CMP10N60/CMF10N60

600V N-Channel MOSFET

General Description

The 10N60 uses advanced planar stripe DMOS technology to provide excellent $R_{DS(ON)}$ and superior switching performance, and withstand high energy pulse in the avalanche and commutation mode. These devices are well suited for high efficiency switched mode power supplies,active power factor correction based on half bridge topology.

Product Summary

BVDSS	RDSON	ID
600V	0.9Ω	10A

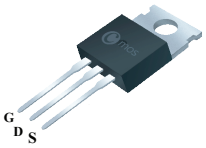
Applications

- Charger
- Adaptor
- Power Supply
- Electrodeless lamp

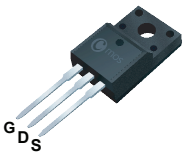
Features

- Fast switching
- 100% avalanche tested
- Improved dv/dt capability
- RoHS Compliant

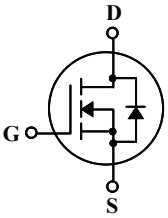
TO-220/220F Pin Configuration



TO-220
(CMP10N60)



TO-220F
(CMF10N60)



Absolute Maximum Ratings (Tc=25℃ unless otherwise noted)

Symbol	Parameter	220	220F	Units
V_{DSS}	Drain-Source Voltage	600		V
I_D	Drain Current - Continuous (T_C = 25℃)	10	10*	A
	- Continuous (T_C = 100℃)	6	6*	A
I_{DM}	Drain Current - Pulsed	40	40*	A
V_{GSS}	Gate-Source Voltage	±30		V
E_{AS}	Single Pulsed Avalanche Energy	562		mJ
E_{AR}	Repetitive Avalanche Energy	16		mJ
dv/dt	Peak Diode Recovery dv/dt	5		V/ns
P_D	Power Dissipation (T_C = 25℃)	160	50	W
	- Derate above 25℃	1.3	0.4	W/℃
T_J, T_{STG}	Operating and Storage Temperature Range	-55 to +150		℃
T_L	Maximum lead temperature for soldering purposes, 1/8 from case for 5 seconds	300		℃

* Drain current limited by maximum junction temperature

Thermal Characteristics

Symbol	Parameter	220	220F	Units
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case Max.	0.77	2.4	℃/W
$R_{\theta CS}$	Thermal Resistance, Case-to-Sink Typ.	0.5	---	℃/W
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient Max.	62.5	62.5	℃/W

Electrical Characteristic (Tc=25℃ 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 μA	600	--	--	V
BV_{DSS} / T_J	Breakdown Voltage Temperature Coefficient	I_D = 250 μA, Referenced to 25°C	--	0.67	--	V/°C
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} = 600 V, V_{GS} = 0 V	--	--	10	μA
		V_{DS} = 480 V, T_C=125°C	--	--	100	
I_{GSSF}	Gate-Body Leakage Current, Forward	V_{GS} = 30 V, V_{DS} = 0 V	--	--	100	nA
I_{GSSR}	Gate-Body Leakage Current, Reverse	V_{GS} = -30 V, V_{DS} = 0 V	--	--	-100	nA
On Characteristics						
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS} = V_{GS}, I_D = 250 μA	2.0	--	4.5	V
$R_{DS(on)}$	Static Drain-Source On-Resistance	V_{GS} = 10 V, I_D = 5A	--	0.84	0.9	
g_{FS}	Forward Transconductance	V_{DS} = 25 V, I_D = 5A	--	8	--	S
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS} = 25 V, V_{GS} = 0 V, f = 1.0 MHz	--	1800	--	pF
C_{oss}	Output Capacitance		--	138	--	pF
C_{rss}	Reverse Transfer Capacitance		--	21	--	pF
Switching Characteristics						
$t_{d(on)}$	Turn-On Delay Time	V_{DD} = 300 V, I_D = 10A, R_G = 25	--	--	55	ns
t_r	Turn-On Rise Time		--	--	85	ns
$t_{d(off)}$	Turn-Off Delay Time		--	--	270	ns
t_f	Turn-Off Fall Time		--	--	162	ns
Q_g	Total Gate Charge	V_{DS} = 480 V, I_D = 10A, V_{GS} = 10 V	--	38	--	nC
Q_{gs}	Gate-Source Charge		--	7	--	nC
Q_{gd}	Gate-Drain Charge		--	16.7	--	nC
Drain-Source Diode Characteristics and Maximum Ratings						
I_S	Maximum Continuous Drain-Source Diode Forward Current		--	--	10	A
I_{SM}	Maximum Pulsed Drain-Source Diode Forward Current		--	--	40	A
V_{SD}	Drain-Source Diode Forward Voltage	V_{GS} = 0 V, I_S = 9A	--	--	1.4	V
t_{rr}	Reverse Recovery Time	V_{GS} = 0 V, I_S = 4A, dI_F / dt = 100 A/μs	--	330	--	ns
Q_{rr}	Reverse Recovery Charge		--	2.2	--	μC

Note:

1. L=5mH, I_{AS}=15A, V_{DD}=100V, R_G=25 Ω,Starting T_J=25℃.

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