

General Description

The CMF12N40 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 efficient switched mode power supplies and active power factor correction.

Features

- Fast switching
- 100% avalanche tested
- RoHS Compliant

Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	400	V
V_{GS}	Gate-Source Voltage	± 25	V
$I_D@T_C=25^\circ\text{C}$	Continuous Drain Current	12	A
$I_D@T_C=100^\circ\text{C}$	Continuous Drain Current	9.6	A
I_{DM}	Pulsed Drain Current ¹	46	A
EAS	Single Pulse Avalanche Energy ²	450	mJ
$P_D@T_C=25^\circ\text{C}$	Total Power Dissipation	40	W
T_{STG}	Storage Temperature Range	-55 to 150	$^\circ\text{C}$
T_J	Operating Junction Temperature Range	-55 to 150	$^\circ\text{C}$

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-ambient	---	62.5	$^\circ\text{C}/\text{W}$
$R_{\theta JC}$	Thermal Resistance Junction-case	---	3.15	$^\circ\text{C}/\text{W}$

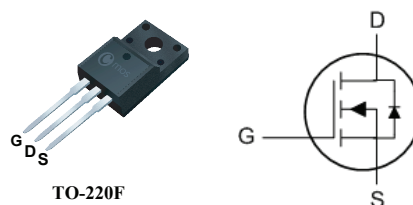
Product Summary

BVDSS	$R_{DS(ON)}$	ID
400V	0.5Ω	12A

Applications

- Switch Mode Power Supplies(SMPS)
- Inverter

TO-220/220F Pin Configuration



Type	Package	Marking
CMF12N40	TO-220F	CMF12N40

Electrical Characteristics ($T_J=25^{\circ}\text{C}$, unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DS}	Drain-Source Breakdown Voltage	$V_{GS}=0V$, $I_D=250\mu A$	400	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	$V_{GS}=10V$, $I_D=4A$	---	---	0.5	Ω
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS}=V_{DS}$, $I_D=250\mu A$	2	---	4	V
I_{DSS}	Drain-Source Leakage Current	$V_{DS}=400V$, $V_{GS}=0V$	---	---	1	μA
		$V_{DS}=320V$, $V_{GS}=0V$, $T_C=125^{\circ}\text{C}$	---	---	10	
I_{GSS}	Gate-Source Leakage Current	$V_{GS}=\pm 30V$, $V_{DS}=0V$	---	---	± 100	nA
g_{fs}	Forward Transconductance	$V_{DS}=10V$, $I_D=4A$	---	8	---	S
R_g	Gate Resistance	$V_{DS}=0V$, $V_{GS}=0V$, $f=1\text{MHz}$	---	25	---	Ω
Q_g	Total Gate Charge	$I_D=11A$	---	15	---	nC
Q_{gs}	Gate-Source Charge	$V_{DD}=320V$	---	4.8	---	
Q_{gd}	Gate-Drain Charge	$V_{GS}=10V$	---	4.5	---	
$T_{d(on)}$	Turn-On Delay Time	$V_{DD}=200V$ $I_D=11A$ $R_G=20\Omega$	---	24	---	ns
T_r	Rise Time		---	56	---	
$T_{d(off)}$	Turn-Off Delay Time		---	40	---	
T_f	Fall Time		---	31	---	
C_{iss}	Input Capacitance	$V_{DS}=25V$, $V_{GS}=0V$, $f=1\text{MHz}$	---	1550	---	pF
C_{oss}	Output Capacitance		---	150	---	
C_{rss}	Reverse Transfer Capacitance		---	4	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current	$V_G=V_D=0V$, Force Current	---	---	12	A
I_{SM}	Pulsed Source Current		---	---	46	A
V_{SD}	Diode Forward Voltage	$V_{GS}=0V$, $I_S=4A$, $T_J=25^{\circ}\text{C}$	---	---	1.4	V

Note :

1.Repetitive rating; pulse width limited by maximum junction temperature.

2.The test condition is $R_G=25\Omega$, $V_{DD}=50V$, $L=1\text{mH}$, $I_{AS}=24.5A$, Starting $T_J=25^{\circ}\text{C}$.

This product has been designed and qualified for the consumer market.

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Cmos reserves the right to improve product design ,functions and reliability without notice.