SPN340T06
N-Channel Enhancement Mode MOSFET

DESCRIPTION

The SPN340T06 is the N-Channel enhancement mode power field effect transistor which is produced using super 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

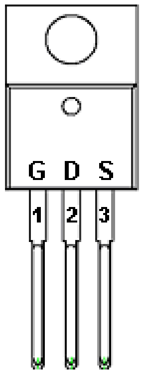
- DC/DC Converter
- Hard Switching and High Speed Circuit
- Synchronous Buck Converter
- Power Tools
- UPS
- Motor Control

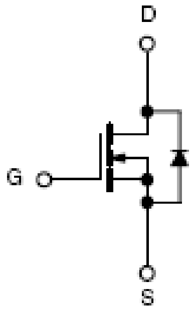
FEATURES

- 60V/340A, $R_{DS(ON)}$=1.9mΩ@V_{GS}=10V
- Super high density cell design for extremely low R_{DS} (ON)
- Exceptional on-resistance and maximum DC current capability
- Enhanced Avalanche Ruggedness
- TO-220-3L package design

PIN CONFIGURATION

TO-220





PART MARKING

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

PIN DESCRIPTION

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

ORDERING INFORMATION

Part Number	Package	Part Marking
SPN340T06T220TGB	TO-220-3L	SPN340T06

※ SPN340T060T220TGB: Tube ; Pb – Free; Halogen – Free

ABSOULTE MAXIMUM RATINGS

(T_A=25°C Unless otherwise noted)

Parameter		Symbol	Typical	Unit
Drain-Source Voltage		V_{DSS}	60	V
Gate –Source Voltage		V_{GSS}	±20	V
Continuous Drain Current(Silicon Limited)	T_C=25℃	I_D	340	A
	T_C=70℃		240	
Continuous Drain Current(Package Limited)	T_C=25℃		120	
Pulsed Drain Current		I_{DM}	900	A
Power Dissipation	T_A=25°C	P_D	104	W
Avalanche Energy with Single Pulse (Tc=25℃, L = 0.4mH)		E_{AS}	1280	mJ
Operating Junction Temperature		T_J	-55/150	°C
Storage Temperature Range		T_{STG}	-55/150	°C
Thermal Resistance-Junction to Case		$R_{\theta JC}$	1.2	°C/W

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	60			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=250uA	2	3	4	
Gate Leakage Current	I_{GSS}	V_{DS}=0V,V_{GS}=±20V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=60V,V_{GS}=0V TJ = 25 ℃			1	uA
		V_{DS}=60,V_{GS}=0V T_J =100 ℃			100	
On-State Drain Current	$I_{D(on)}$	V_{DS}≥5V,V_{GS} =10V	60			A
Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS}=10V,I_D=20A		1.67	1.9	mΩ
Forward Transconductance	gfs	V_{DS}=5V,I_D=20A		92		S
Gate Resistance	R_G	V_{GS}=0V,V_{DS}=Open, f=1MHz		0.7		Ω
Diode Forward Voltage	V_{SD}	I_F=20A,V_{GS} =0V		0.9	1.2	V
Dynamic						
Total Gate Charge	Q_g	V_{DS}=30V,V_{GS}=10V I_D=20A		124		nC
Gate-Source Charge	Q_{gs}			30		
Gate-Drain Charge	Q_{gd}			20		
Input Capacitance	C_{iss}	V_{DS}=30V,V_{GS}=0V f=1MHz		10570		pF
Output Capacitance	C_{oss}			4050		
Reverse Transfer Capacitance	C_{rss}			84		
Turn-On Time	$t_{d(on)}$	V_{DD}=30V, I_D=20A, V_{GS}=10V, R_G=3Ω		35		nS
	t_r			27		
Turn-Off Time	$t_{d(off)}$			70		
	t_f			15		

