



SPN72T10A N-Channel Enhancement Mode MOSFET

DESCRIPTION

The SPN72T10A is the N-Channel logic enhancement mode power field effect transistors are produced using high cell density, DMOS trench technology. The SPN72T10A has been designed specifically to improve the overall efficiency of DC/DC converters using either synchronous or conventional switching PWM controllers. It has been optimized for low gate charge, low $R_{DS(ON)}$ and fast switching speed.

FEATURES

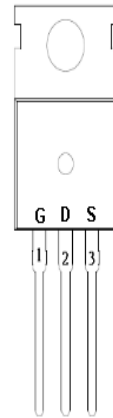
- ◆ 100V/63A, $R_{DS(ON)}=9.8m\Omega@V_{GS}=10V$
- ◆ 100V/63A, $R_{DS(ON)}=13.0m\Omega@V_{GS}=4.5V$
- ◆ Super high density cell design for extremely low $R_{DS(ON)}$
- ◆ Exceptional on-resistance and maximum DC current capability
- ◆ TO-220-3L/TO-252-2L package design

APPLICATIONS

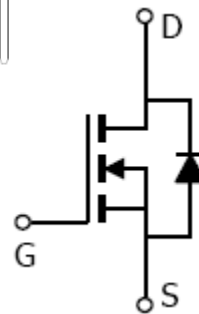
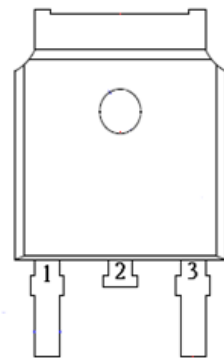
- DC/DC Converter
- Load Switch
- SMPS Secondary Side Synchronous Rectifier
- Motor Control
- Power Tool

PIN CONFIGURATION

TO-220-3L



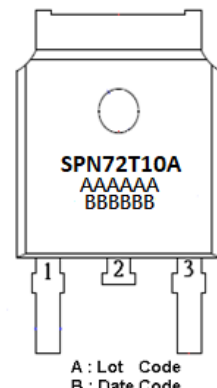
TO-252-2L



PART MARKING



A : Lot Code
B : Date Code



A : Lot Code
B : Date Code



SPN72T10A

N-Channel Enhancement Mode MOSFET

PIN DESCRIPTION

Pin	Symbol	Description
1	G	Gate
2	D	Drain
3	S	Source

ORDERING INFORMATION

Part Number	Package	Part Marking
SPN72T10AT220TGB	TO-220-3L	SPN72T10A
SPN72T10AT252RGB	TO-252-2L	SPN72T10A

※ SPN72T10AT220TGB : Tube ; Pb – Free ; Halogen – Free

※ SPN72T10AT252RGB : Tape Reel ; Pb – Free ; Halogen - Free

ABSOLUTE MAXIMUM RATINGS

(TA=25°C Unless otherwise noted)

Parameter	Symbol	Typical	Unit	
Drain-Source Voltage	V _{DSS}	100	V	
Gate –Source Voltage	V _{GSS}	±20	V	
Continuous Drain Current (Silicon Limited)	I _D	T _C =25°C	63	A
		T _C =100°C	40	
Pulsed Drain Current	I _{DM}	160	A	
Single Pulse Avalanche Energy (T _C =25°C , L=0.1mH.)	E _{AS}	101	mJ	
Power Dissipation (TO-220)	P _D	104	W	
Power Dissipation (TO-252)		T _C =25°C		93
Operating Junction Temperature	T _J	-55/150	°C	
Storage Temperature Range	T _{STG}	-55/150	°C	
Thermal Resistance-Junction to Case (TO-220)	R _{θJC}	1.2	°C/W	
Thermal Resistance-Junction to Case (TO-252)	R _{θJC}	1.35	°C/W	



