

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
- 13A, 600V, $R_{DS(on)} = 0.31\Omega$ @ $V_{GS} = 10\text{ V}$

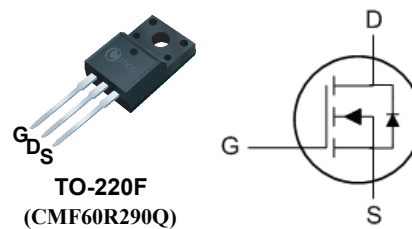
Product Summary

BVDSS	$R_{DS(on)}$	ID
600V	0.31Ω	13A

Applications

- Charger
- Adaptor
- Power Supply
- Electroless lamp

TO-220F Pin Configuration



Absolute Maximum Ratings

$T_C = 25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	CMF60R290Q	Units
V_{DSS}	Drain-Source Voltage	600	V
I_D	Drain Current - Continuous ($T_C = 25^\circ\text{C}$) - Continuous ($T_C = 100^\circ\text{C}$)	13	A
		8.3	A
I_{DM}	Drain Current - Pulsed	40	A
V_{GSS}	Gate-Source Voltage	± 30	V
E_{AS}	Single Pulsed Avalanche Energy	40	mJ
dv/dt	Peak Diode Recovery dv/dt	15	V/ns
P_D	Power Dissipation ($T_C = 25^\circ\text{C}$)	35	W
T_J, T_{STG}	Operating and Storage Temperature Range	-55 to +150	$^\circ\text{C}$
T_L	Maximum lead temperature for soldering purposes, 1/8" from case for 5 seconds	150	$^\circ\text{C}$

Thermal Characteristics

Symbol	Parameter	CMF60R290Q	Units
$R_{\theta C}$	Thermal Resistance, Junction-to-Case Max.	3.8	$^\circ\text{C/W}$
$R_{\theta A}$	Thermal Resistance, Junction-to-Ambient Max.	62.5	$^\circ\text{C/W}$

Electrical Characteristic

 $T_C = 25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
--------	-----------	-----------------	-----	-----	-----	-------

Off Characteristics

BV_{DS}	Drain-Source Breakdown Voltage	$V_{GS} = 0\text{ V}, I_D = 250\text{ }\mu\text{A}$	600	--	--	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS} = 600\text{ V}, V_{GS} = 0\text{ V}$	--	--	1	μA
I_{GSSF}	Gate-Body Leakage Current, Forward	$V_{GS} = 30\text{ V}, V_{DS} = 0\text{ V}$	--	--	100	nA
I_{GSSR}	Gate-Body Leakage Current, Reverse	$V_{GS} = -30\text{ V}, V_{DS} = 0\text{ V}$	--	--	-100	nA

On Characteristics

$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}, I_D = 250\text{ }\mu\text{A}$	2	--	4.0	V
$R_{DS(on)}$	Static Drain-Source On-Resistance	$V_{GS} = 10\text{ V}, I_D = 6.5\text{ A}$	--	0.25	0.31	Ω

Dynamic Characteristics

C_{iss}	Input Capacitance	$V_{DS} = 25\text{ V}, V_{GS} = 0\text{ V},$ $f = 1.0\text{ MHz}$	--	1400	--	pF
C_{oss}	Output Capacitance		--	860	--	pF
C_{rss}	Reverse Transfer Capacitance		--	50	--	pF

Switching Characteristics

$t_{d(on)}$	Turn-On Delay Time	$V_{DS} = 300\text{ V}, I_D = 13\text{ A}$ $R_G = 25\text{ }\Omega, V_{GS} = 10\text{ V}$	--	20	--	ns
t_r	Turn-On Rise Time		--	45	--	ns
$t_{d(off)}$	Turn-Off Delay Time		--	212	--	ns
t_f	Turn-Off Fall Time		--	40	--	ns
Q_g	Total Gate Charge	$V_{DS} = 480\text{ V}, I_D = 13\text{ A}$ $V_{GS} = 10\text{ V}$	--	35	--	nC
Q_{gs}	Gate-Source Charge		--	6.5	--	nC
Q_{gd}	Gate-Drain Charge		--	14	--	nC

Drain-Source Diode Characteristics and Maximum Ratings

I _S	Maximum Continuous Drain-Source Diode Forward Current		--	--	13	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 = 13A	--	--	1.4	V
t _{rr}	Reverse Recovery Time	V _{DD} =100V, I _S = 13A	--	353	--	ns
Q _{rr}	Reverse Recovery Charge	dI _F / dt = 100 A/μs	--	4.6	--	μC

This product has been designed and qualified for the consumer market.
Cmos assumes no liability for customers' product design or applications.
Cmos reserves the right to improve product design, functions and reliability without notice.