TYPICAL CHARACTERISTICS

Fig 1. Typical Output Characteristics

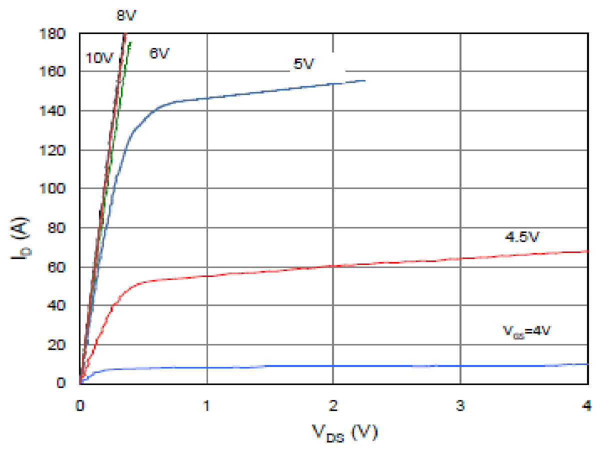


Figure 2. On-Resistance vs. Gate-Source Voltage

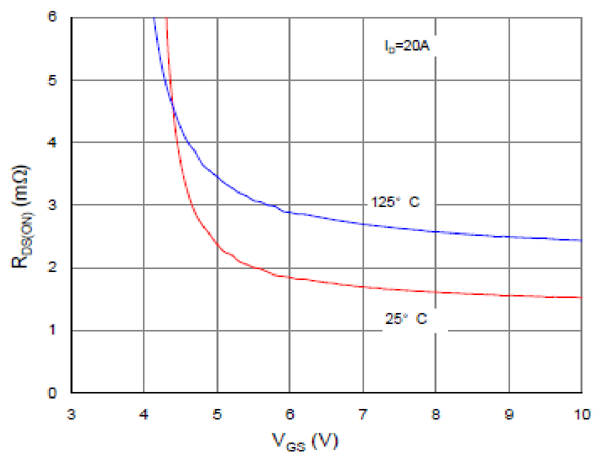


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

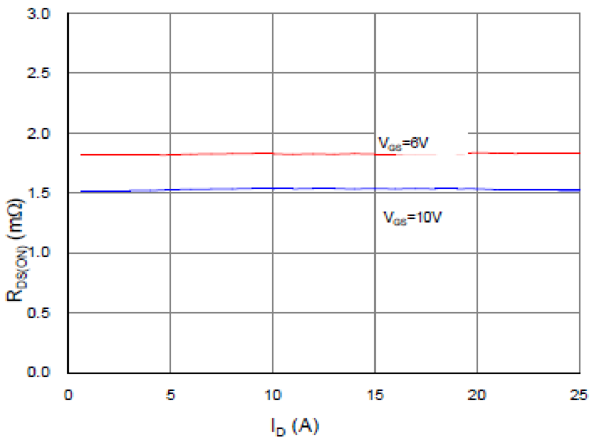


Figure 4. Normalized On-Resistance vs. Junction Temperature

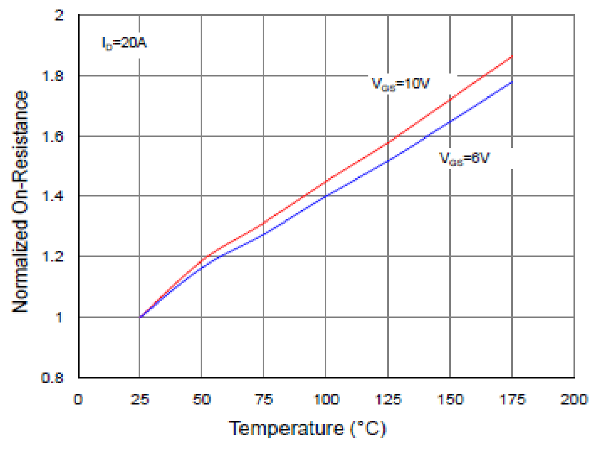


Figure 5. Typical Transfer Characteristics

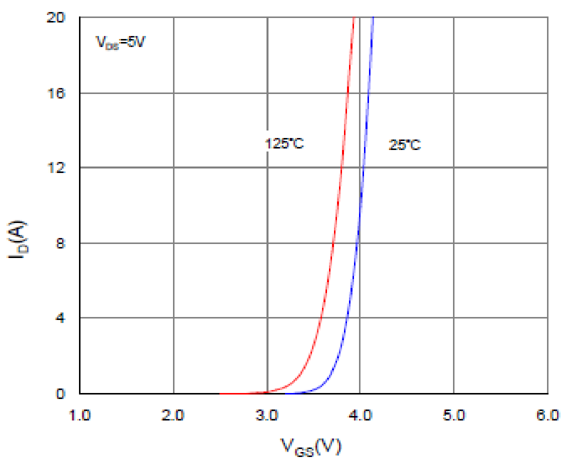
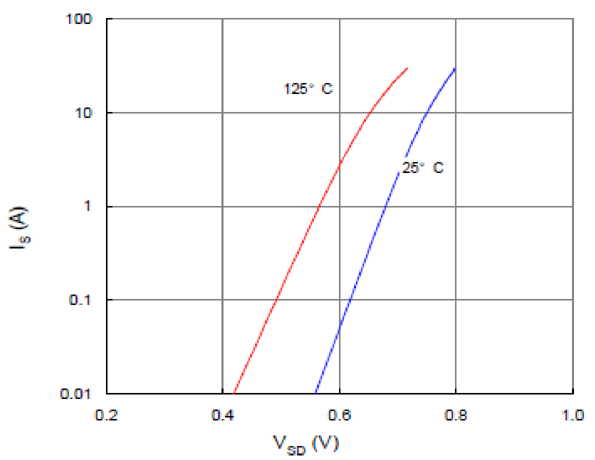