SPN72T10A

N-Channel Enhancement Mode MOSFET

ELECTRICAL CHARACTERISTICS

(TA=25°C Unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	100			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1.4	1.8	2.4	V
Gate Leakage Current	I_{GSS}	$V_{DS}=0V, V_{GS}=\pm 20V$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=80V, V_{GS}=0V$			1	uA
		$V_{DS}=80V, V_{GS}=0V, T_J=85^\circ C$			10	
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=20A$		8	9.8	mΩ
		$V_{GS}=4.5V, I_D=20A$		10.5	13	
Forward Transconductance	g_{fs}	$V_{DS}=5V, I_D=10A$		80		S
Gate resistance	R_g	$V_{DS}=0V, V_{GS}=0V$ $f=1MHz$		1.4		Ω
Diode Forward Voltage	V_{SD}	$I_s=1A, V_{GS}=0V$		0.9	1.2	V
Dynamic						
Total Gate Charge	$Q_g(10V)$	$V_{DS}=50V, V_{GS}=10V$ $I_D=20A$		24		nC
Total Gate Charge	$Q_g(4.5V)$			12		
Gate-Source Charge	Q_{gs}			4		
Gate-Drain Charge	Q_{gd}			6		
Input Capacitance	C_{iss}	$V_{DS}=50V, V_{GS}=0V$ $f=1MHz$		1450		pF
Output Capacitance	C_{oss}			273		
Reverse Transfer Capacitance	C_{rss}			5		
Turn-On Time	$t_{d(on)}$	$V_{DD}=50V, I_D=20A, V_{GS}=10V$ $R_G=10\Omega$		6		nS
	t_r			4		
Turn-Off Time	$t_{d(off)}$			18		
	t_f			3		



