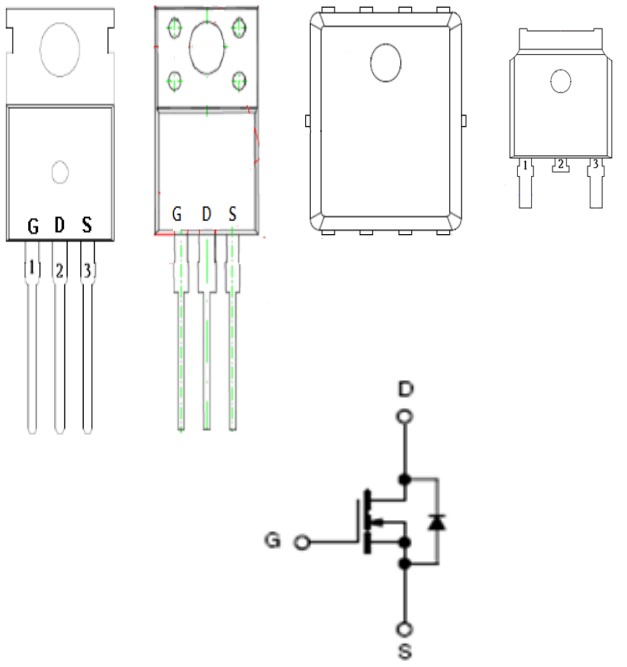
SPN75T10
N-Channel Enhancement Mode MOSFET

DESCRIPTION
The SPN75T10 is the N-Channel logic enhancement mode power field effect transistor which is produced using high cell density DMOS trench technology. This high density process is especially tailored to minimize on-state resistance. These devices are particularly suitable for synchronous rectifier application, Motor control power management and other Power Tool circuits. It has been optimized for low gate charge, low $R_{DS(ON)}$ and fast switching speed.

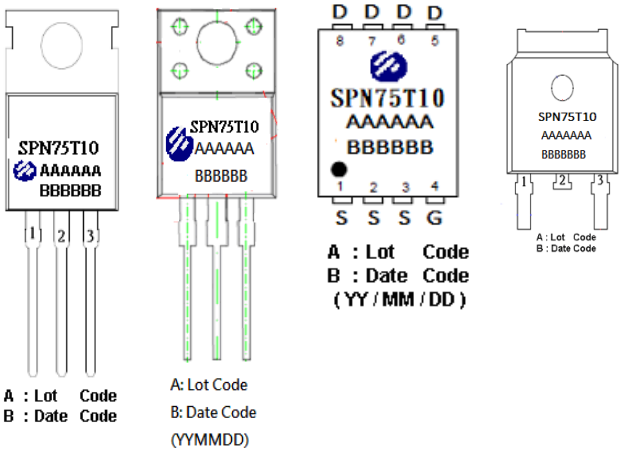
APPLICATIONS
- DC/DC Converter
- Load Switch
- SMPS Secondary Side Synchronous Rectifier
- Power Tool
- Motor Control

FEATURES
- 100V/80A,$R_{DS(ON)}$=9.2mΩ@V_{GS}=10V
- 100V/80A,$R_{DS(ON)}$=14mΩ@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-220F-3L/TO-252-2L/PPAK5x6-8L package design

PIN CONFIGURATION
TO-220-3L TO-220F-3L PPAK5x6-8L TO252-2L



PART MARKING



TO-220/TO-220F/TO-252 PIN DESCRIPTION

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

PPAK5x6 PIN DESCRIPTION

Pin	Symbol	Description
1	S	Source
2	S	Source
3	S	Source
4	G	Gate
5	D	Drain
6	D	Drain
7	D	Drain
8	D	Drain

ORDERING INFORMATION

Part Number	Package	Part Marking
SPN75T10T220TGB	TO-220-3L	SPN75T10
SPN75T10T220FTGB	TO-220F-3L	SPN75T10
SPN75T10T252RGB	TO-252-2L	SPN75T10
SPN75T10DN8RGB	PPAK5x6-8L	SPN75T10

※ SPN75T10T220TGB : Tube ; Pb – Free ; Halogen – Free
※ SPN75T10T220FTGB : Tube ; Pb – Free ; Halogen – Free
※ SPN75T10T252RGB : Tape Reel ; Pb – Free ; Halogen – Free
※ SPN75T10DN8RGB : Tape Reel ; Pb – Free ; Halogen – Free

SPN75T10
N-Channel Enhancement Mode MOSFET

ABSOULTE MAXIMUM RATINGS

(T_A=25℃ Unless otherwise noted)