Figure 6. Typical Source-Drain Diode Forward Voltage



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TYPICAL CHARACTERISTICS

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

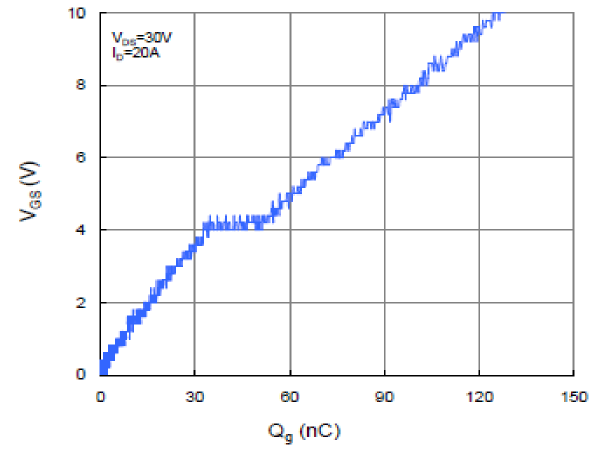


Figure 8. Typical Capacitance vs. Drain-to-Source Voltage

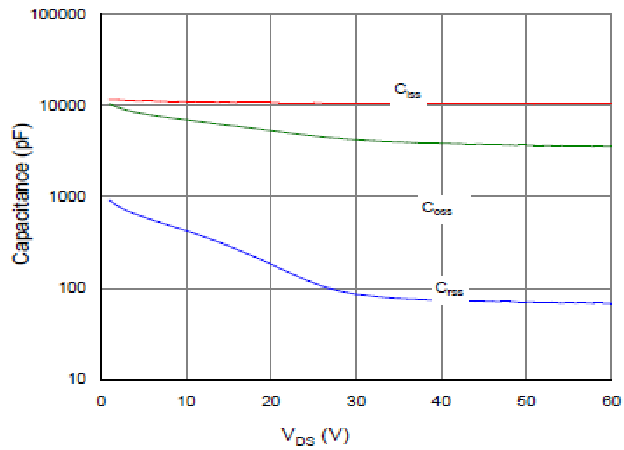


Figure 9. Maximum Safe Operating Area

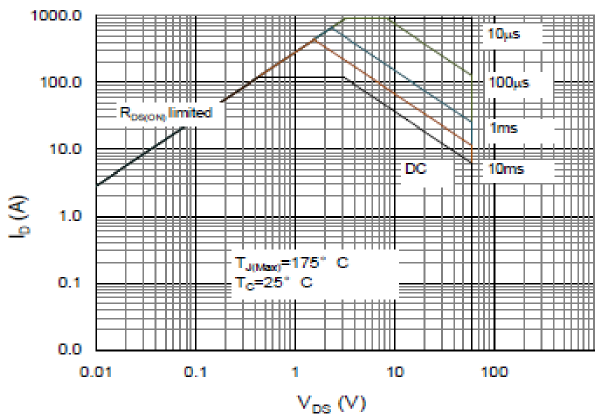


Figure 10. Maximun Drain Current vs. Case Temperature

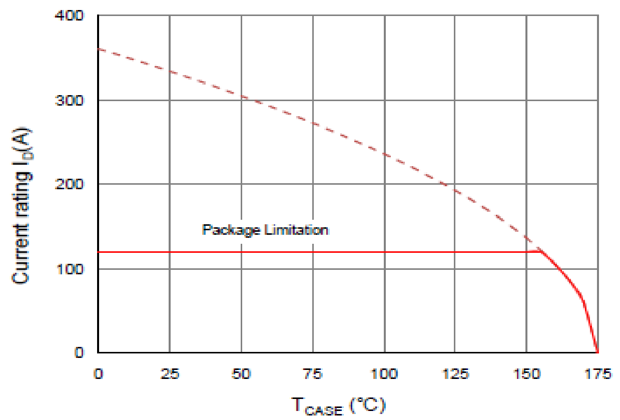
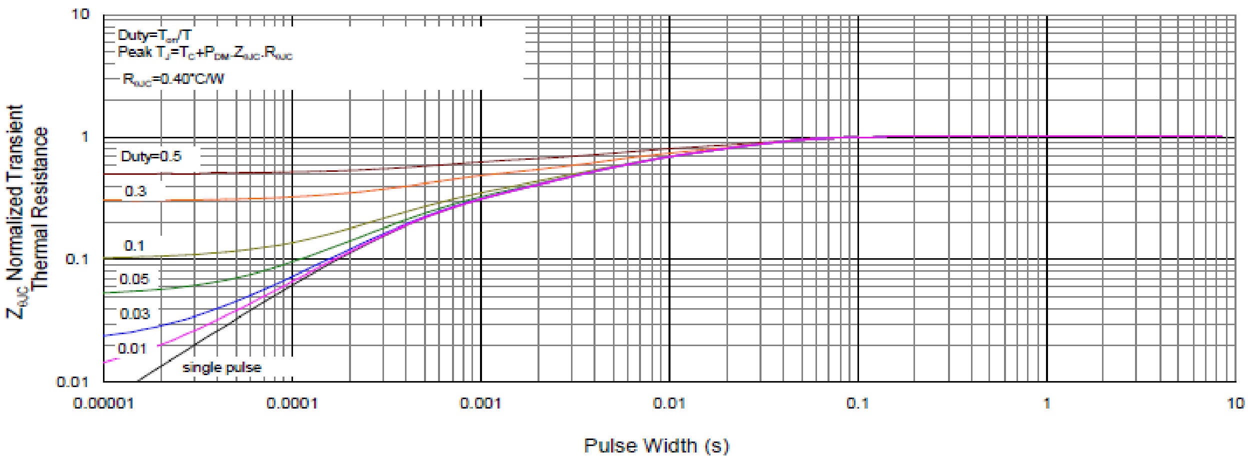
