CMP110N06L/CMB110N06L

60V N-Channel MOSFET

General Description

The 110N06L is N-Channel MOSFET, It has specifically been designed to minimize input capacitance and gate charge. The device is therefore suitable in advanced high-efficiency switching applications.

Product Summary

BVDSS	RDSON	ID
60V	7.5mΩ	110A

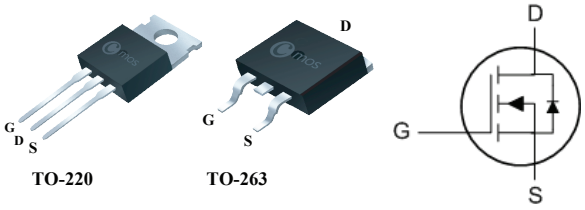
Applications

- PWM Application
- Load Switch
- Power Management

Features

- Fast switching
- 100% avalanche tested
- Low On-Resistance

TO-220/263 Pin Configuration



Type	Package	Marking
CMP110N06L	TO-220	CMP110N06L
CMB110N06L	TO-263	CMB110N06L

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	110	A
I_D@T_C=100℃	Continuous Drain Current	50	A
I_{DM}	Pulsed Drain Current[1]	440	A
EAS	Single Pulse Avalanche Energy[2]	324	mJ
P_D@T_C=25℃	Total Power Dissipation	130	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	℃/W
$R_{\theta JC}$	Thermal Resistance Junction-case	---	1.15	℃/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	V_{GS}=10V , I_D=30A	---	6.5	7.5	mΩ
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =250uA	1	---	2.2	V
I_{DSS}	Drain-Source Leakage Current	V_{DS}=60V, V_{GS}=0V	---	---	1	uA
I_{GSS}	Gate-Source Leakage Current	V_{GS} = ±20V , V_{DS}=0V	---	---	±100	nA
Q_g	Total Gate Charge	I_D=40A V_{DS} =30V V_{GS} =10 V Note3	---	118	---	nC
Q_{gs}	Gate-Source Charge		---	16	---	
Q_{gd}	Gate-Drain Charge		---	23	---	
$T_{d(on)}$	Turn-On Delay Time	V_{DS} =30V I_D=40A R_G=1.8Ω V_{GS} =10V Note3	---	10	---	ns
T_r	Rise Time		---	7	---	
$T_{d(off)}$	Turn-Off Delay Time		---	38	---	
T_f	Fall Time		---	16	---	
C_{iss}	Input Capacitance	V_{DS}=30V , V_{GS}=0V , f=1MHz	---	6150	---	pF
C_{oss}	Output Capacitance		---	230	---	
C_{rss}	Reverse Transfer Capacitance		---	236	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current	V_G=V_D=0V , Force Current	---	---	110	A
I_{SM}	Pulsed Source Current		---	---	320	A
trr	Reverse Recovery Time	I_{SD} = 75A, dI_{SD}/dt = 100A/μs	---	25	---	ns
Q_{RR}	Reverse Recovered Charge		---	35	---	nc
V_{SD}	Diode Forward Voltage	V_{GS}=0V , I_S=40A , T_J=25℃	---	---	1.2	V

Note :

1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature
2. EAS condition: T_J =25℃, V_{DD} =30V, V_G =10V, R_G =25Ω, L=0.5mH
3. Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%

