CMF11N60B

N-Ch 600V Fast Switching MOSFETs

General Description

These N-Channel enhancement mode power field effect transistors are produced using advanced technology This latest technology has been especially designed 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 switch mode power Supplier, active power factor correction based on Half-Bridge topology.

Features

- Originative New Design
- 100% avalanche tested
- Very Low Intrinsic Capacitances
- Fast switching
- Improved dv/dt capability
- 11A, 600V, $R_{DS(on)}$ = 0.66Ω @V_{GS} = 10 V

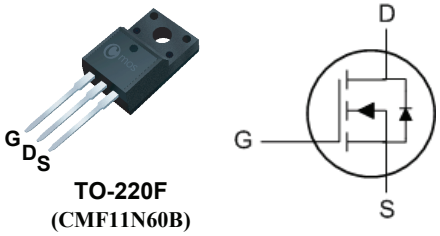
Product Summary

BVDSS	RDSON	ID
600V	0.66Ω	11A

Applications

- Charger
- Adaptor
- Power Supply
- Electrodeless lamp

TO-220F Pin Configuration



TO-220F
(CMF11N60B)

Absolute Maximum Ratings

T_C = 25°C unless otherwise noted

Symbol	Parameter	Rating	Units
V_{DSS}	Drain-Source Voltage	600	V
I_D	Drain Current * - Continuous (T_C = 25°C)	11	A
	- Continuous (T_C = 100°C)	7	A
I_{DM}	Drain Current - Pulsed [1]	44	A
V_{GSS}	Gate-Source Voltage	±30	V
E_{AS}	Single Pulsed Avalanche Energy [4]	600	mJ
E_{AR}	Repetitive Avalanche Energy	18.2	mJ
dv/dt	Peak Diode Recovery dv/dt [3]	4.5	V/ns
P_D	Power Dissipation (T_C = 25°C)	50	W
	- Derate above 25°C	0.39	W/°C
T_J, T_{STG}	Operating and Storage Temperature Range	-55 to +150	°C

* Drain current limited by maximum junction temperature

Thermal Characteristics

Symbol	Parameter	Rating	Units
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case Max [1]	2.55	°C/W
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient Max [1]	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 μA	600	--	--	V
BV_{DSS} /ΔT_J	Breakdown Voltage Temperature Coefficient	I_D = 250μA, Referenced to 25°C	--	0.67	--	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	3.0	--	4.5	V
$R_{DS(on)}$	Static Drain-Source On-Resistance	V_{GS} = 10 V, I_D = 5.5A	--	0.55	0.66	Ω
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS} = 25 V, V_{GS} = 0 V, f = 1.0 MHz	--	2600	--	pF
C_{oss}	Output Capacitance		--	6.2	--	pF
C_{rss}	Reverse Transfer Capacitance		--	190	--	pF
Switching Characteristics						
$t_{d(on)}$	Turn-On Delay Time	V_{DS} = 300 V, I_D = 11A [3] R_G = 25Ω, V_{GS} = 10V	--	25	--	ns
t_r	Turn-On Rise Time		--	45	--	ns
$t_{d(off)}$	Turn-Off Delay Time		--	170	--	ns
t_f	Turn-Off Fall Time		--	55	--	ns
Q_g	Total Gate Charge	V_{DS}= 480 V, I_D = 11A [3] V_{GS} = 10V	--	35	--	nC
Q_{gs}	Gate-Source Charge		--	6.5	--	nC
Q_{gd}	Gate-Drain Charge		--	11	--	nC
Drain-Source Diode Characteristics and Maximum Ratings						
I_S	Maximum Continuous Drain-Source Diode Forward Current		--	--	11	A
I_{SM}	Maximum Pulsed Drain-Source Diode Forward Current		--	--	44	A
V_{SD}	Drain-Source Diode Forward Voltage	V_{GS} = 0 V, I_S = 11A	--	--	1.4	V
t_{rr}	Reverse Recovery Time	V_{GS} = 0 V, I_F = 11A [3] dI_F / dt = 100 A/μs	--	430	--	ns
Q_{rr}	Reverse Recovery Charge		--	4	--	C

Notes:

1. Pulse width is based on RθJC & RθJA and the maximum allowed junction temperature of 150°C.
2. Pulse test: pulse width ≤300us, duty cycle≤2%, pulse width limited by junction temperature $T_{J(MAX)}$=150°C.
3. I_{SD} ≤11A, di/dt≤200A/us, V_{DD}≤BV_{DSS}, R_g =25Ω, Starting T_J=25°C
4. L=9mH, I_{AS}=11.5A, V_{DD}=100V, R_g =25Ω, Starting T_J=25°C

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