CMP50P06/CMB50P06

P-Channel 60-V (D-S) MOSFET

General Description

The 50P06 is a P-channel Power MOSFET. It uses advanced trench technology to provide excellent RDS(ON). This device is high current load applications.

Product Summary

BVDSS	RDSON	ID
-60V	25mΩ	-50A

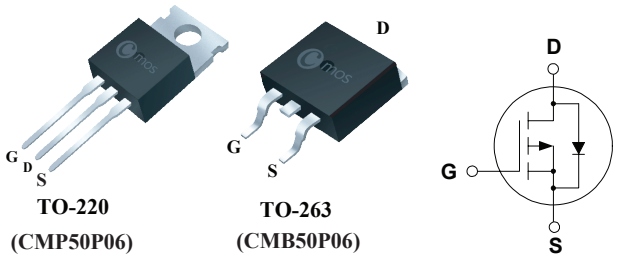
Applications

- DC-DC Converters
- Load switch

Features

- Fast switching
- Lower On-resistance
- 100% avalanche tested
- RoHS Compliant

TO-220/263 Pin Configuration



TO-220 (CMP50P06)

TO-263 (CMB50P06)

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	-50	A
I_D@T_C=100℃	Continuous Drain Current	-35	A
I_{DM}	Pulsed Drain Current[1]	-150	A
EAS	Single Pulse Avalanche Energy[2]	400	mJ
P_D@T_C=25℃	Total Power Dissipation	150	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	---	62.5	℃/W
$R_{\theta JC}$	Thermal Resistance Junction-case	---	0.94	℃/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
$R_{DS(ON)}$	Static Drain-Source On-Resistance[3]	V_{GS}=-10V, I_D=-10A	---	---	25	mΩ
		V_{GS}=-4.5V, I_D=-10A	---	---	32	
$V_{GS(th)}$	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 , T_J=25℃	---	---	-1	uA
		V_{DS}=-48V, V_{GS}=0V , T_J=150℃	---	---	-10	
I_{GSS}	Gate-Source Leakage Current	V_{GS} =±20V , V_{DS}=0V	---	---	±100	nA
gfs	Forward Transconductance	V_{DS}=-15V , I_D=-11A	---	20	---	S
Q_g	Total Gate Charge[3]	V_{DS}=-48V , I_D=-50A V_{GS}=-10V	---	80	---	nC
Q_{gs}	Gate-Source Charge		---	15	---	
Q_{gd}	Gate-Drain Charge		---	40	---	
$T_{d(on)}$	Turn-On Delay Time[3]	V_{DD}=-30V, R_G=25Ω I_D=-23.5A	---	50	---	ns
T_r	Rise Time		---	450	---	
$T_{d(off)}$	Turn-Off Delay Time		---	100	---	
T_f	Fall Time		---	190	---	
C_{iss}	Input Capacitance	V_{DS}=-25V, V_{GS}=0V , f=1MHz	---	4000	---	pF
C_{oss}	Output Capacitance		---	1300	---	
C_{rss}	Reverse Transfer Capacitance		---	320	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current	V_G=V_D=0V , Force Current	---	---	-50	A
I_{SM}	Pulsed Source Current[1]		---	---	-150	A
V_{SD}	Diode Forward Voltage[3]	V_{GS}=0V , I_F=-10A	---	---	-1.2	V

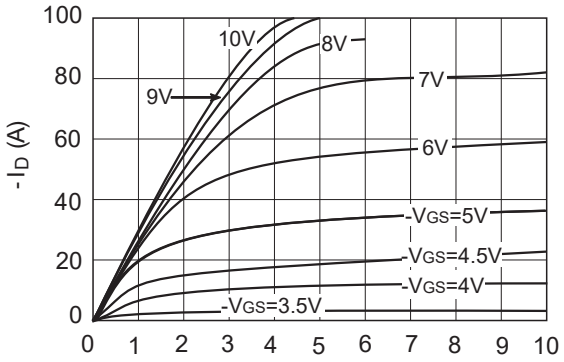
Notes

1.Pulse width limited by Max. junction temperature.