Typical Characteristics

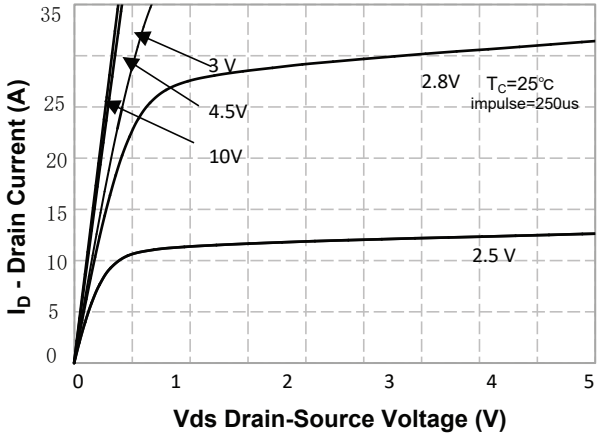


Figure 1. On-Region Characteristics

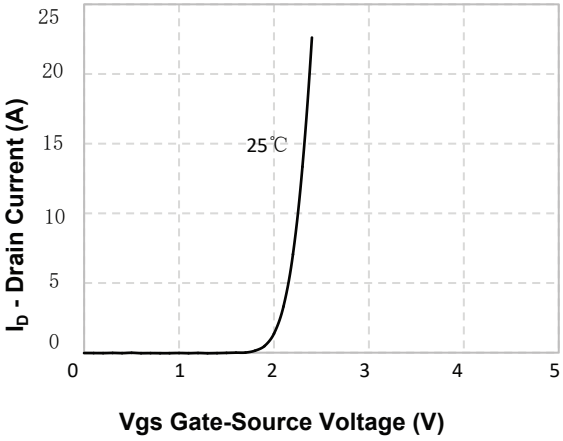


Figure 2. Transfer Characteristics

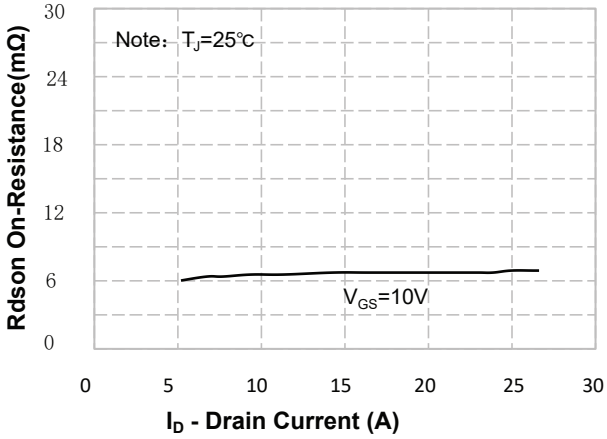


Figure 3. On-Resistance Variation vs Drain Current and Gate Voltage

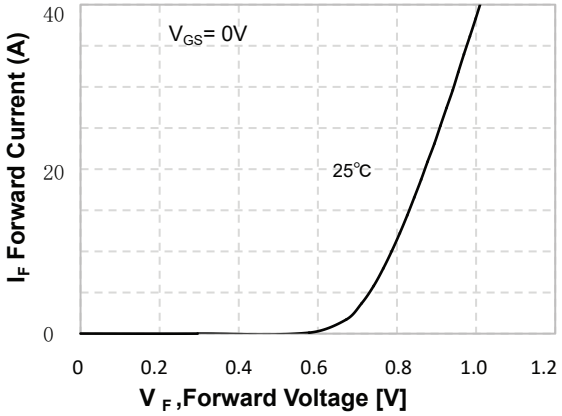


Figure 4. Body Diode Forward Voltage Variation vs Source Current

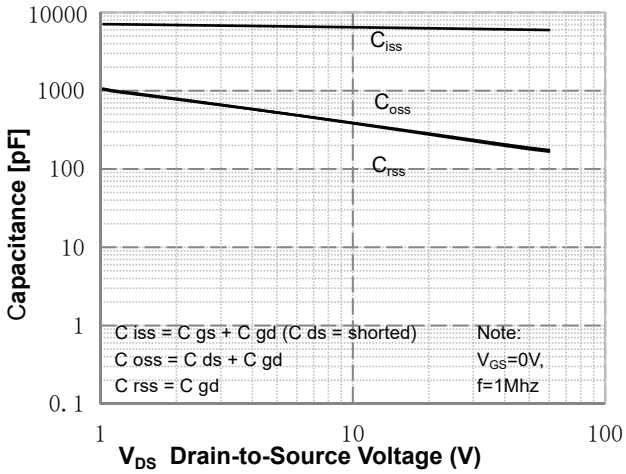


Figure 5. Capacitance Characteristics

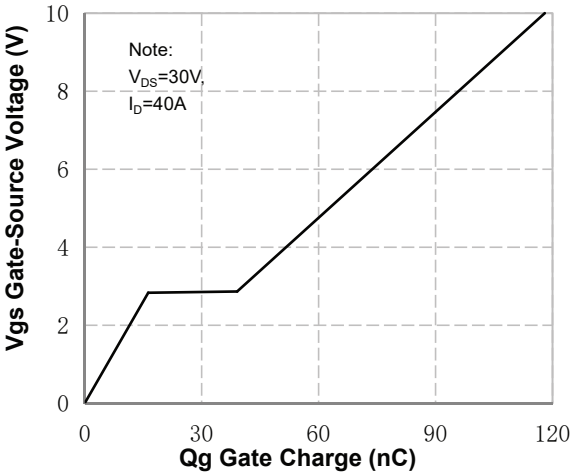