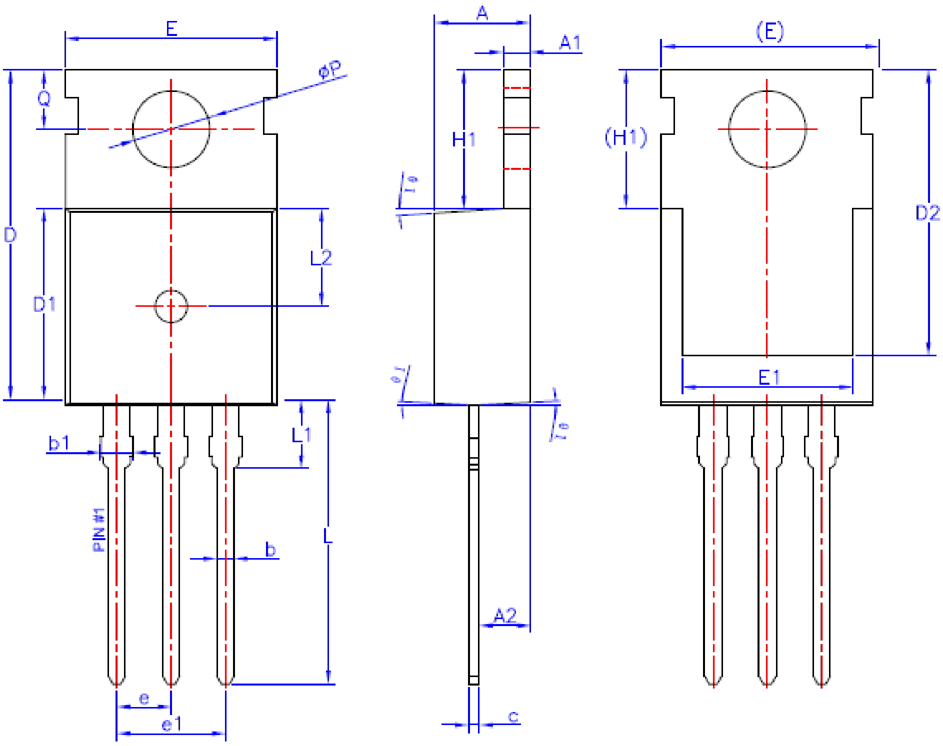


Figure 11. Normalized Maximum Transient Thermal Impedance, Junction-to-Case



TO-220-3L PACKAGE OUTLINE



SYMBOL	MIN	NOM	MAX
A	4.40	4.50	4.60
A1	1.27	1.30	1.33
A2	2.30	2.40	2.50
b	0.70	0.60	0.90
b1	-	-	1.40
c	0.45	0.50	0.60
D	15.30	15.70	16.10
D1	9.10	9.20	9.30
D2	13.10	-	13.70
E	9.70	9.90	10.20
E1	7.80	8.00	8.20
e	2.54BSC		
e1	5.08BSC		
H1	6.30	6.50	6.70
L	12.78	13.08	13.38
L1	-	-	3.50
L2	4.6REF		
φ P	3.55	3.60	3.65
Q	2.73	-	2.87
θ 1	1°	3°	5°

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