



SPN7575 N-Channel Enhancement Mode MOSFET

DESCRIPTION

The SPN7575 is the N-Channel logic enhancement mode power field effect transistors are produced using high cell density , DMOS trench technology.

This high density process is especially tailored to minimize on-state resistance.

This device is particularly suited for E Bike application.

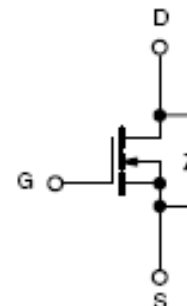
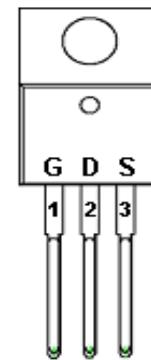
APPLICATIONS

- DC/DC Converter
- Load Switch
- Power Tool

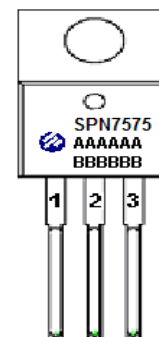
FEATURES

- ◆ 75V/80A, $R_{DS(ON)} = 11m\Omega @ V_{GS} = 10V$
- ◆ Super high density cell design for extremely low $R_{DS(ON)}$
- ◆ Exceptional on-resistance and maximum DC current capability
- ◆ TO-220-3L package design

PIN CONFIGURATION(TO-220-3L)



PART MARKING



A : Lot Code
B : Date Code
(YY / MM / DD)



SPN7575

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
SPN7575T220TG	TO-220-3L	SPN7575

※ SPN7575T220TG: Tube ; Pb – Free

ABSOLUTE MAXIMUM RATINGS

($T_A=25^{\circ}\text{C}$ Unless otherwise noted)

Parameter	Symbol	Typical	Unit	
Drain-Source Voltage	V_{DSS}	75	V	
Gate –Source Voltage	V_{GSS}	± 20	V	
Continuous Drain Current($T_J=150^{\circ}\text{C}$)	I_D	$T_A=25^{\circ}\text{C}$	90	A
		$T_A=70^{\circ}\text{C}$	80	
Pulsed Drain Current	I_{DM}	370	A	
Avalanche Current	I_{AS}	52	A	
Power Dissipation	P_D	$T_A=25^{\circ}\text{C}$	200	W
		$T_A=70^{\circ}\text{C}$	140	
Avalanche Energy with Single Pulse ($T_J=25^{\circ}\text{C}$, $L = 500\mu\text{H}$, $I_{AS} = 20\text{A}$, $V_{DD} = 60\text{V}$.)	E_{AS}	165	mJ	
Operating Junction Temperature	T_J	-55/150	$^{\circ}\text{C}$	
Storage Temperature Range	T_{STG}	-55/150	$^{\circ}\text{C}$	
Thermal Resistance-Junction to Ambient	$R_{\theta JC}$	0.75	$^{\circ}\text{C}/\text{W}$	



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ELECTRICAL CHARACTERISTICS

(TA=25°C Unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	75			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	2.0		4.0	
Gate Leakage Current	I_{GSS}	$V_{DS}=0V, V_{GS}=\pm 20V$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=60V, V_{GS}=0V$			1	uA
		$V_{DS}=60V, V_{GS}=0V$ $T_J = 55^\circ C$			5	
On-State Drain Current	$I_{D(on)}$	$V_{DS} \geq 5V, V_{GS} = 10V$	70			A
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 40A$		11	12	mΩ
Forward Transconductance	g_{fs}	$V_{DS}=5V, I_D=20A$		52		S
Single Pulse Avalanche Energy	EAS	$V_{DS}=60V, L=500\mu H,$ $I_{AS}=20A$	58			mJ
Diode Forward Voltage	V_{SD}	$I_S=30A, V_{GS} = 0V$			1.2	V
Dynamic						
Total Gate Charge	Q_g	$V_{DS}=15V, V_{GS}=10V$ $I_D = 15A$		105		nC
Gate-Source Charge	Q_{gs}			20		
Gate-Drain Charge	Q_{gd}			17		
Input Capacitance	C_{iss}	$V_{DS}=15V, V_{GS}=0V$ $f=1MHz$		7760		pF
Output Capacitance	C_{oss}			320		
Reverse Transfer Capacitance	C_{rss}			210		
Turn-On Time	$t_{d(on)}$	$V_{DD}=15V, I_D=1A,$ $V_{GEN}=10V, R_G=3.3\Omega$		19.5		nS
	t_r			11.5		
Turn-Off Time	$t_{d(off)}$			118.5		
	t_f			11		