SPN72T10A

N-Channel Enhancement Mode MOSFET

TYPICAL CHARACTERISTICS

Fig 1. Typical Output Characteristics

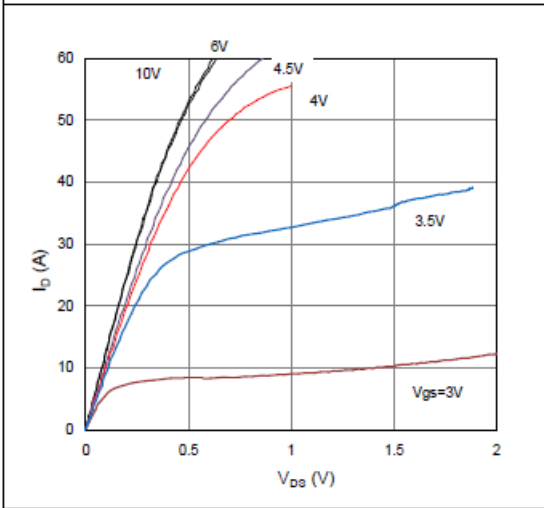


Figure 2. On-Resistance vs. Gate-Source Voltage

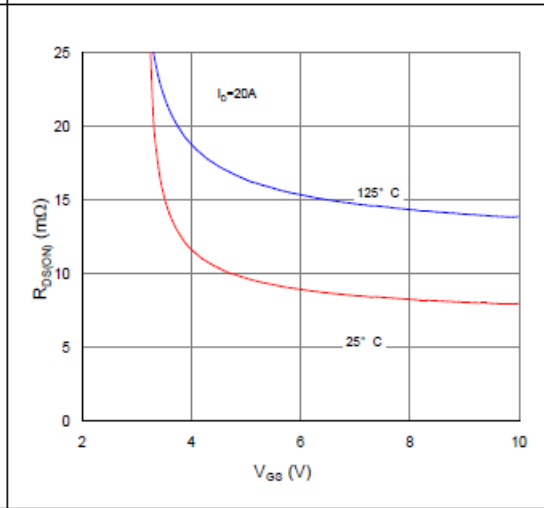


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

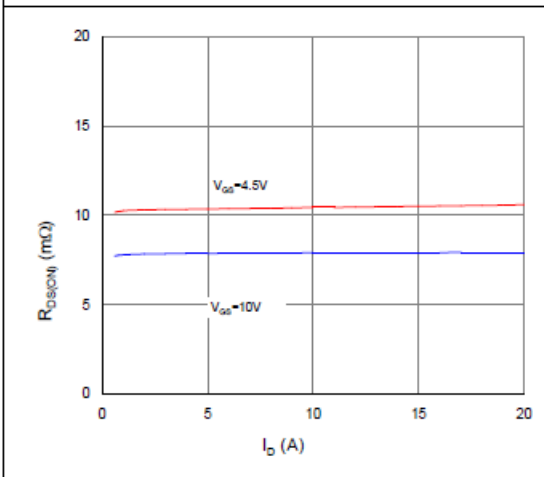


Figure 4. Normalized On-Resistance vs. Junction Temperature

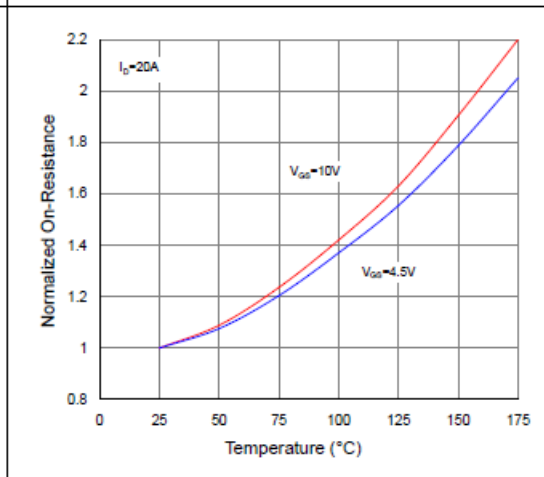


Figure 5. Typical Transfer Characteristics

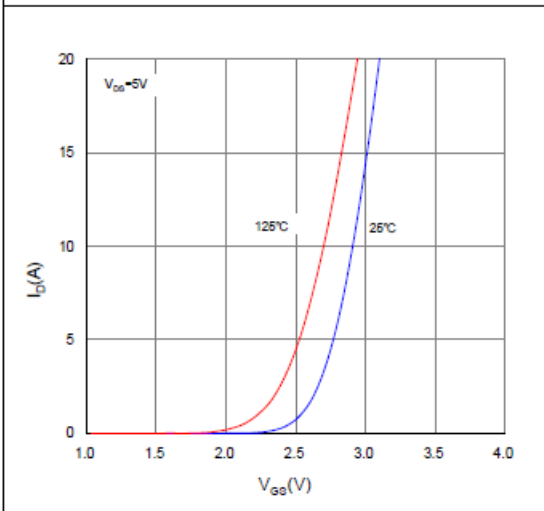
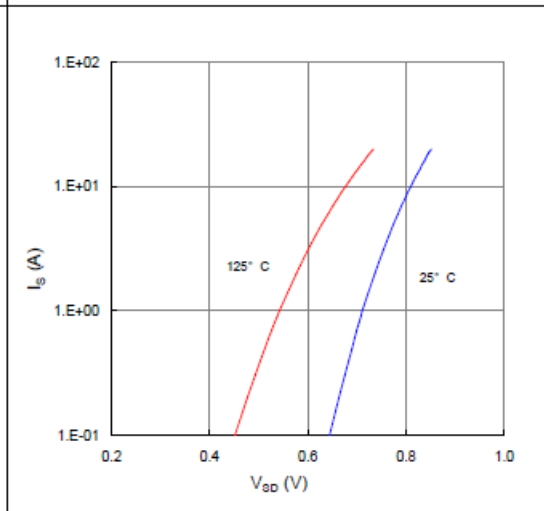


