

General Description

The 2N60D 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

- 2A, 600V, RDS(on) = 5Ω @VGS = 10 V
- Fast switching
- 100% Avalanche Tested
- Improved dv/dt capability
- ESD Improved 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)	2	A
	- Continuous (T _C = 100°C)	1.14	A
I _{DM}	Drain Current - Pulsed ^a	6	A
V _{GSS}	Gate-Source Voltage	± 30	V
E _{AS}	Single Pulsed Avalanche Energy ^b	120	mJ
I _{AR}	Avalanche Current ^a	2	A
E _{AR}	Repetitive Avalanche Energy ^a	3.8	mJ
dv/dt	Peak Diode Recovery dv/dt ^c	4.5	V/ns
P _D	Power Dissipation (T _C = 25°C)	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

Thermal Characteristics

Symbol	Parameter	Value	Units
R _{θJC}	Thermal Resistance, Junction-to-Case Max.	2.87	°C/W
R _{θCS}	Thermal Resistance, Case-to-Sink Typ.	0.5	°C/W
R _{θJA}	Thermal Resistance, Junction-to-Ambient Max.	50	°C/W

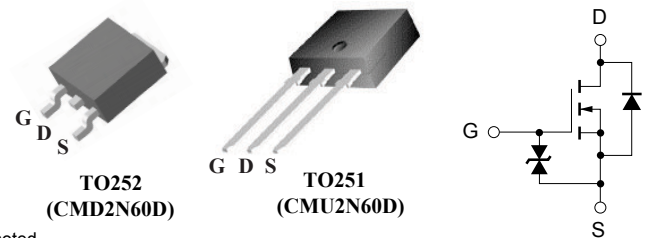
Product Summary

BVDSS	RDSON	ID
600V	5 Ω	2A

Applications

- Power Supply
- PFC
- High Current, High Speed Switching

TO252 / TO251 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	$V_{GS} = 0\text{ V}, I_D = 250\text{ A}$	600	--	--	V
BV_{DSS} / T_J	Breakdown Voltage Temperature Coefficient	$I_D = 250\text{ A}$, Referenced to 25°C	--	0.6	--	$\text{V}/^\circ\text{C}$
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS} = 600\text{ V}, V_{GS} = 0\text{ V}$	--	--	1	A
		$V_{DS} = 480\text{ V}, T_C = 125^\circ\text{C}$	--	--	100	
I_{GSSF}	Gate-Body Leakage Current, Forward	$V_{GS} = 30\text{ V}, V_{DS} = 0\text{ V}$	--	--	10	μA
I_{GSSR}	Gate-Body Leakage Current, Reverse	$V_{GS} = -30\text{ V}, V_{DS} = 0\text{ V}$	--	--	-10	μA

On Characteristics

$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}, I_D = 250\text{ A}$	2.0	--	4.0	V
$R_{DS(on)}$	Static Drain-Source On-Resistance	$V_{GS} = 10\text{ V}, I_D = 1\text{ A}$	--	--	5	Ω
g_{FS}	Forward Transconductance	$V_{DS} = 40\text{ V}, I_D = 1\text{ A}$ d	--	5	--	S

Dynamic Characteristics

C_{iss}	Input Capacitance	$V_{DS} = 25\text{ V}$ $V_{GS} = 0\text{ V}$ $f = 1.0\text{ MHz}$	--	220	--	pF
C_{oss}	Output Capacitance		--	25	--	pF
C_{rss}	Reverse Transfer Capacitance		--	5	--	pF

Switching Characteristics

$t_{d(on)}$	Turn-On Delay Time	$V_{DD} = 300\text{ V}$ $I_D = 2\text{ A}$ $R_G = 25\Omega$ d,e	--	14	--	ns
t_r	Turn-On Rise Time		--	37	--	ns
$t_{d(off)}$	Turn-Off Delay Time		--	30	--	ns
t_f	Turn-Off Fall Time		--	42	--	ns
Q_g	Total Gate Charge	$V_{DS} = 480\text{ V}$ $I_D = 2\text{ A}$ $V_{GS} = 10\text{ V}$ d,e	--	9.5	--	nC
Q_{gs}	Gate-Source Charge		--	1.7	--	nC
Q_{gd}	Gate-Drain Charge		--	4.5	--	nC

Drain-Source Diode Characteristics and Maximum Ratings

I _S	Maximum Continuous Drain-Source Diode Forward Current		--	--	2	A
I _{SM}	Maximum Pulsed Drain-Source Diode Forward Current		--	--	6	A
V _{SD}	Drain-Source Diode Forward Voltage	V _{GS} = 0 V, I _S = 2A	--	--	1.4	V
t _{rr}	Reverse Recovery Time	V _{GS} = 0 V, I _S = 2A dI _F / dt = 100 A/ s d	--	230	--	ns
Q _{rr}	Reverse Recovery Charge		--	1	--	C

Notes:

a. Repetitive Rating: Pulse width limited by maximum junction temperature

b. $L = 56\text{ mH}$, $I_{AS} = 2.0\text{ A}$, $V_{DD} = 50\text{ V}$, $R_G = 25\Omega$, Starting $T_J = 25^\circ\text{C}$

c. $I_{SD} \leq 2\text{ A}$, $di/dt \leq 200\text{ A}/\mu\text{s}$, $V_{DD} \leq BVDSS$, Starting $T_J = 25^\circ\text{C}$

d. Pulse Test: Pulse width $\leq 300\text{ }\mu\text{s}$, Duty cycle $\leq 2\%$

e. Essentially independent of operating temperature