CMF50R380

N-Channel Super Junction Power MOSFET

General Description

This Super Junction MOSFET has better characteristics, such as fast switching time, low on resistance, low gate charge and excellent avalanche characteristics. It is mainly suitable for active power factor correction and switching mode power supplies.

Product Summary

BVDSS	RDSON	ID
500V	0.37Ω	12A

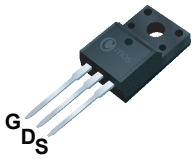
Applications

- Power factor correction(PFC)
- Switched mode power supplies(SMPS)
- Uninterruptible power supply(UPS)

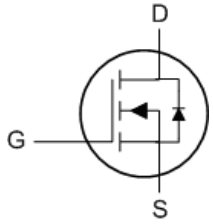
Features

- 12A, 500V, RDS(on) = 0.37Ω @VGS = 10 V
- 100% avalanche tested
- Low Power Loss by High Speed Switching and Low On-Resistance

TO-220F Pin Configuration



TO-220F



Type	Package	Marking
CMF50R380	TO-220F	CMF50R380

Absolute Maximum Ratings

T_C = 25°C unless otherwise noted

Symbol	Parameter	Rating	Units
V_{DSS}	Drain-Source Voltage	500	V
I_D	Drain Current - Continuous (T_C = 25°C)	12	A
	- Continuous (T_C = 100°C)	7.2	A
I_{DM}	Drain Current - Pulsed	36	A
V_{GSS}	Gate-Source Voltage	±30	V
E_{AS}	Single Pulsed Avalanche Energy	40	mJ
dv/dt	Peak Diode Recovery dv/dt	20	V/ns
P_D	Power Dissipation (T_C = 25°C)	31	W
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

Thermal Characteristics

Symbol	Parameter	Rating	Units
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case Max.	4	°C/W
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient Max.	62	°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 uA	500	--	--	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} = 600 V, V_{GS} = 0 V	--	--	1	uA
		V_{DS} = 480 V, V_{GS} = 0 V ,T_J=125℃	--	--	10	
I_{GSS}	Gate-Source Leakage Current	V_{GS} =±20V , V_{DS}=0V	--	--	±100	nA
On Characteristics						
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS} = V_{GS}, I_D = 250uA	2	--	4	V
$R_{DS(on)}$	Static Drain-Source On-Resistance	V_{GS} = 10 V, I_D = 4.5A	--	0.3	0.37	Ω
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS} =100V, V_{GS} = 0 V, f = 1.0 MHz	--	1300	--	pF
C_{oss}	Output Capacitance		--	30	--	pF
C_{rss}	Reverse Transfer Capacitance		--	2.5	--	pF
Switching Characteristics						
$t_{d(on)}$	Turn-On Delay Time	V_{DS} = 400 V, I_D = 5.5A R_G = 5Ω , V_{GS} = 10V	--	20	--	ns
t_r	Turn-On Rise Time		--	13	--	ns
$t_{d(off)}$	Turn-Off Delay Time		--	45	--	ns
t_f	Turn-Off Fall Time		--	16	--	ns
Q_g	Total Gate Charge	V_{DS} = 480 V, I_D = 5.5A V_{GS} = 10 V	--	20	--	nC
Q_{gs}	Gate-Source Charge		--	4.5	--	nC
Q_{gd}	Gate-Drain Charge		--	6.5	--	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 = 9A	--	--	1.4	V