CMP100N04S/CMB100N04S/CMI100N04S

40V N-Channel MOSFET

General Description

The 100N04S is N-ch MOSFETs with extreme high cell density , which provide excellent RDSON and gate charge for most of the synchronous buck converter applications.

Product Summary

BVDSS	RDSON	ID
40V	5.8mΩ	80A

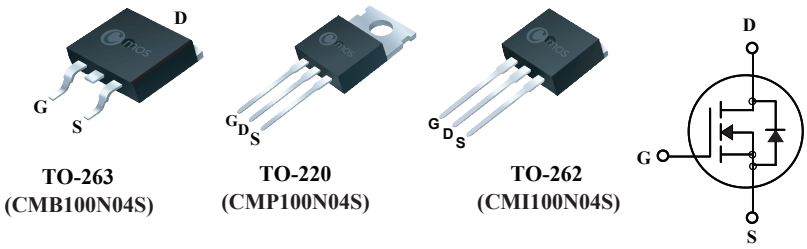
Applications

- LED power controller
- DC-DC & DC-AC converters
- high current, high speed switching
- motor control, audio amplifiers

Features

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

TO-263/220/262 Pin Configuration



TO-263 (CMB100N04S) TO-220 (CMP100N04S) TO-262 (CMI100N04S)

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℃	Continuous Drain Current [1]	80	A
I_D@T_C=100℃	Continuous Drain Current [1]	50	A
I_{DM}	Pulsed Drain Current[2]	320	A
EAS	Single Pulse Avalanche Energy[3]	230	mJ
P_D@T_C=25℃	Total Power Dissipation	115	W
T_{STG}	Storage Temperature Range	-55 to 175	℃
T_J	Operating Junction Temperature Range	-55 to 175	℃

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-ambient [1]	---	62	℃/W
$R_{\theta JC}$	Thermal Resistance Junction-case	---	1.3	℃/W

Electrical Characteristics (T_J=25℃ , unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V , I_D=250uA	40	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance[2]	V_{GS}=10V , I_D=20A	---	5.1	5.8	mΩ
		V_{GS}=4.5V , I_D=20A	---	9	12	
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =250uA	1	---	3	V
I_{DSS}	Drain-Source Leakage Current	V_{DS}=40V , V_{GS}=0V	---	---	1	uA
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±20V , V_{DS}=0V	---	---	±100	nA
gfs	Forward Transconductance	V_{DS}=10V , I_D=20A	---	14	---	S
R_g	Gate Resistance	V_{DS}=0V , V_{GS}=0V , f=1MHz	---	2	---	Ω
Q_g	Total Gate Charge	I_D=80A V_{DS}=32V V_{GS}=10V	---	60	---	nC
Q_{gs}	Gate-Source Charge		---	15	---	
Q_{gd}	Gate-Drain Charge		---	16	---	
$T_{d(on)}$	Turn-On Delay Time	V_{DS}=20V I_D=80A R_G=3.3Ω V_{GS}=10V	---	35	---	ns
T_r	Rise Time		---	80	---	
$T_{d(off)}$	Turn-Off Delay Time		---	85	---	
T_f	Fall Time		---	30	---	
C_{iss}	Input Capacitance	V_{DS}=25V , V_{GS}=0V , f=1MHz	---	2900	---	pF
C_{oss}	Output Capacitance		---	200	---	
C_{rss}	Reverse Transfer Capacitance		---	150	---	

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=15 A, T_J=25℃	---	---	1.3	V

Note :
1.The data tested by surface mounted on a 1 inch^2 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}=20V,V_{GS}=10V,L=0.5mH,I_{AS}=30.5A