

### General Description

The 75N03 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

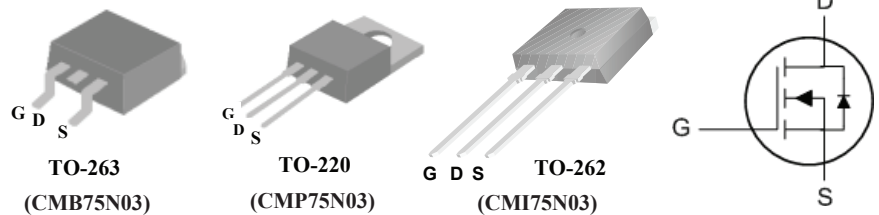
### Product Summary

BVDSS	RDS(on)	ID
30V	6mΩ	75A

### Applications

- LED POWER CONTROLLER
- DC-DC & DC-AC CONVERTERS
- HIGH CURRENT, HIGH SPEED SWITCHING
- SOLENOID AND RELAY DRIVERS
- MOTOR CONTROL, AUDIO AMPLIFIERS

### TO263 / TO220/TO262 Pin Configuration



### Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
$V_{DS}$	Drain-Source Voltage	30	V
$V_{GS}$	Gate-Source Voltage	$\pm 20$	V
$I_D@T_C=25^\circ C$	Continuous Drain Current, $V_{GS} @ 10V^1$	75	A
$I_D@T_C=100^\circ C$	Continuous Drain Current, $V_{GS} @ 10V^1$	50	A
$I_{DM}$	Pulsed Drain Current <sup>2</sup>	220	A
EAS	Single Pulse Avalanche Energy <sup>3</sup>	400	mJ
$I_{AS}$	Avalanche Current	50	A
$P_D@T_C=25^\circ C$	Total Power Dissipation <sup>4</sup>	120	W
$T_{STG}$	Storage Temperature Range	-55 to 175	$^\circ C$
$T_J$	Operating Junction Temperature Range	-55 to 175	$^\circ C$

### Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-ambient (Steady State) <sup>1</sup>	---	62	$^\circ C/W$
$R_{\theta JC}$	Thermal Resistance Junction-case	---	1.5	$^\circ C/W$

Electrical Characteristics (T<sub>J</sub>=25 °C, unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV <sub>DSS</sub>	Drain-Source Breakdown Voltage	V <sub>GS</sub> =0V, I <sub>D</sub> =250uA	30	---	---	V
ΔBV <sub>DSS</sub> /ΔT <sub>J</sub>	BVDSS Temperature Coefficient	Reference to 25 °C, I <sub>D</sub> =1mA	---	0.035	---	V/°C
R <sub>DS(ON)</sub>	Static Drain-Source On-Resistance <sup>2</sup>	V <sub>GS</sub> =10V, I <sub>D</sub> =40A	---	---	6	mΩ
		V <sub>GS</sub> =4.5V, I <sub>D</sub> =20A	---	---	12	
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>GS</sub> =V <sub>DS</sub> , I <sub>D</sub> =250uA	1	---	3	V
I <sub>DSS</sub>	Drain-Source Leakage Current	V <sub>DS</sub> =24V, V <sub>GS</sub> =0V	---	---	1	uA
		V <sub>DS</sub> =24V, V <sub>GS</sub> =0V, T <sub>C</sub> =125°C	---	---	25	
I <sub>GSS</sub>	Gate-Source Leakage Current	V <sub>GS</sub> =±20V, V <sub>DS</sub> =0V	---	---	±100	nA
g <sub>fs</sub>	Forward Transconductance	V <sub>DS</sub> =10V, I <sub>D</sub> =40A	---	50	---	S
R <sub>g</sub>	Gate Resistance	V <sub>DS</sub> =0V, V <sub>GS</sub> =0V, f=1MHz	---	---	3.3	Ω
Q <sub>g</sub>	Total Gate Charge (4.5V)	I <sub>D</sub> =40A V <sub>DS</sub> =24V V <sub>GS</sub> =5V	---	---	42	nC
Q <sub>gs</sub>	Gate-Source Charge		---	---	52	
Q <sub>gd</sub>	Gate-Drain Charge		---	---	26	
T <sub>d(on)</sub>	Turn-On Delay Time	V <sub>DS</sub> =15V	---	9	---	ns
T <sub>r</sub>	Rise Time	I <sub>D</sub> =40A	---	100	---	
T <sub>d(off)</sub>	Turn-Off Delay Time	R <sub>G</sub> =3.3Ω, V <sub>GS</sub> =10V	---	37	---	
T <sub>f</sub>	Fall Time	R <sub>D</sub> =0.37Ω	---	60	---	
C <sub>iss</sub>	Input Capacitance	V <sub>DS</sub> =25V, V <sub>GS</sub> =0V, f=1MHz	---	1900	---	pF
C <sub>oss</sub>	Output Capacitance		---	800	---	
C <sub>rss</sub>	Reverse Transfer Capacitance		---	300	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I <sub>S</sub>	Continuous Source Current <sup>1,6</sup>	V <sub>G</sub> =V <sub>D</sub> =0V, Force Current	---	---	75	A
I <sub>SM</sub>	Pulsed Source Current <sup>2,6</sup>		---	---	220	A
V <sub>SD</sub>	Diode Forward Voltage <sup>2</sup>	V <sub>GS</sub> =0V, I <sub>S</sub> =75 A, T <sub>J</sub> =25°C	---	---	1.28	V

Note :

- 1.The data tested by surface mounted on a 1 inch<sup>2</sup> 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<sub>DD</sub>=25V, V<sub>GS</sub>=10V, L=0.1mH, I<sub>AS</sub>=50A
- 4.The power dissipation is limited by 175°C junction temperature
- 5.The Min. value is 100% EAS tested guarantee.
- 6.The data is theoretically the same as I<sub>D</sub> and I<sub>DM</sub>, in real applications, should be limited by total power dissipation.