CMP3006/CMB3006/CMI3006

30V N-Channel MOSFET

General Description

The 3006 uses advanced trench technology to provide excellent RDS(ON). This device is suitable for low voltage, high speed switching applications in power supplies.

Product Summary

BVDSS	RDSON	ID
30V	6.5mΩ	90A

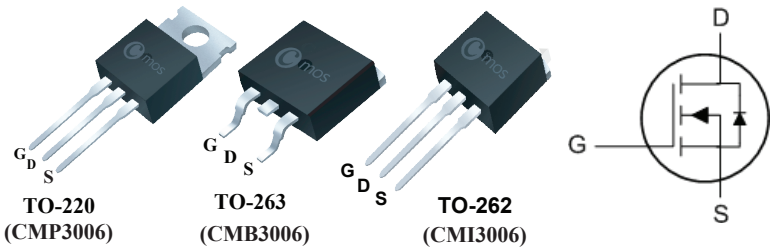
Applications

- DC/DC converter
- Load Switch
- Power Motor Controls
- Bridge Circuits

Features

- Simple Drive Requirement
- 100% Avalanche tested
- RoHS Compliant

TO-220/263/262 Pin Configuration



TO-220 (CMP3006) TO-263 (CMB3006) TO-262 (CMI3006)

Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	30	V
V_{GS}	Gate-Source Voltage	±20	V
I_D@T_C=25℃	Continuous Drain Current[1]	90	A
I_D@T_C=100℃	Continuous Drain Current[1]	58	A
I_{DM}	Pulsed Drain Current[2]	360	A
EAS	Single Pulse Avalanche Energy[3]	169	mJ
P_D	Total Power Dissipation[4]	75	W
T_{STG}	Storage Temperature Range	-55 to 150	℃
T_J	Operating Junction Temperature Range	-55 to 150	℃

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-ambient(Steady State)[1]	---	62	℃/W
$R_{\theta JC}$	Thermal Resistance Junction-case[1]	---	1.68	℃/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	30	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance[2]	V_{GS}=10V , I_D=20A	---	5	6.5	mΩ
		V_{GS}=4.5V , I_D=10A	---	6.5	10	
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =250uA	1	---	2.5	V
I_{DSS}	Drain-Source Leakage Current	V_{DS}=24V , V_{GS}=0V	---	---	1	uA
		V_{DS}=24V , V_{GS}=0V ,TC=55℃	---	---	5	
I_{GSS}	Gate-Source Leakage Current	V_{GS} =±20V , V_{DS}=0V	---	---	±100	nA
gfs	Forward Transconductance	V_{DS}=10V , I_D=10A	---	14	---	S
Q_g	Total Gate Charge (4.5V)	I_D=15A V_{DS}=15V V_{GS}=4.5V	---	20	---	nC
Q_{gs}	Gate-Source Charge		---	7.5	---	
Q_{gd}	Gate-Drain Charge		---	7	---	
$T_{d(on)}$	Turn-On Delay Time	V_{DD}=15V I_D=15A R_G=3.3Ω V_{GS}=10V	---	10	---	ns
T_r	Rise Time		---	15	---	
$T_{d(off)}$	Turn-Off Delay Time		---	40	---	
T_f	Fall Time		---	12	---	
C_{iss}	Input Capacitance	V_{DS}=15V , V_{GS}=0V , f=1MHz	---	2200	---	pF
C_{oss}	Output Capacitance		---	250	---	
C_{rss}	Reverse Transfer Capacitance		---	230	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current[1,5]	V_G=V_D=0V , Force Current	---	---	90	A
I_{SM}	Pulsed Source Current[2,5]		---	---	360	A
V_{SD}	Diode Forward Voltage[2]	V_{GS}=0V , I_S=30A, T_J=25℃	---	---	1.2	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}=26A

4.The power dissipation is limited by 150℃ junction temperature

5.The data is theoretically the same as I_D and I_{DM} , in real applications , should be limited by total power dissipation.

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