

General Description

The 6N50 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	1.3Ω	6A

Applications

- Power Supply
- Uninterruptible Power Supply

TO-252/251 Pin Configuration



Absolute Maximum Ratings

TC = 25°C unless otherwise noted

Symbol	Parameter	TSD6N50M/TSU6N50M	Units
V _{DSS}	Drain-Source Voltage	500	V
I _D	Drain Current - Continuous (T _C = 25°C)	6	A
		3.8	A
I _{DM}	Drain Current - Pulsed (Note 1)	18	A
V _{GSS}	Gate-Source Voltage	±30	V
E _{AS}	Single Pulsed Avalanche Energy (Note 2)	285	mJ
P _D	Power Dissipation (T _C = 25°C)	90	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	TSD6N50M/TSU6N50M	Units
R _{θJC}	Thermal Resistance, Junction-to-Case Max.	1.4	°C /W
R _{θJA}	Thermal Resistance, Junction-to-Ambient Max.	83	°C /W

Electrical Characteristic (T_c=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 V, I _D = 250 μA	500	--	--	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} = 500 V, V _{GS} = 0 V	--	--	1	μA
I _{GSSF}	Gate-Body Leakage Current, Forward	V _{GS} = 30 V, V _{DS} = 0 V	--	--	100	nA
I _{GSSR}	Gate-Body Leakage Current, Reverse	V _{GS} = -30 V, V _{DS} = 0 V	--	--	-100	nA

On Characteristics

V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _D = 250 μA	2.0	--	4	V
R _{DS(on)}	Static Drain-Source On-Resistance	V _{GS} = 10 V, I _D = 2.75A	--	--	1.3	Ω
g _{FS}	Forward Transconductance	V _{DS} = 10 V, I _D = 5A	--	8	--	S

Dynamic Characteristics

C _{iss}	Input Capacitance	V _{DS} = 25 V, V _{GS} = 0 V, f = 1.0 MHz	--	1450	--	pF
C _{oss}	Output Capacitance		--	95	--	pF
C _{rss}	Reverse Transfer Capacitance		--	10	--	pF

Switching Characteristics

t _{d(on)}	Turn-On Delay Time	V _{DD} = 250 V, I _D = 6A, R _G = 25Ω	--	5	--	ns
t _r	Turn-On Rise Time		--	55	--	ns
t _{d(off)}	Turn-Off Delay Time		--	25	--	ns
t _f	Turn-Off Fall Time		--	55	--	ns
Q _g	Total Gate Charge	V _{DS} = 400 V, I _D = 6A, V _{GS} = 10 V	--	13	30	nC
Q _{gs}	Gate-Source Charge		--	4	--	nC
Q _{gd}	Gate-Drain Charge		--	6	--	nC

Drain-Source Diode Characteristics and Maximum Ratings

I _S	Maximum Continuous Drain-Source Diode Forward Current		--	--	6	A
I _{SM}	Maximum Pulsed Drain-Source Diode Forward Current		--	--	18	A
V _{SD}	Drain-Source Diode Forward Voltage	V _{GS} = 0 V, I _S = 5A	--	--	1.4	V
t _{rr}	Reverse Recovery Time	V _{GS} = 0 V, I _S = 6 A, dI _F / dt = 100 A/μs	--	275	--	ns
Q _{rr}	Reverse Recovery Charge		--	1.7	--	μC

Notes:

1. Repetitive Rating : Pulse width limited by maximum junction temperature
2. L = 5mH, I_{AS} = 10.5A, V_{DD} = 10V, Starting T_J = 25°C

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