

General Description

The CMF50N06T is extremely high-density N-channel MOSFET, which provides the best R_{DS(on)} and gate charge for the synchronous buck converter applications.

Features

- 50A, 60V. R_{DS(on)} = 16mΩ @ V_{GS} = 10V
- Fast Switching
- N-channel-Enhancement mode
- Low Threshold Drive
- 100% Avalanche Tested

Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V _{DS}	Drain-Source Voltage	60	V
V _{GS}	Gate-Source Voltage	±20	V
I _D @T _C =25°C	Continuous Drain Current ¹	50	A
I _D @T _C =100°C	Continuous Drain Current ¹	30	A
I _{DM}	Pulsed Drain Current ²	150	A
EAS	Single Pulse Avalanche Energy ³	156	mJ
I _{AS}	Avalanche Current	25	A
P _D @T _C =25°C	Total Power Dissipation	45	W
T _{STG}	Storage Temperature Range	-55 to 175	°C
T _J	Operating Junction Temperature Range	-55 to 175	°C

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
R _{θJA}	Thermal Resistance Junction-ambient ¹	---	65	°C/W
R _{θJC}	Thermal Resistance Junction-case	---	1.4	°C/W

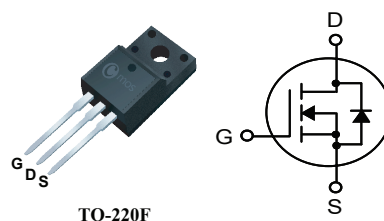
Product Summary

BVDSS	R _{DS(on)}	I _D
60V	16mΩ	50A

Applications

- Power Supplies
- DC-DC & DC-AC Converters
- Motor Control, Audio Amplifiers
- High Current, High Speed Switching
- Solenoid And Relay Drivers

TO-220F Pin Configuration



Type	Package	Marking
CMF50N06T	TO-220F	CMF50N06T

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

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DS}	Drain-Source Breakdown Voltage	$V_{GS}=0V$, $I_D=250\mu A$	60	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance ²	$V_{GS}=10V$, $I_D=20A$	---	14	16	m Ω
		$V_{GS}=4.5V$, $I_D=15A$	---	17	20	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS}=V_{DS}$, $I_D=250\mu A$	1	---	3	V
I_{DSS}	Drain-Source Leakage Current	$V_{DS}=60V$, $V_{GS}=0V$	---	---	1	μA
		$V_{DS}=60V$, $V_{GS}=0V$, $T_C=125^{\circ}\text{C}$	---	---	10	
I_{GSS}	Gate-Source Leakage Current	$V_{GS}=\pm 20V$, $V_{DS}=0V$	---	---	± 100	nA
g_{fs}	Forward Transconductance	$V_{DS}=10V$, $I_D=10A$	---	20	---	S
R_g	Gate Resistance	$V_{DS}=0V$, $V_{GS}=0V$, $f=1\text{MHz}$	---	1.6	---	Ω
Q_g	Total Gate Charge	$I_D=50A$	---	30	---	nC
Q_{gs}	Gate-Source Charge	$V_{DS}=48V$	---	8.5	---	
Q_{gd}	Gate-Drain Charge	$V_{GS}=5V$	---	16	---	
$T_{d(on)}$	Turn-On Delay Time	$V_{DS}=30V$	---	17	---	ns
T_r	Rise Time	$I_D=22.5A$	---	160	---	
$T_{d(off)}$	Turn-Off Delay Time	$R_G=6.9\Omega$	---	69	---	
T_f	Fall Time	$V_{GS}=10V$	---	70	---	
C_{iss}	Input Capacitance	$V_{DS}=25V$, $V_{GS}=0V$, $f=1\text{MHz}$	---	2900	---	pF
C_{oss}	Output Capacitance		---	580	---	
C_{rss}	Reverse Transfer Capacitance		---	120	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current ¹	$V_G=V_D=0V$, Force Current	---	---	50	A
I_{SM}	Pulsed Source Current ²		---	---	150	A
V_{SD}	Diode Forward Voltage ²	$V_{GS}=0V$, $I_S=20A$, $T_J=25^{\circ}\text{C}$	---	---	1.32	V

Note :

1.The data tested by surface mounted on a 1 inch² FR-4 board with 20Z copper.2.The data tested by pulsed , pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.3.The EAS data shows Max. rating . The test condition is $V_{DD}=40V$, $V_{GS}=10V$, $L=0.5\text{mH}$, $I_{AS}=25A$.

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