

General Description

These Power MOSFETs are produced using Cmos's proprietary, planar stripe, DMOS technology. These devices are well suited for high efficiency switched mode power supplies, active power factor correction based on half bridge topology.

Features

- Fast switching
- 100% avalanche tested
- Improved dv/dt capability

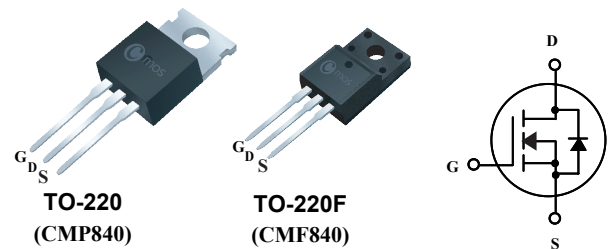
Product Summary

BVDSS	R _{DS(on)} max.	ID
500V	1.1Ω	8A

Applications

- Adapter
- Switch Mode Power Supply
- Uninterruptable Power Supply

TO-220/220F Pin Configuration



Absolute Maximum Ratings

T_C = 25°C unless otherwise noted

Symbol	Parameter	220	220F	Units
V _{DSS}	Drain-Source Voltage	500		V
I _D	Drain Current - Continuous (T _C = 25°C)	8	8*	A
	- Continuous (T _C = 100°C)	5	5*	A
I _{DM}	Drain Current - Pulsed ^a	32	32*	A
V _{GSS}	Gate-Source Voltage	± 30		V
E _{AS}	Single Pulsed Avalanche Energy ^b	500		mJ
dv/dt	Peak Diode Recovery dv/dt ^c	4.5		V/ns
P _D	Power Dissipation (T _C = 25°C)	140	45	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	220	220F	Units
R _{θJC}	Thermal Resistance, Junction-to-Case Max.	0.89	2.78	°C/W
R _{θJA}	Thermal Resistance, Junction-to-Ambient Max.	62.5	62.5	°C/W

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

Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
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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
		$V_{DS} = 400\text{ V}, T_C = 125^\circ\text{C}$	--	--	100	
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	$V_{GS} = 10\text{ V}, I_D = 3.5\text{ A}$	--	0.92	1.1	Ω
g_{FS}	Forward Transconductance	$V_{DS} = 20\text{ V}, I_D = 3.5\text{ A}$	--	7	--	S

Dynamic Characteristics

C_{iss}	Input Capacitance	$V_{DS} = 25\text{ V}$ $V_{GS} = 0\text{ V}$ $f = 1.0\text{ MHz}$	--	1100	--	pF
C_{oss}	Output Capacitance		--	80	--	pF
C_{rss}	Reverse Transfer Capacitance		--	7	--	pF

Switching Characteristics

$t_{d(on)}$	Turn-On Delay Time	$V_{DD} = 250\text{ V}$ $I_D = 8\text{ A}$ $R_G = 25\Omega$	--	20	--	ns
t_r	Turn-On Rise Time		--	70	--	ns
$t_{d(off)}$	Turn-Off Delay Time		--	90	--	ns
t_f	Turn-Off Fall Time		--	60	--	ns
Q_g	Total Gate Charge	$V_{DS} = 400\text{ V}$ $I_D = 8\text{ A}$ $V_{GS} = 10\text{ V}$	--	30	--	nC
Q_{gs}	Gate-Source Charge		--	4	--	nC
Q_{gd}	Gate-Drain Charge		--	15	--	nC

Drain-Source Diode Characteristics and Maximum Ratings

I _S	Maximum Continuous Drain-Source Diode Forward Current		--	--	8	A
I _{SM}	Maximum Pulsed Drain-Source Diode Forward Current		--	--	32	A
V _{SD}	Drain-Source Diode Forward Voltage	V _{GS} = 0 V, I _S = 7A	--	0.87	1.4	V
t _{rr}	Reverse Recovery Time	V _{GS} = 0 V, I _S = 8A dI /dt = 100 A/μs	--	340	--	ns
Q _{rr}	Reverse Recovery Charge		--	3	--	μC

Notes:

- a.Repetitive Rating: Pulse width limited by maximum junction temperature
- b.The EAS data shows Max. rating .The test condition is $V_{bs}=80\text{ V}$, $V_{GS}=10\text{ V}$, $L=10\text{ mH}$, $I_{AS}=10\text{ A}$.
- c. $I_{SD}\leq 8.0\text{ A}$, $dI/dt \leq 200\text{ A}/\mu\text{s}$, $V_{DD} \leq BV_{DSS}$, Starting $T_J = 25^\circ\text{C}$
- d.Pulse Test: Pulse width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2\%$
- e.Essentially Independent of Operating Temperature Typical Characteristics

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

