

General Description

The 80N04 is N-ch MOSFET 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

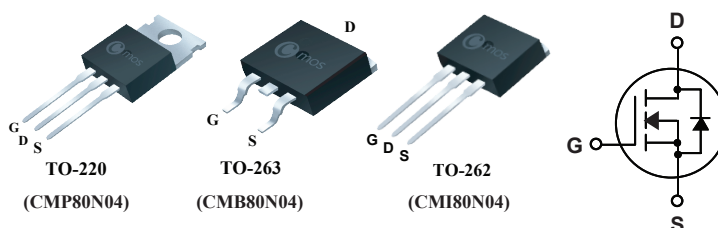
Product Summary

BVDSS	R _{DS(on)} max.	ID
40V	4.8mΩ	80A

Applications

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

TO-220/263/262 Pin Configuration



Absolute Maximum Ratings

Symbol	Parameter	Value	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	80	A
I _D @T _C =100°C	Continuous Drain Current ¹	50	A
I _{DM}	Pulsed Drain Current ²	320	A
EAS	Single Pulse Avalanche Energy ³	760	mJ
I _{AS}	Avalanche Current	80	A
P _D @T _C =25°C	Total Power Dissipation	115	W
T _{STG}	Storage Temperature Range	-55 to 175	°C
T _J	Operating Junction Temperature Range	-55 to 175	°C

Thermal Data

Symbol	Parameter	Value	Unit
R _{θJA}	Thermal Resistance Junction-ambient ¹	62	°C/W
R _{θJC}	Thermal Resistance Junction-case	1.3	°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	$V_{GS}=0V$, $I_D=250\mu A$	40	---	---	V
$\Delta BV_{DSS}/\Delta T_J$	BVDSS Temperature Coefficient	Reference to 25°C , $I_D=1mA$	---	0.035	---	V/ $^\circ\text{C}$
$R_{DS(ON)}$	Static Drain-Source On-Resistance ²	$V_{GS}=10V$, $I_D=25A$	---	3.5	4.8	mΩ
		$V_{GS}=4.5V$, $I_D=25A$	---	5.0	8	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS}=V_{DS}$, $I_D=250\mu A$	1	---	3	V
I_{DSS}	Drain-Source Leakage Current	$V_{DS}=40V$, $V_{GS}=0V$	---	---	1	μA
		$V_{DS}=40V$, $V_{GS}=0V$, $T_J=125^\circ\text{C}$	---	---	100	
I_{GSS}	Gate-Source Leakage Current	$V_{GS}=\pm 20V$, $V_{DS}=0V$	---	---	± 100	nA
g_{fs}	Forward Transconductance	$V_{DS}=10V$, $I_D=15A$	---	30	---	S
R_g	Gate Resistance	$V_{DS}=0V$, $V_{GS}=0V$, $f=1MHz$	---	1.5	---	Ω
Q_g	Total Gate Charge	$I_D=80A$	---	56	---	nC
Q_{gs}	Gate-Source Charge	$V_{DS}=32V$	---	20	---	
Q_{gd}	Gate-Drain Charge	$V_{GS}=5V$	---	15	---	
$T_{d(on)}$	Turn-On Delay Time	$V_{DS}=20V$	---	35	---	ns
T_r	Rise Time	$I_D=80A$	---	82	---	
$T_{d(off)}$	Turn-Off Delay Time	$R_G=3.3\Omega$	---	85	---	
T_f	Fall Time	$V_{GS}=10V$	---	30	---	
C_{iss}	Input Capacitance	$V_{DS}=25V$, $V_{GS}=0V$, $f=1MHz$	---	6400	---	pF
C_{oss}	Output Capacitance		---	460	---	
C_{rss}	Reverse Transfer Capacitance		---	450	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current ¹	$V_G=V_D=0V$, Force Current	---	---	80	A
I_{SM}	Pulsed Source Current ²		---	---	320	A
V_{SD}	Diode Forward Voltage ²	$V_{GS}=0V$, $I_S=80A$, $T_J=25^\circ\text{C}$	---	---	1.3	V

Note :

1.The data tested by surface mounted on a 1 inch² FR-4 board with 20Z 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 $V_{DD}=40V$, $V_{GS}=10V$, $L=1.0mH$, $I_{AS}=39A$

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