CMP10N20/CMF10N20

200V N-Channel MOSFET

General Description

These N-Channel enhancement mode power field effect transistors uses advanced trench Technology, which provides low on-state resistance, high switching performance and excellent quality. These devices are well suited for high efficiency switching DC/DC converters, switch mode power supplies, DC-AC converters for uninterrupted power supplies and motor controls.

Features

- 100% avalanche tested
- Fast Switching
- Improved dv/dt capability

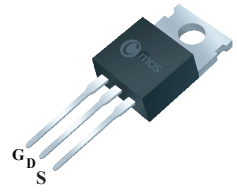
Product Summary

BVDSS	RDSON	ID
200V	0.36Ω	10A

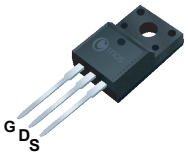
Applications

- Switch mode power supplies (SMPS)
- PWM Motor Controls
- DC-DC converters

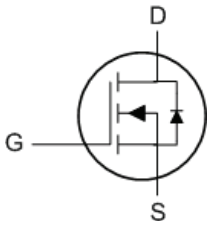
TO-220/220F Pin Configuration



TO-220
(CMP10N20)



TO-220F
(CMF10N20)



Absolute Maximum Ratings

Symbol	Parameter	CMP10N20/CMF10N20		Units
V_{DS}	Drain-Source Voltage	200		V
V_{GS}	Gate-Source Voltage	±30		V
I_D@T_C=25°C	Continuous Drain Current	10	10*	A
I_D@T_C=100°C	Continuous Drain Current	6	6*	A
I_{DM}	Pulsed Drain Current[1]	30	30*	A
EAS	Single Pulse Avalanche Energy[2]	200		mJ
P_D@T_C=25°C	Total Power Dissipation	75	38	W
T_{STG}	Storage Temperature Range	-55 to 150		°C
T_J	Operating Junction Temperature Range	-55 to 150		°C

* Drain current limited by maximum junction temperature.

Thermal Data

Symbol	Parameter	CMP10N20	CMF10N20	Unit
$R_{\theta JA}$	Thermal Resistance Junction-ambient	62.5	62.5	°C/W
$R_{\theta JC}$	Thermal Resistance Junction-case	1.74	3.33	°C/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	200	---	---	V
$\triangle BV_{DSS}/\triangle T_J$	BVDSS Temperature Coefficient	Reference to 25℃ , I_D=250uA	---	0.28	---	V/℃
$R_{DS(ON)}$	Static Drain-Source On-Resistance	V_{GS}=10V , I_D=5.4A	---	---	0.36	Ω
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =250uA	2	---	4	V
I_{DSS}	Drain-Source Leakage Current	V_{DS}=200V, V_{GS}=0V	---	---	10	uA
		V_{DS}=160V , V_{GS}=0V , TC=125℃	---	---	100	
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±30V , V_{DS}=0V	---	---	±100	nA
gfs	Forward Transconductance	V_{DS}=20V , I_D=10A	---	10	---	S
Q_g	Total Gate Charge	I_D=10A V_{DS}=160V V_{GS}=10V (Note 3, 4)	---	15	20	nC
Q_{gs}	Gate-Source Charge		---	3.5	---	
Q_{gd}	Gate-Drain Charge		---	6	---	
$T_{d(on)}$	Turn-On Delay Time	V_{DD}=100V I_D=10A R_G=25Ω (Note 3, 4)	---	15	---	ns
T_r	Rise Time		---	90	---	
$T_{d(off)}$	Turn-Off Delay Time		---	50	---	
T_f	Fall Time		---	65	---	
C_{iss}	Input Capacitance	V_{DS}=25V , V_{GS}=0V , f=1MHz	---	650	---	pF
C_{oss}	Output Capacitance		---	100	---	
C_{rss}	Reverse Transfer Capacitance		---	20	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current	V_G=V_D=0V , Force Current	---	---	10	A
I_{SM}	Pulsed Source Current		---	---	30	A
V_{SD}	Diode Forward Voltage	V_{GS}=0V , I_S=10 A, T_J=25℃	---	---	1.5	V

Note :
1.Repetitive Rating: Pulse width limited by maximum junction temperature
2.L = 1.0mH, I_{AS} = 20A, V_{DD} = 50V, R_G = 25Ω, Starting T_J = 25℃
3.Pulse Test: Pulse width≤300μs, Duty Cycle≤2%
4.Essentially Independent of Operating Temperature