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TYPICAL CHARACTERISTICS

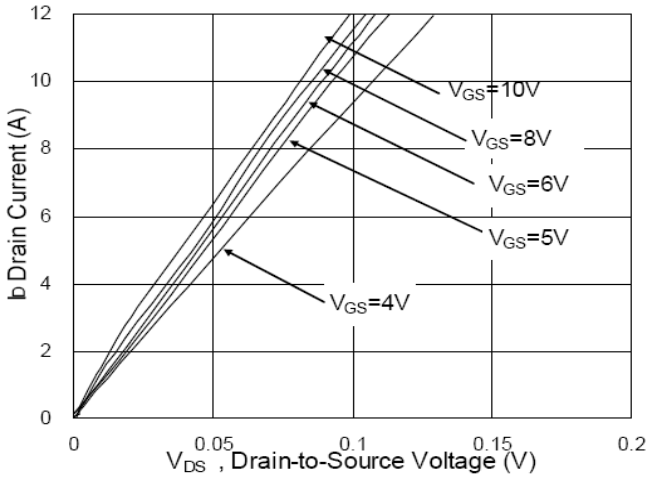


Fig. 1 Typical Output Characteristics

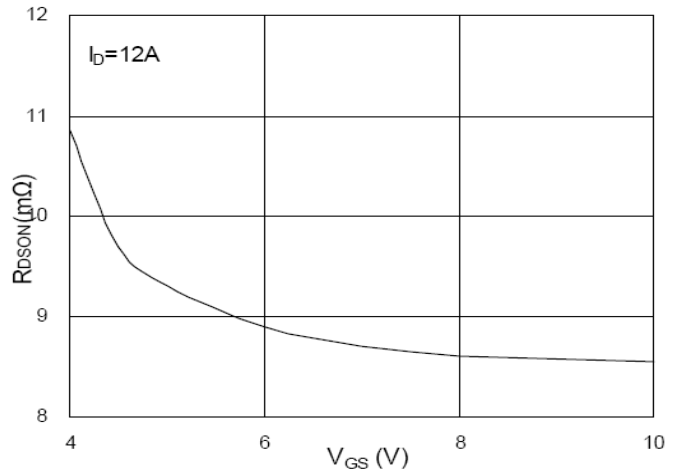


Fig. 2 On-Resistance vs. Gate Voltage

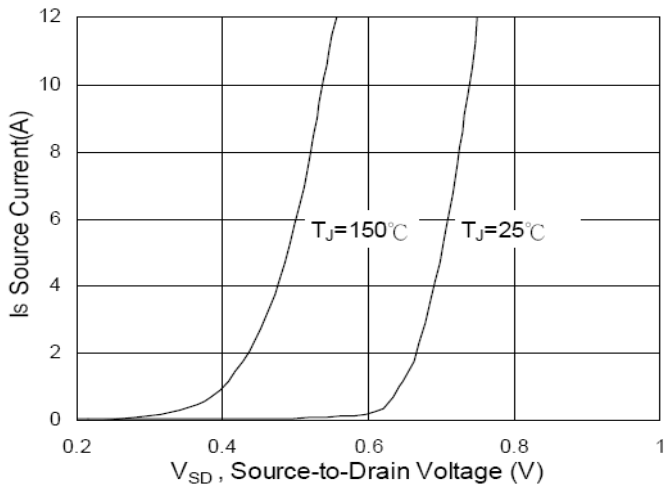


Fig. 3 Forward Characteristics of Reverse Diode

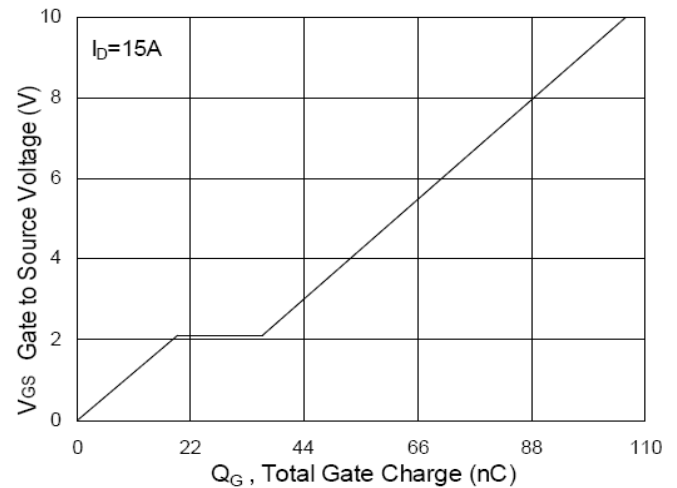


Fig. 4 Gate Charge Characteristics

