

CMF12N60

N-Ch 600V Fast Switching MOSFETs

General Description

These N-Channel enhancement mode power field effect transistors are produced using advanced technology which has been especially tailored to minimize on-state resistance, provide 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, electronic lamp ballasts based on half bridge topology.

Features

- Originative New Design
- 100% avalanche tested
- Very Low Intrinsic Capacitances
- Fast switching
- Improved dv/dt capability
- 12A, 600V, RDS(on) = 0.66Ω @VGS = 10 V

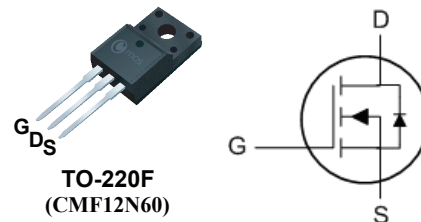
Product Summary

BVDSS	RDSON	ID
600V	0.66Ω	12A

Applications

- Charger
- Adaptor
- Power Supply
- Electrodeless lamp

TO-220F Pin Configuration



Absolute Maximum Ratings T_C = 25°C unless otherwise noted

Symbol	Parameter	CMF12N60	Units
V _{DSS}	Drain-Source Voltage	600	V
I _D	Drain Current - Continuous (T _C = 25°C) - Continuous (T _C = 100°C)	12	A
		7.5	A
I _{DM}	Drain Current - Pulsed	36	A
V _{GSS}	Gate-Source Voltage	±30	V
E _{AS}	Single Pulsed Avalanche Energy	350	mJ
I _{AR}	Avalanche Current	12	A
E _{AR}	Repetitive Avalanche Energy	23	mJ
dv/dt	Peak Diode Recovery dv/dt	4.5	V/ns
P _D	Power Dissipation (T _C = 25°C) - Derate above 25°C	51	W
		1.78	W/°C
T _J , T _{STG}	Operating and Storage Temperature Range	-55 to +150	°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	CMF12N60	Units
R _{θJC}	Thermal Resistance, Junction-to-Case Max.	0.56	°C/W
R _{θCS}	Thermal Resistance, Case-to-Sink Typ.	---	°C/W
R _{θJA}	Thermal Resistance, Junction-to-Ambient Max.	62.5	°C/W

Electrical Characteristic

T_C = 25°C unless otherwise noted

Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
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Off Characteristics

BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} = 0 V, I _D = 250 μA	600	--	--	V
ΔBV _{DSS} / ΔT _J	Breakdown Voltage Temperature Coefficient	I _D = 250 μA, Referenced to 25°C	--	0.5	--	V/°C
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} = 600 V, V _{GS} = 0 V	--	--	1	μA
		V _{DS} = 480 V, T _C = 125°C	--	--	10	
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	--	4.0	V
R _{DS(on)}	Static Drain-Source On-Resistance	V _{GS} = 10 V, I _D = 6.0A	--	0.53	0.66	Ω

Dynamic Characteristics

C _{iss}	Input Capacitance	V _{DS} = 25 V, V _{GS} = 0 V, f = 1.0 MHz	--	1840	2390	pF
C _{oss}	Output Capacitance		--	185	240	pF
C _{rss}	Reverse Transfer Capacitance		--	16	21	pF

Switching Characteristics

t _{d(on)}	Turn-On Delay Time	V _{DD} = 300 V, I _D = 12A R _G = 25 Ω	--	30	70	ns
t _r	Turn-On Rise Time		--	86	185	ns
t _{d(off)}	Turn-Off Delay Time		--	140	280	ns
t _f	Turn-Off Fall Time		--	95	195	ns
Q _g	Total Gate Charge	V _{DS} = 480 V, I _D = 12A V _{GS} = 10 V	--	40	51	nC
Q _{gs}	Gate-Source Charge		--	8.3	--	nC
Q _{gd}	Gate-Drain Charge		--	13.8	--	nC

Drain-Source Diode Characteristics and Maximum Ratings

I _S	Maximum Continuous Drain-Source Diode Forward Current	--	--	12	A	
I _{SM}	Maximum Pulsed Drain-Source Diode Forward Current	--	--	36	A	
V _{SD}	Drain-Source Diode Forward Voltage	V _{GS} = 0 V, I _S = 12A	--	--	1.4	V
t _{rr}	Reverse Recovery Time	V _{GS} = 0 V, I _S = 12A	--	420	--	ns
Q _{rr}	Reverse Recovery Charge	dI _F / dt = 100 A/μs	--	4.9	--	μC

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