

General Description

These Power MOSFETs are produced using Cmos's proprietary, planar stripe, DMOS technology. These devices are well suited for high efficient switched mode power supplies and active power factor correction.

Features

- Low gate charge
- Fast switching
- 100% avalanche tested
- Improved dv/dt capability
- RoHS compliant

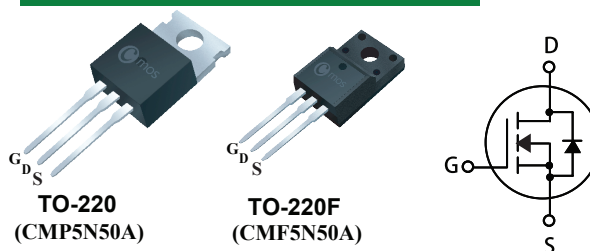
Product Summary

BVDSS	R _{DS(on)} max.	ID
500V	1.6Ω	5A

Applications

- Charger
- Adaptor
- Power Supply
- Ballast

TO-220/220F Pin Configuration



Absolute Maximum Ratings

T_C = 25°C unless otherwise noted

Symbol	Parameter	CMP5N50A/CMF5N50A		Units
V _{DSS}	Drain-Source Voltage	500		V
I _D	Drain Current - Continuous (T _C = 25°C) - Continuous (T _C = 100°C)	5	5*	A
		2.9	2.9*	A
I _{DM}	Drain Current - Pulsed	20	20*	A
V _{GSS}	Gate-Source Voltage	±30		V
E _{AS}	Single Pulsed Avalanche Energy (Note 1)	350		mJ
P _D	Power Dissipation (T _C = 25°C)	100	40	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

* Drain current limited by maximum junction temperature

Thermal Characteristics

Symbol	Parameter	CMP5N50A/CMF5N50A		Units
R _{θJC}	Thermal Resistance, Junction-to-Case Max.	1.25	3.13	°C/W
R _{θCS}	Thermal Resistance, Case-to-Sink Typ.	---		°C/W
R _{θJA}	Thermal Resistance, Junction-to-Ambient Max.	62.5		°C/W

Electrical Characteristic

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

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

Off Characteristics

BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS} = 0\text{ V}, I_D = 250\text{ }\mu\text{A}$	500	--	--	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS} = 500\text{ V}, V_{GS} = 0\text{ V}$	--	--	1	μA
		$V_{DS} = 500\text{ V}, V_T = 125^\circ\text{C}$	--	--	10	
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	$V_{DS} = V_{GS}, I_D = 250\text{ }\mu\text{A}$	2.0	--	4.0	V
$R_{DS(on)}$	Static Drain-Source On-Resistance	$V_{GS} = 10\text{ V}, I_D = 2.5\text{ A}$	--	1.4	1.6	Ω
g_{FS}	Forward Transconductance	$V_{DS} = 15\text{ V}, I_D = 2.5\text{ A}$	--	5.9	--	S

Dynamic Characteristics

C_{iss}	Input Capacitance	$V_{DS} = 25\text{ V}, V_{GS} = 0\text{ V},$ $f = 1.0\text{ MHz}$	--	770	--	pF
C_{oss}	Output Capacitance		--	60	--	pF
C_{rss}	Reverse Transfer Capacitance		--	8	--	pF

Switching Characteristics

$t_{d(on)}$	Turn-On Delay Time	$V_{DD} = 300\text{ V}, I_D = 5\text{ A}$ $R_G = 25\Omega, V_{GS} = 10\text{ V}$	--	20	--	ns
t_r	Turn-On Rise Time		--	50	--	ns
$t_{d(off)}$	Turn-Off Delay Time		--	80	--	ns
t_f	Turn-Off Fall Time		--	50	--	ns
Q_g	Total Gate Charge	$V_{DS} = 400\text{ V}, I_D = 5\text{ A}$ $V_{GS} = 10\text{ V}$	--	32	--	nC
Q_{gs}	Gate-Source Charge		--	7	--	nC
Q_{gd}	Gate-Drain Charge		--	14	--	nC

Drain-Source Diode Characteristics and Maximum Ratings

I _S	Maximum Continuous Drain-Source Diode Forward Current	--	--	5	A	
I _{SM}	Maximum Pulsed Drain-Source Diode Forward Current	--	--	20	A	
V _{SD}	Drain-Source Diode Forward Voltage	V _{GS} = 0 V, I _S = 5A	--	0.87	1.4	V
t _{rr}	Reverse Recovery Time	V _{GS} = 0 V, I _S = 5A	--	380	--	ns
Q _{rr}	Reverse Recovery Charge	di _F / dt = 100 A/μs	--	3.8	--	μC

Note :

1. The EAS data shows Max. rating . The test condition is $V_{DD}=100\text{ V}$, $V_{GS}=10\text{ V}$, $L=28\text{ mH}$, $I_{AS}=5\text{ A}$.

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.

Typical Characteristics