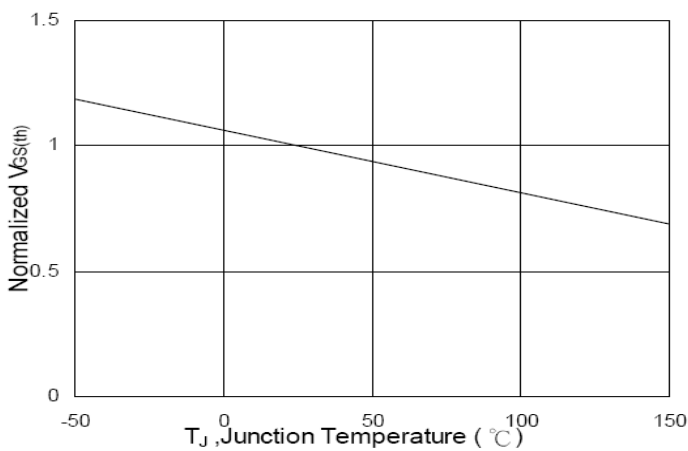


Fig. 5 Vgs vs. Junction Temperature

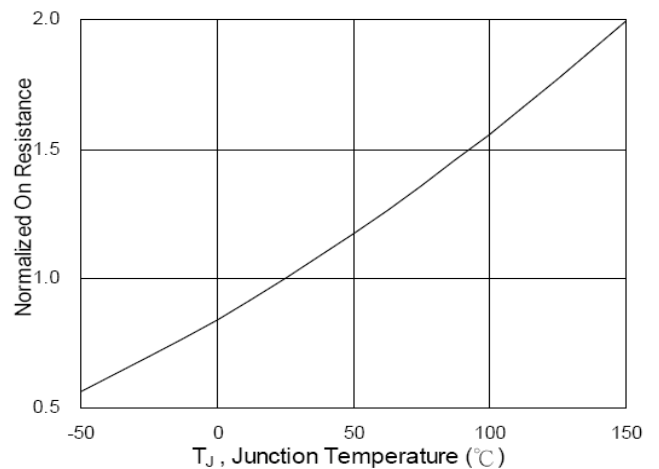


Fig. 6 On Resistance vs. Junction Temperature



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TYPICAL CHARACTERISTICS

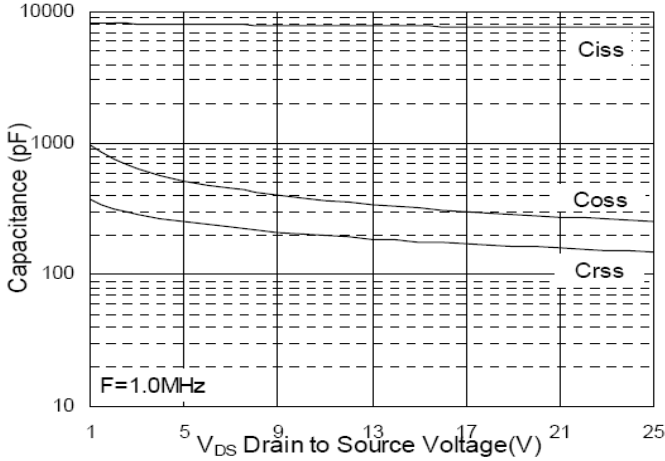


Fig. 7 Typical Capacitance Characteristics

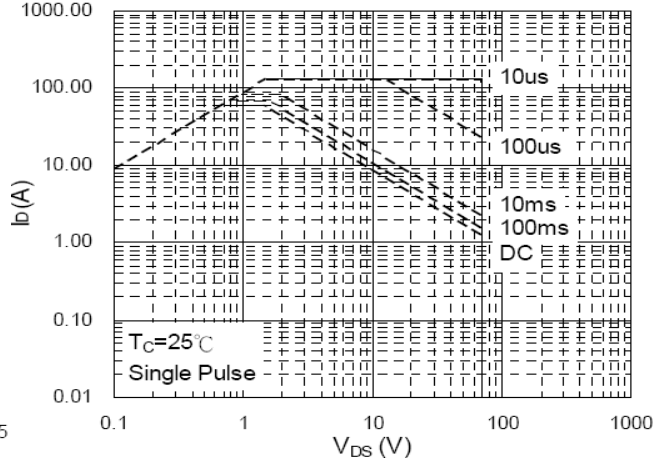


Fig. 8 Maximum Safe Operation Area

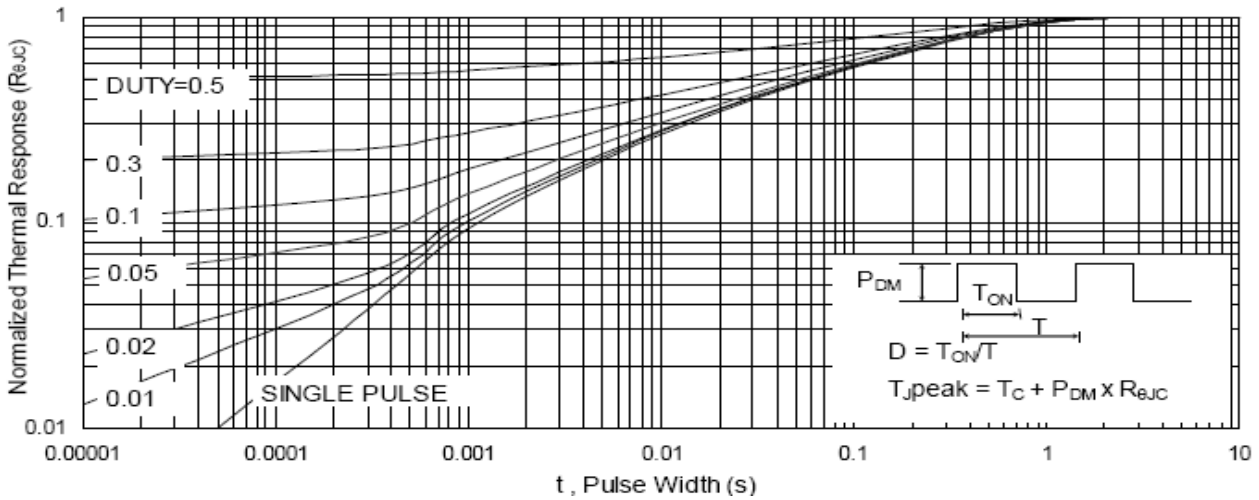