Parameter		Symbol	Typical	Unit
Drain-Source Voltage		V_{DSS}	100	V
Gate –Source Voltage		V_{GSS}	+20/-12	V
Continuous Drain Current(Silicon Limited)	T_C=25℃	I_D	80	A
	T_C=100℃		50.6	
Pulsed Drain Current		I_{DM}	320	A
Power Dissipation@ T_C=25℃	TO-220	P_D	156	W
Power Dissipation@ T_C=25℃	TO-220F/TO-252		145	
Power Dissipation@ T_C=25℃	PPAK5x6		135	
Avalanche Energy with Single Pulse (Tj=25℃, L=0.1mH , I_{AS}=65A , V_{DD}=50V , V_{GS}=10V)		E_{AS}	211	mJ
Operating Junction Temperature		T_J	-55/150	℃
Storage Temperature Range		T_{STG}	-55/150	℃
Thermal Resistance-Junction to Ambient		$R_{\theta JA}$	62	℃/W
Thermal Resistance-Junction to Case		$R_{\theta JC}$	0.8	℃/W

Note :

The maximum current rating is package limited at 78A for TO-220F-3L
The maximum current rating is package limited at 70A for TO-252-2L
The maximum current rating is package limited at 80A for PPAK5x6-8L

ELECTRICAL CHARACTERISTICS

(T_A=25℃ Unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V,I_D=250uA	100			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=250uA	1.0		2.5	
Gate Leakage Current	I_{GSS}	V_{DS}=0V,V_{GS}=+20V/-12V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=80V,V_{GS}=0V T_J=25℃			1	uA
		V_{DS}=80V,V_{GS}=0V T_J=125℃			10	
Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS}=10V,I_D=15A		7.6	9.2	mΩ
		V_{GS}=4.5V,I_D=8A		10.8	14	
Diode Forward Voltage	V_{SD}	I_S=1A,V_{GS}=0V,T_J=25℃			1	V
Dynamic						
Total Gate Charge	Q_g	V_{DS}=80V,V_{GS}=10V I_D=8.5A		39.7	80	nC
Gate-Source Charge	Q_{gs}			5.4	10	
Gate-Drain Charge	Q_{gd}			11.2	22	
Input Capacitance	C_{iss}	V_{DD}=25V,V_{GS}=0V f=1MHz		2550	5100	pF
Output Capacitance	C_{oss}			685	1370	
Reverse Transfer Capacitance	C_{rss}			42	84	
Turn-On Time	$t_{d(on)}$	V_{DD}=50V, I_D=1A,V_{GS}=10V R_G=6Ω		14.6	30	nS
	t_r			21.5	44	
Turn-Off Time	$t_{d(off)}$			54	108	
	t_f			84.3	168	