2.The EAS data shows Max. rating . The test condition is V_D=-30V, L=2mH, I_{AS}=22A

3.Pulse test

Typical Characteristics



On-RegionCharacteristics

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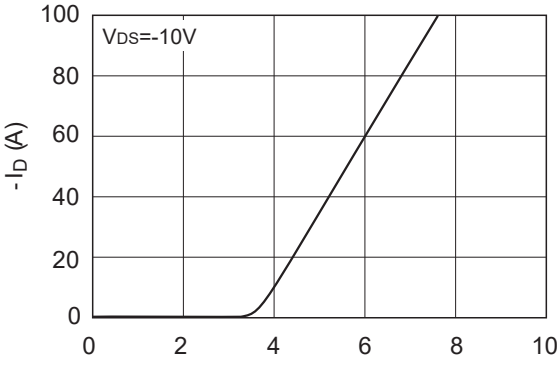
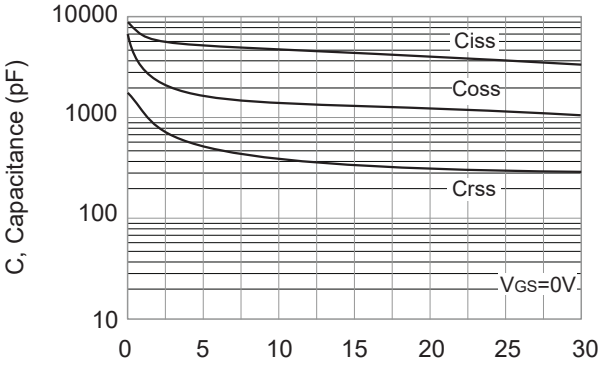
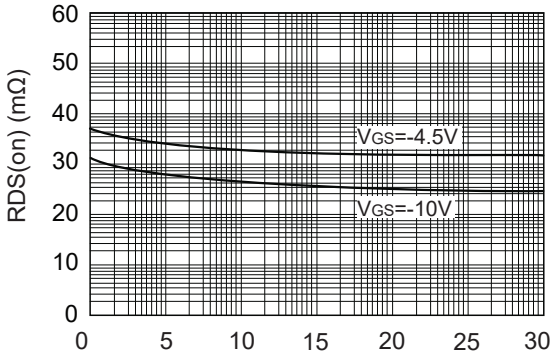


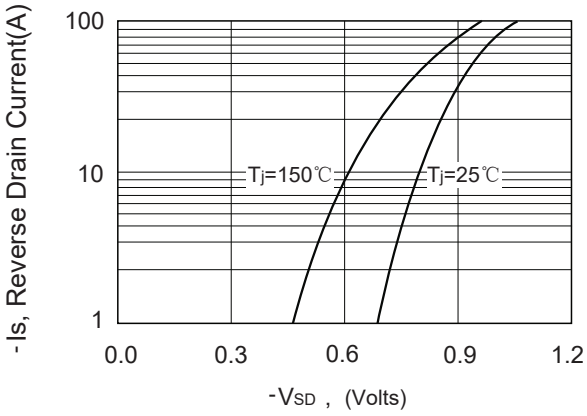
Transfer Characteristics



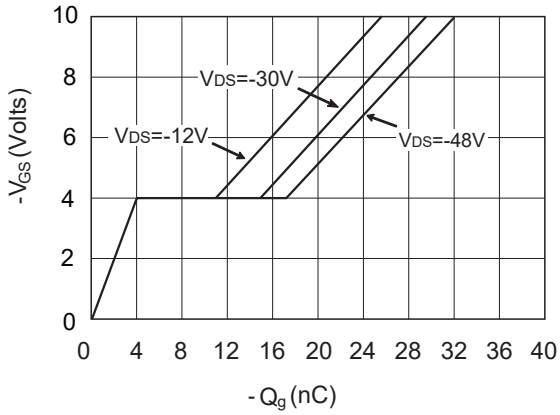
Capacitance Characteristics



On-Resistance vs. Drain Current and Gate Voltage



Body-Diode Characteristics



Gate-Charge Characteristics