Fig. 9 Effective Transient Thermal Impedance

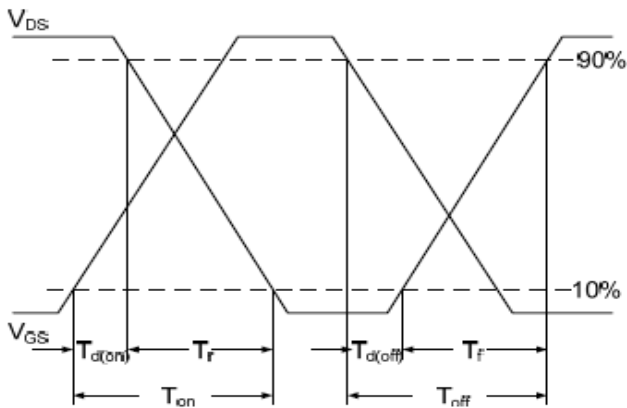


Fig. 10 Switching Time Waveform

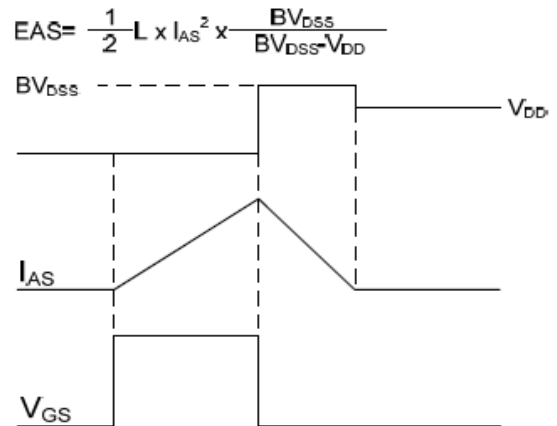
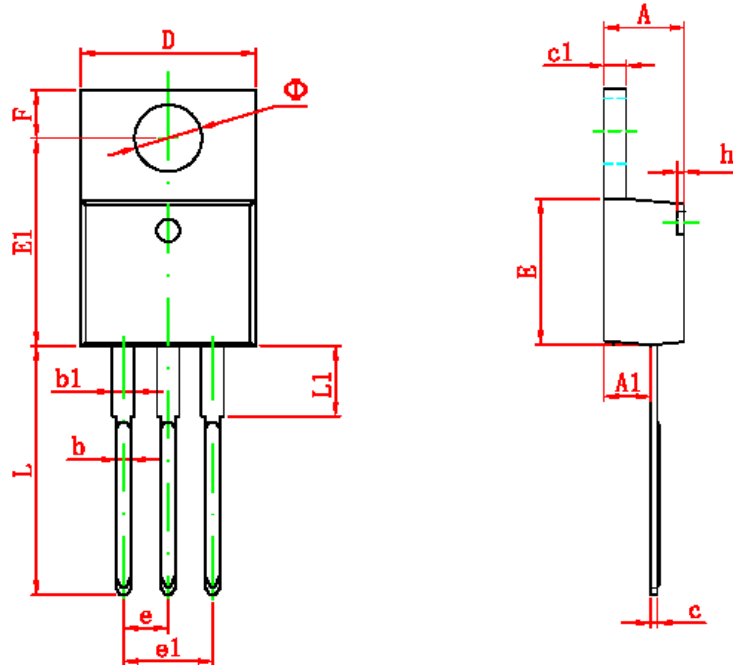


Fig. 11 Unclamped Inductive Waveform



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TO-220-3L PACKAGE OUTLINE



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	4.470	4.670	0.176	0.184
A1	2.520	2.820	0.099	0.111
b	0.710	0.910	0.028	0.036
b1	1.170	1.370	0.046	0.054
c	0.310	0.530	0.012	0.021
c1	1.170	1.370	0.046	0.054
D	10.010	10.310	0.394	0.406
E	8.500	8.900	0.335	0.350
E1	12.060	12.460	0.475	0.491
e	2.540 TYP		0.100 TYP	
e1	4.980	5.180	0.196	0.204
F	2.590	2.890	0.102	0.114
h	0.000	0.300	0.000	0.012
L	13.400	13.800	0.528	0.543
L1	3.560	3.960	0.140	0.156
• •	3.735	3.935	0.147	0.155



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