

General Description

The 5N60 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

- 4.5A, 600V, RDS (on) = 2.5 Ω @VGS = 10 V
- 100% Avalanche Tested
- Improved dv/dt capability

Absolute Maximum Ratings

T_C = 25°C unless otherwise noted

Symbol	Parameter	Value	Units
V _{DSS}	Drain-Source Voltage	600	V
I _D	Drain Current - Continuous (T _C = 25°C)	4.5	A
	- Continuous (T _C = 100°C)	2.6	A
I _{DM}	Drain Current - Pulsed ^a	13.5	A
V _{GSS}	Gate-Source Voltage	± 30	V
E _{AS}	Single Pulsed Avalanche Energy ^b	220	mJ
I _{AR}	Avalanche Current ^a	4.5	A
E _{AR}	Repetitive Avalanche Energy ^a	4.9	mJ
dv/dt	Peak Diode Recovery dv/dt ^c	4.5	V/ns
P _D	Power Dissipation (T _C = 25°C)	54	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	Value	Units
R _{θJC}	Thermal Resistance, Junction-to-Case Max.	2.56	°C/W
R _{θJA}	Thermal Resistance, Junction-to-Ambient Max.	110	°C/W

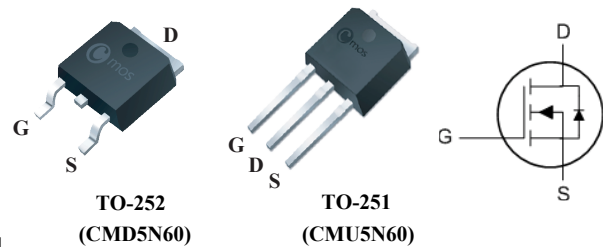
Product Summary

BVDSS	RDSON	ID
600V	2.5Ω	4.5A

Applications

- Power Supply
- PFC
- Ballast

TO-252/251 Pin Configuration



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	$V_{GS} = 0\text{ V}, I_D = 250\ \mu\text{A}$	600	--	--	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS} = 600\text{ V}, V_{GS} = 0\text{ V}$	--	--	1	μA
		$V_{DS} = 480\text{ V}, T_C = 125^\circ\text{C}$	--	--	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	$V_{DS} = V_{GS}, I_D = 250\ \mu\text{A}$	2.0	--	4.0	V
$R_{DS(on)}$	Static Drain-Source On-Resistance	$V_{GS} = 10\text{ V}, I_D = 2.25\text{ A}$	--	--	2.5	Ω
g_{FS}	Forward Transconductance	$V_{DS} = 40\text{ V}, I_D = 2.25\text{ A}^d$	--	4.7	--	S

Dynamic Characteristics

C_{iss}	Input Capacitance	$V_{DS} = 25\text{ V}$	--	490	--	pF
C_{oss}	Output Capacitance		$V_{GS} = 0\text{ V}$	--	55	--
C_{riss}	Reverse Transfer Capacitance	$f = 1.0\text{ MHz}$	--	10	--	pF

Switching Characteristics

$t_{d(on)}$	Turn-On Delay Time	$V_{DD} = 300\text{ V}$ $I_D = 4.5\text{ A}$ $R_G = 25\ \Omega$	--	15	--	ns	
t_r	Turn-On Rise Time		--	42	--	ns	
$t_{d(off)}$	Turn-Off Delay Time		d,e	--	55	--	ns
t_f	Turn-Off Fall Time		--	26	--	ns	
Q_g	Total Gate Charge	$V_{DS} = 480\text{ V}$ $I_D = 4.5\text{ A}$ $V_{GS} = 10\text{ V}$	--	15	--	nC	
Q_{gs}	Gate-Source Charge		d,e	--	2.8	--	nC
Q_{gd}	Gate-Drain Charge		--	7	--	nC	

Drain-Source Diode Characteristics and Maximum Ratings

I_S	Maximum Continuous Drain-Source Diode Forward Current	--	--	4.5	A	
I_{SM}	Maximum Pulsed Drain-Source Diode Forward Current	--	--	13.5	A	
V_{SD}	Drain-Source Diode Forward Voltage	$V_{GS} = 0\text{ V}, I_S = 4.5\text{ A}$	--	--	1.4	V
t_{rr}	Reverse Recovery Time	$V_{GS} = 0\text{ V}, I_S = 4.5\text{ A}$ $di/dt = 100\text{ A}/\mu\text{s}$	--	300	--	ns
Q_{rr}	Reverse Recovery Charge		d	--	2.2	--

Notes:

- Repetitive Rating: Pulse width limited by maximum junction temperature
- $L = 18.9\text{ mH}$, $I_{AS} = 4.5\text{ A}$, $V_{DD} = 50\text{ V}$, $R_G = 25\ \Omega$, Starting $T_J = 25^\circ\text{C}$
- $I_{SD} \leq 4.5\text{ A}$, $di/dt \leq 200\text{ A}/\mu\text{s}$, $V_{DD} \leq BV_{DSS}$, Starting $T_J = 25^\circ\text{C}$
- Pulse Test: Pulse width $\leq 300\ \mu\text{s}$, Duty cycle $\leq 2\%$
- Essentially independent of operating temperature

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