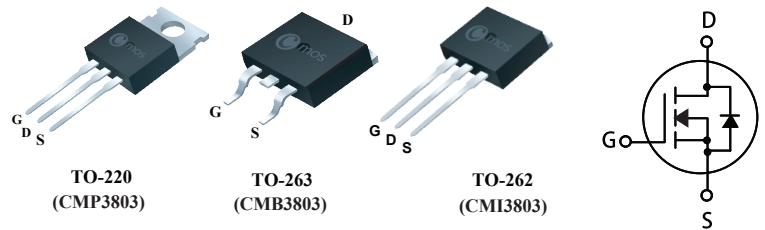
Product Summary

BVDSS	RDSON	ID
30V	2.8mΩ	150A

Applications

- High current, High speed switching
- DC-DC & DC-AC converters
- Motor control, Audio amplifiers
- Solenoid and relay drivers
- Automotive environment

TO-220/263/262 Pin Configuration



Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	30	V
V_{GS}	Gate-Source Voltage	± 16	V
$I_D@T_C=25^{\circ}C$	Continuous Drain Current	150	A
$I_D@T_C=100^{\circ}C$	Continuous Drain Current	85	A
I_{DM}	Pulsed Drain Current ¹	600	A
EAS	Single Pulse Avalanche Energy ²	648	mJ
I_{AS}	Avalanche Current	85	A
P_D	Total Power Dissipation	240	W
T_{STG}	Storage Temperature Range	-65 to 175	$^{\circ}C$
T_J	Operating Junction Temperature Range	-65 to 175	$^{\circ}C$

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-ambient	---	62.5	$^{\circ}C/W$
$R_{\theta JC}$	Thermal Resistance Junction-case	---	0.62	$^{\circ}C/W$

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

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DS}	Drain-Source Breakdown Voltage	$V_{GS}=0V$, $I_D=250\mu A$	30	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance ¹	$V_{GS}=10V$, $I_D=28A$	---	2.4	2.8	$m\Omega$
		$V_{GS}=4.5V$, $I_D=25A$	---	2.8	3.5	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS}=V_{DS}$, $I_D=250\mu A$	1	---	2.5	V
I_{DSS}	Drain-Source Leakage Current	$V_{DS}=30V$, $V_{GS}=0V$	---	---	1	μA
		$V_{DS}=30V$, $V_{GS}=0V$, $T_C=125^\circ\text{C}$	---	---	10	
I_{GSS}	Gate-Source Leakage Current	$V_{GS}=\pm 16V$, $V_{DS}=0V$	---	---	± 100	nA
g_{fs}	Forward Transconductance	$V_{DS}=10V$, $I_D=30A$	---	35	---	S
R_g	Gate Resistance	$V_{DS}=0V$, $V_{GS}=0V$, $f=1\text{MHz}$	---	9	---	Ω
Q_g	Total Gate Charge	$I_D=100A$	---	85	---	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	$R_G=4.7\Omega$	---	150	---	
T_f	Fall Time	$V_{GS}=4.5V$	---	80	---	
C_{iss}	Input Capacitance	$V_{DS}=25V$, $V_{GS}=0V$, $f=1\text{MHz}$	---	6200	---	pF
C_{oss}	Output Capacitance		---	680	---	
C_{rss}	Reverse Transfer Capacitance		---	580	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current	$V_G=V_D=0V$, Force Current	---	---	150	A
I_{SM}	Pulsed Source Current ¹		---	---	600	A
V_{SD}	Diode Forward Voltage ¹	$V_{GS}=0V$, $I_S=28A$, $T_J=25^\circ\text{C}$	---	0.81	1.5	V

Note :

1.The data tested by pulsed , pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.2.The EAS data shows Max. rating . The test condition is $V_{DD}=25V$, $V_{GS}=10V$, $L=1mH$, $I_{AS}=36A$.

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Typical Characteristics

