CMB50N06/CMP50N06

N-Channel 60V 45A Power MOSFET

General Description

The 50N06 is extremely high-density N-channel MOSFET, which provides the best RDSON and gate charge for the synchronous buck converter applications.

Features

- 45A,60V.RDS(ON)=0.028Ω@VGS=10V
- Fast Switching
- N-channel-Enhancement mode
- Low Threshold Drive
- 100% Avalanche Tested

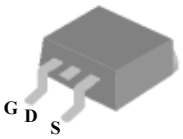
Product Summery

BVDSS	RDSON	ID
60V	<28mΩ	45A

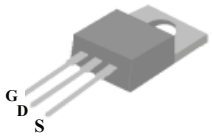
Applications

- Power Supplies
- DC-DC & DC-AC Converters
- Motor Control, Audio Amplifiers
- High Current, High Speed Switching
- Solenoid And Relay Drivers

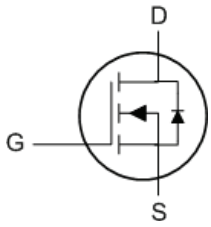
TO263 / TO220 Pin Configuration



TO-263
(CMB50N06L)



TO-220
(CMP50N06L)



Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	60	V
V_{GS}	Gate-Source Voltage	±20	V
I_D@T_C=25℃	Continuous Drain Current[1]	45	A
I_D@T_C=100℃	Continuous Drain Current[1]	30	A
I_{DM}	Pulsed Drain Current[2]	145	A
EAS	Single Pulse Avalanche Energy[3]	160	mJ
I_{AS}	Avalanche Current	30	A
P_D@T_C=25℃	Total Power Dissipation	90	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]	---	65	℃/W
$R_{\theta JC}$	Thermal Resistance Junction-case	---	1.4	℃/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	60	---	---	V
$\triangle BV_{DSS}/\triangle T_J$	BVDSS Temperature Coefficient	Reference to 25℃	---	0.065	---	V/℃
$R_{DS(ON)}$	Static Drain-Source On-Resistance[2]	V_{GS}=10V , I_D=22.5A	11	20	28	mΩ
		V_{GS}=4.5V , I_D=22.5A	---	30	40	
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =250uA	1	---	3	V
I_{DSS}	Drain-Source Leakage Current	V_{DS}=60V , V_{GS}=0V	---	---	1	uA
		V_{DS}=60V , V_{GS}=0V , T_C=125°C	---	---	10	
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±20V , V_{DS}=0V	---	---	±100	nA
gfs	Forward Transconductance	V_{DS}=10V , I_D=22.5A	---	28	---	S
R_g	Gate Resistance	V_{DS}=0V , V_{GS}=0V , f=1MHz	---	---	6.9	Ω
Q_g	Total Gate Charge	I_D=45 A V_{DS}=48 V V_{GS}=5V	---	30	44	nC
Q_{gs}	Gate-Source Charge		---	8.6	---	
Q_{gd}	Gate-Drain Charge		---	16	---	
$T_{d(on)}$	Turn-On Delay Time	V_{DS}=30 V I_D=22.5A R_G=6.9Ω V_{GS}=10V	---	17	---	ns
T_r	Rise Time		---	159	---	
$T_{d(off)}$	Turn-Off Delay Time		---	68	---	
T_f	Fall Time		---	89	---	
C_{iss}	Input Capacitance	V_{DS}=25V , V_{GS}=0V , f=1MHz	---	2300	---	pF
C_{oss}	Output Capacitance		---	580	---	
C_{rss}	Reverse Transfer Capacitance		---	120	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current[1]	V_G=V_D=0V , Force Current	---	---	45	A
I_{SM}	Pulsed Source Current[2]		---	---	145	A
V_{SD}	Diode Forward Voltage[2]	V_{GS}=0V , I_S=45 A, T_J=25℃	---	---	1.32	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}=25V,V_{GS}=10V,L=0.1mH,I_{AS}=30A