TYPICAL CHARACTERISTICS

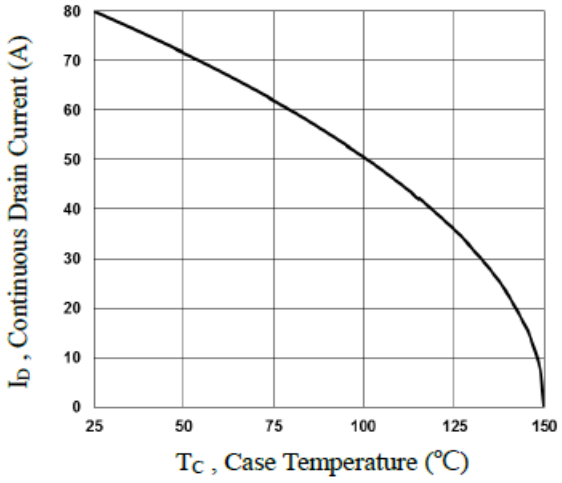


Fig.1 Continuous Drain Current vs. T_c

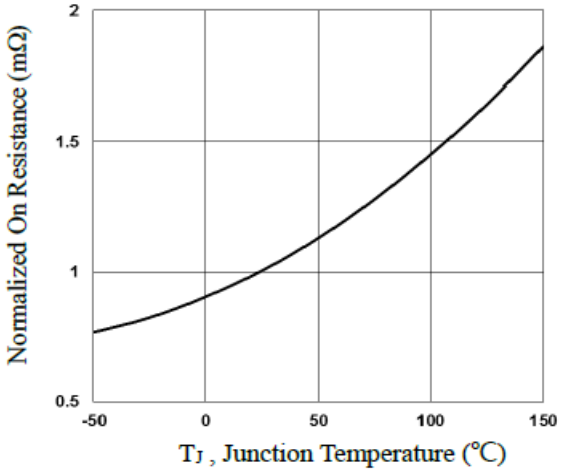


Fig.2 Normalized RDSON vs. T_J

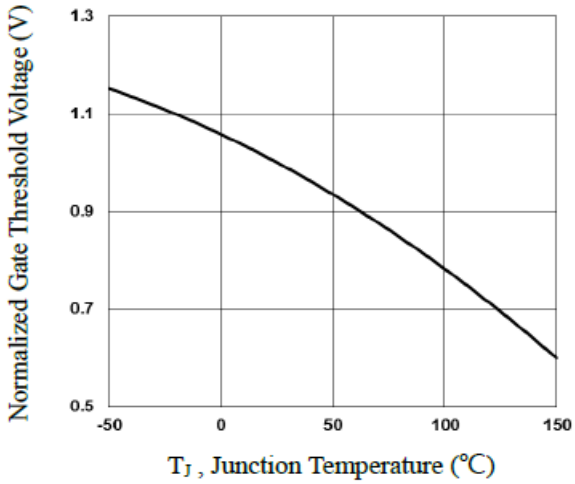


Fig.3 Normalized Vth vs. T_J

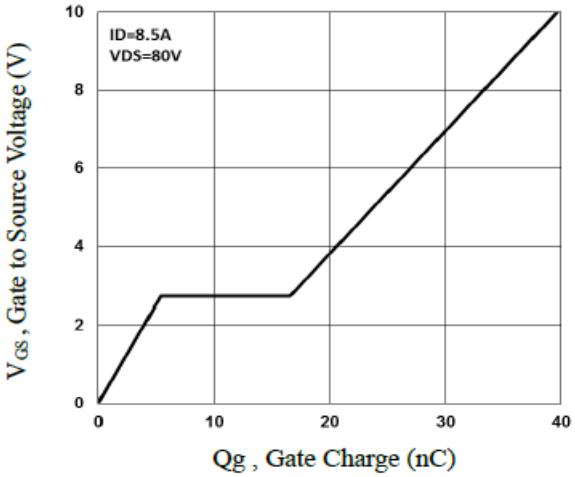


Fig.4 Gate Charge Characteristics

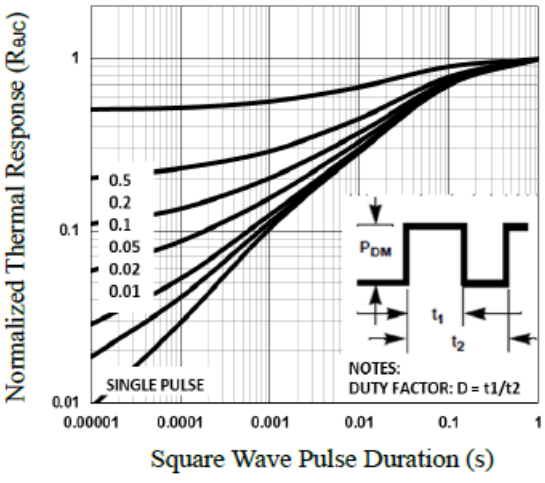


Fig.5 Normalized Transient Impedance

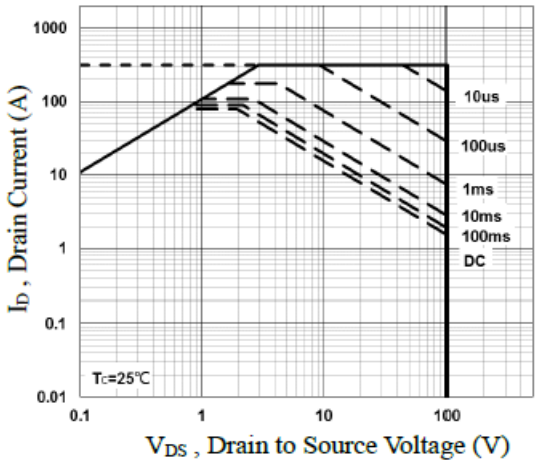


Fig.6 Maximum Safe Operation Area

TYPICAL CHARACTERISTICS

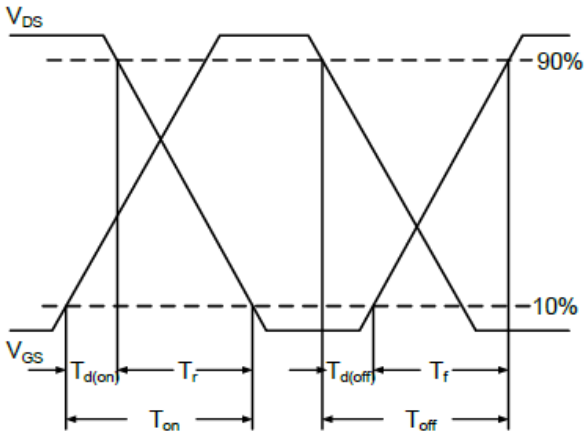


Fig.7 Switching Time Waveform

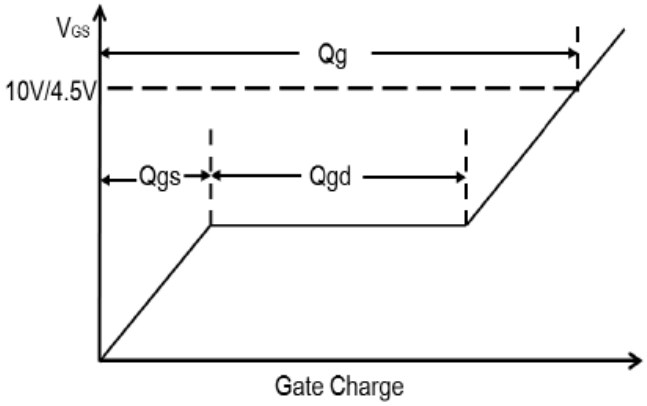


Fig.8 Gate Charge Waveform

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
© 2020 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