Figure 6. Typical Source-Drain Diode Forward Voltage





SPN72T10A

N-Channel Enhancement Mode MOSFET

TYPICAL CHARACTERISTICS

Figure 7. Typical Gate-Charge vs. Gate-to-Source Voltage

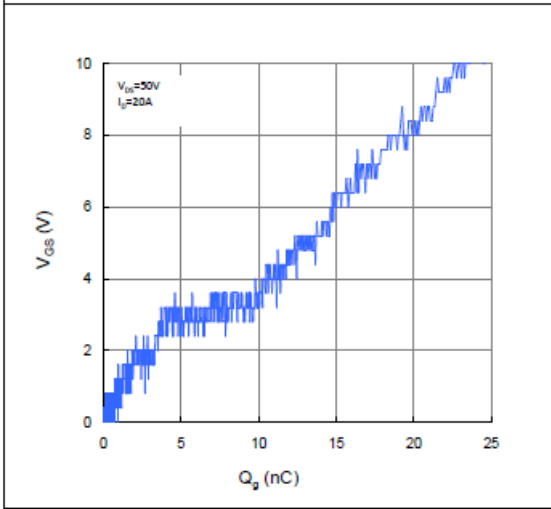


Figure 8. Typical Capacitance vs. Drain-to-Source Voltage

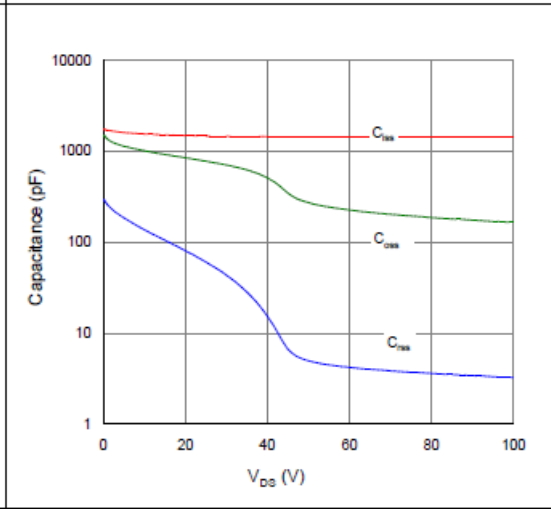


Figure 9. Maximum Safe Operating Area

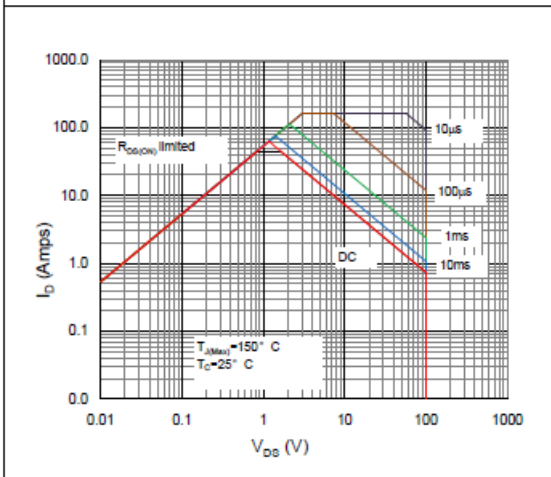


Figure 10. Maximum Drain Current vs. Case Temperature

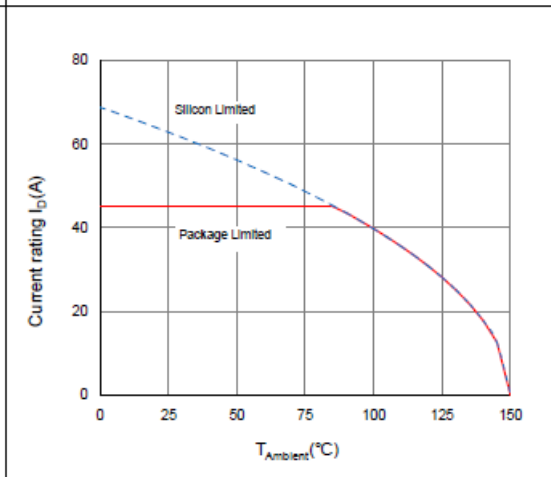
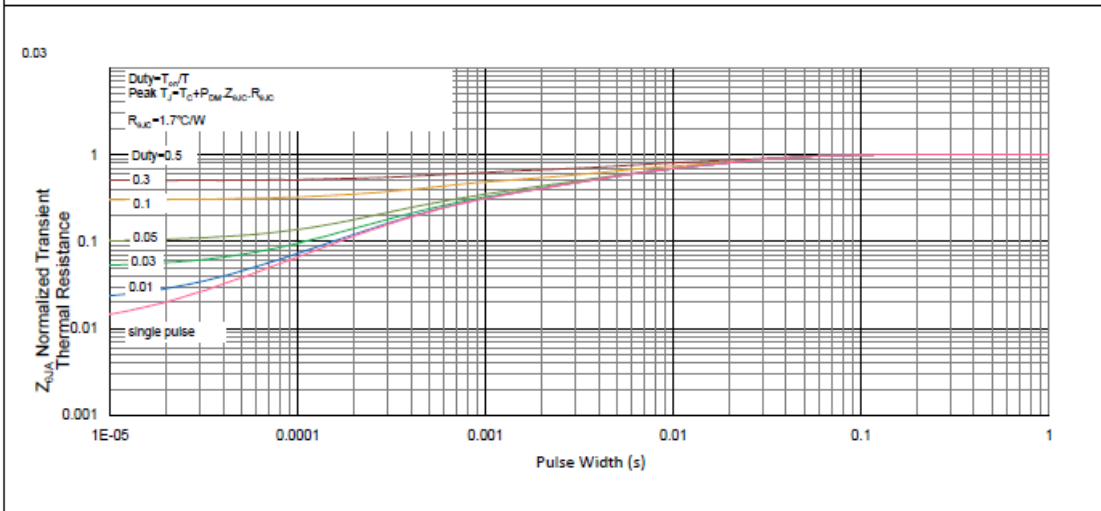


Figure 11. Normalized Maximum Transient Thermal Impedance, Junction-to-Ambient





SPN72T10A

N-Channel Enhancement Mode MOSFET

Information provided is alleged to be exact and consistent. SYNC Power Corporation presumes no responsibility for the penalties of use of such information or for any violation of patents or other rights of third parties which may result from its use. No license is granted by allegation or otherwise under any patent or patent rights of SYNC Power Corporation. Conditions mentioned in this publication are subject to change without notice. This publication surpasses and replaces all information previously supplied. SYNC Power Corporation products are not authorized for use as critical components in life support devices or systems without express written approval of SYNC Power Corporation.

©The SYNC Power logo is a registered trademark of SYNC Power Corporation

©2022 SYNC Power Corporation – Printed in Taiwan – All Rights Reserved

SYNC Power Corporation

7F-2, No.3-1, Park Street

NanKang District (NKSP), Taipei, Taiwan 115

Phone: 886-2-2655-8178

Fax: 886-2-2655-8468

©<http://www.syncpower.com>