Figure 6. Gate Charge Characteristics

Typical Characteristics

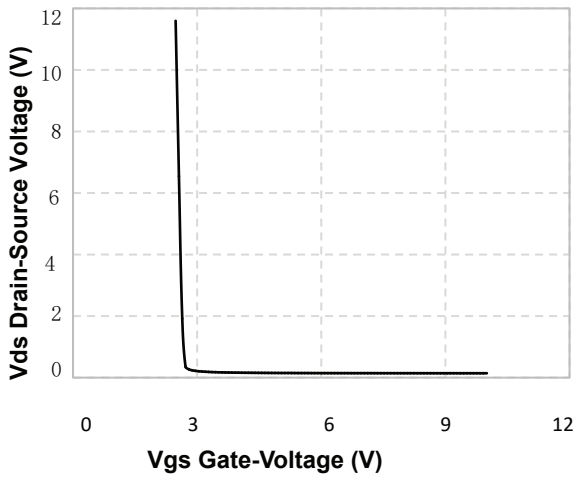


Figure 7. Vds Drain-Source Voltage vs Gate Voltage

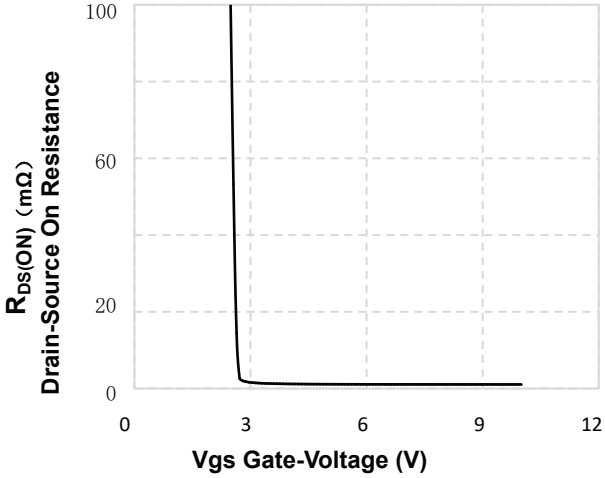


Figure 8. On-Resistance vs Gate Voltage

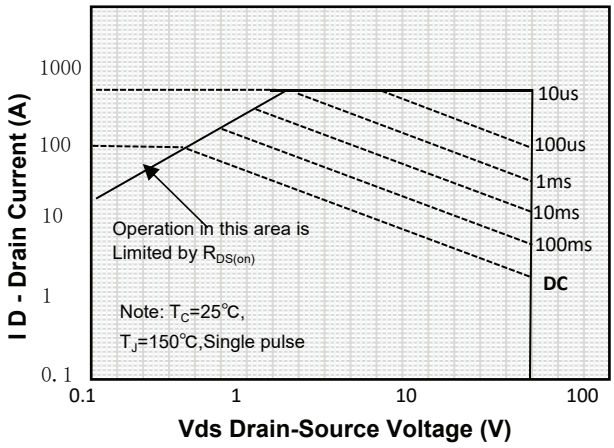


Figure 9. Maximum Safe Operating Area

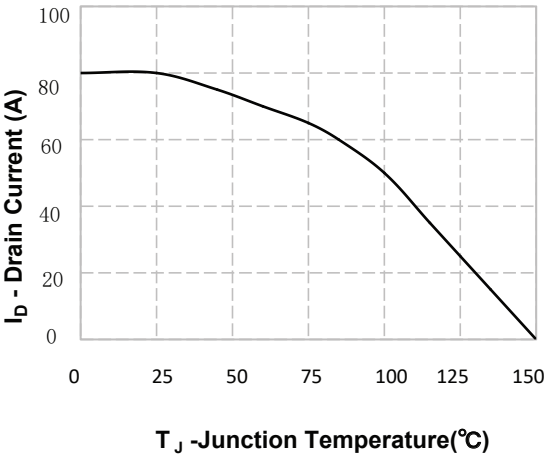


Figure 10. Maximum Continuous Drain Currentvs Temperature

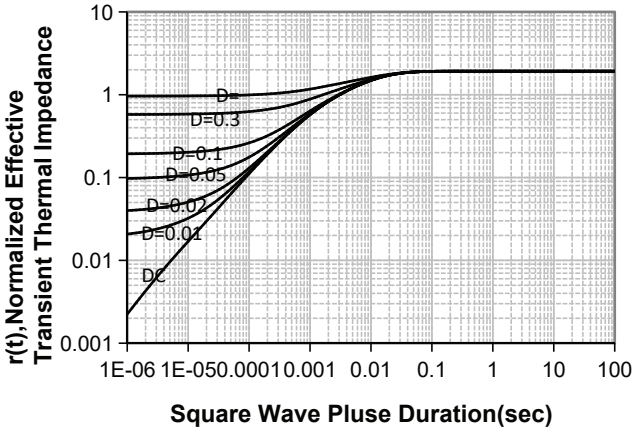


Figure 11. Transient Thermal Response Curve