

General Description

The 3N50M have been fabricated using an advanced high voltage MOSFET process that is designed to deliver high levels of performance and robustness in popular AC-DC applications.

Features

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

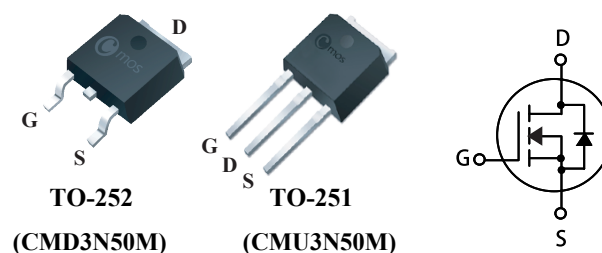
Product Summary

BVDSS	RDSON	ID
500V	3Ω	3A

Applications

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

TO-252/251 Pin Configuration



Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DSS}	Drain-Source Voltage	500	V
I_D	Drain Current - Continuous ($T_C = 25^\circ\text{C}$)	3	A
	- Continuous ($T_C = 100^\circ\text{C}$)	1.8	A
I_{DM}	Drain Current - Pulsed	12	A
V_{GSS}	Gate-Source Voltage	± 30	V
E_{AS}	Single Pulsed Avalanche Energy ¹	81	mJ
P_D	Power Dissipation ($T_C = 25^\circ\text{C}$)	60	W
T_J, T_{STG}	Operating and Storage Temperature Range	-55 to +150	$^\circ\text{C}$

Thermal Characteristics

Symbol	Parameter	Rating	Units
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case Max.	1.25	$^\circ\text{C}/\text{W}$
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient Max.	110	$^\circ\text{C}/\text{W}$

Electrical Characteristic (Tc=25°C unless otherwise noted)

Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
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Off Characteristics

BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS} = 0\text{ V}, I_D = 250\mu\text{A}$	500	--	--	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS} = 500\text{ V}, V_{GS} = 0\text{ V}$	--	--	1	μA
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	$V_{DS} = V_{GS}, I_D = 250\mu\text{A}$	2	--	4	V
$R_{DS(on)}$	Static Drain-Source On-Resistance	$V_{GS} = 10\text{ V}, I_D = 1\text{A}$	--	2.6	3	Ω
g_{FS}	Forward Transconductance	$V_{DS} = 20\text{ V}, I_D = 1\text{A}$	--	2.3	--	S

Dynamic Characteristics

C_{iss}	Input Capacitance	$V_{DS} = 25\text{ V}, V_{GS} = 0\text{ V},$ $f = 1.0\text{ MHz}$	--	280	--	pF
C_{oss}	Output Capacitance		--	25	--	pF
C_{rss}	Reverse Transfer Capacitance		--	0.5	--	pF

Switching Characteristics

$t_{d(on)}$	Turn-On Delay Time	$V_{DD} = 250\text{ V}, I_D = 3\text{A},$ $R_G = 25\Omega, V_{GS} = 10\text{ V}$	--	11	--	ns
t_r	Turn-On Rise Time		--	20	--	ns
$t_{d(off)}$	Turn-Off Delay Time		--	21	--	ns
t_f	Turn-Off Fall Time		--	15	--	ns
Q_g	Total Gate Charge	$V_{DS} = 480\text{ V}, I_D = 1\text{A},$ $V_{GS} = 10\text{ V}$	--	5	--	nC
Q_{gs}	Gate-Source Charge		--	1	--	nC
Q_{gd}	Gate-Drain Charge		--	3	--	nC

Drain-Source Diode Characteristics and Maximum Ratings

I _S	Maximum Continuous Drain-Source Diode Forward Current		--	--	3	A
I _{SM}	Maximum Pulsed Drain-Source Diode Forward Current		--	--	12	A
V _{SD}	Drain-Source Diode Forward Voltage	V _{GS} = 0 V, I _S = 3A	--	--	1.4	V
t _{rr}	Reverse Recovery Time	V _{GS} = 0 V, I _S = 3 A, dI _F / dt = 100 A/us	--	190	--	ns
Q _{rr}	Reverse Recovery Charge		--	0.53	--	uC

Notes:

1. The EAS data shows Max. rating . The test condition is $V_{DS}=50\text{V}$, $V_{GS}=10\text{V}$, $L=8\text{mH}$, $I_{AS}=4.5\text{A}$.

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

Typical Characteristics

