CMP30N06/CMB30N06/CMI30N06/CMF30N06

60V LOGIC N-Channel MOSFET

General Description

The 30N06 is extremely high-density N-channel MOSFET, which provides the best RDSON and gate charge for the synchronous buck converter applications.

Features

- Originative New Design
- 100% avalanche tested
- Very Low Intrinsic Capacitances
- Fast switching
- Improved dv/dt capability
- 30A, 60V, RDS(on) = 0.035Ω @VGS = 10 V

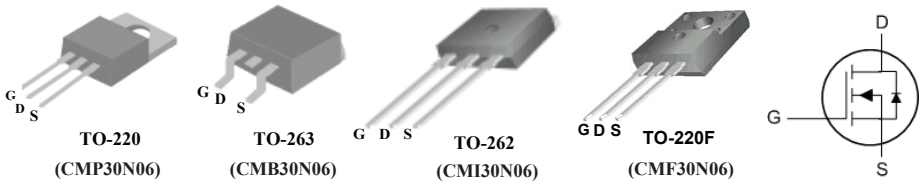
Product Summery

BVDSS	RDSON	ID
60V	0.035Ω	30A

Applications

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

TO220/263/262/220F Pin Configuration



Absolute Maximum Ratings

T_C = 25°C unless otherwise noted

Symbol	Parameter	220/263/262	220F	Units
V_{DSS}	Drain-Source Voltage	60		V
I_D	Drain Current - Continuous (T_C = 25°C)	30	30*	A
	- Continuous (T_C = 100°C)	21.3	15.9	A
I_{DM}	Drain Current - Pulsed	90	90	A
V_{GSS}	Gate-Source Voltage	± 20		V
E_{AS}	Single Pulsed Avalanche Energy	350		mJ
I_{AR}	Avalanche Current	30	22	A
E_{AR}	Repetitive Avalanche Energy	7.9	3.8	mJ
dv/dt	Peak Diode Recovery dv/dt	7	7	V/ns
P_D	Power Dissipation (T_C = 25°C)	80	40	W
	- Derate above 25°C	0.53	0.25	W/°C
T_J, T_{STG}	Operating and Storage Temperature Range	-55 to +175		°C
T_L	Maximum lead temperature for soldering purposes, 1/8 from case for 5 seconds	300		°C

* Drain current limited by maximum junction temperature

Thermal Characteristics

Symbol	Parameter	220/263/262	220F	Units
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case Max.	1.9	3.9	°C/W
$R_{\theta CS}$	Thermal Resistance, Case-to-Sink Typ.	---	---	°C/W
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient Max.	62.5	62.5	°C/W

Electrical Characteristic

T_C = 25°C unless otherwise noted

Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
Off Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS} = 0 V, I_D = 250 A	60	--	--	V
$\triangle BV_{DSS}$ / $\triangle T_J$	Breakdown Voltage Temperature Coefficient	I_D = 250 A, Referenced to 25°C	--	0.06	--	V/°C
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} = 60V, V_{GS} = 0 V	--	--	1	A
		V_{DS} = 48 V, T_C=150°C	--	--	10	
I_{GSSF}	Gate-Body Leakage Current, Forward	V_{GS} = 20 V, V_{DS} = 0 V	--	--	100	nA
I_{GSSR}	Gate-Body Leakage Current, Reverse	V_{GS} = -20 V, V_{DS} = 0 V	--	--	-100	nA
On Characteristics						
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS} = V_{GS}, I_D = 250 A	2	--	4	V
$R_{DS(on)}$	Static Drain-Source On-Resistance	V_{GS} = 10 V, I_D = 11.3A	--	0.027	0.035	Ω
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS} = 25 V, V_{GS} = 0 V, f = 1.0 MHz	--	800	--	pF
C_{oss}	Output Capacitance		--	270	--	pF
C_{rss}	Reverse Transfer Capacitance		--	50	--	pF
Switching Characteristics						
$t_{d(on)}$	Turn-On Delay Time	V_{DD} = 30 V, I_D = 16A R_G = 25Ω	--	15	40	ns
t_r	Turn-On Rise Time		--	210	430	ns
$t_{d(off)}$	Turn-Off Delay Time		--	60	130	ns
t_f	Turn-Off Fall Time		--	110	230	ns
Q_g	Total Gate Charge	V_{DS} = 48 V, I_D = 32A V_{GS} = 5V	--	15	--	nC
Q_{gs}	Gate-Source Charge		--	3.5	--	nC
Q_{gd}	Gate-Drain Charge		--	8.5	--	nC
Drain-Source Diode Characteristics and Maximum Ratings						
I_S	Maximum Continuous Drain-Source Diode Forward Current		--	--	30	A
I_{SM}	Maximum Pulsed Drain-Source Diode Forward Current		--	--	90	A
V_{SD}	Drain-Source Diode Forward Voltage	V_{GS} = 0 V, I_S = 22.5A	--	--	1.5	V
t_{rr}	Reverse Recovery Time	V_{GS} = 0 V, I_S = 32A dI_F / dt = 100 A/ s	--	60	--	ns
Q_{rr}	Reverse Recovery Charge		--	90	--	C