



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 RDS(ON) and fast switching speed..

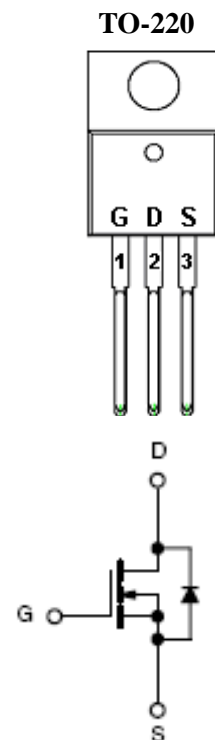
FEATURES

- ◆ 60V/340A, RDS(ON)=1.9mΩ@VGS=10V
- ◆ Super high density cell design for extremely low RDS (ON)
- ◆ Exceptional on-resistance and maximum DC current capability
- ◆ Enhanced Avalanche Ruggedness
- ◆ TO-220-3L package design

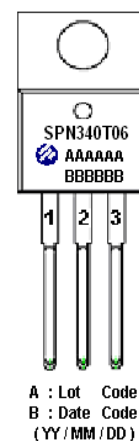
APPLICATIONS

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

PIN CONFIGURATION



PART MARKING





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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

※ SPN340T06T220TGB: Tube ; Pb – Free; Halogen – Free

ABSOLUTE MAXIMUM RATINGS

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

Parameter	Symbol	Typical	Unit	
Drain-Source Voltage	V_{DS}	60	V	
Gate –Source Voltage	V_{GS}	± 20	V	
Continuous Drain Current(Silicon Limited)	I_D	$T_C=25^{\circ}\text{C}$	340	A
		$T_C=70^{\circ}\text{C}$	240	
Continuous Drain Current(Package Limited)	$T_C=25^{\circ}\text{C}$	120		
Pulsed Drain Current	I_{DM}	900	A	
Power Dissipation	P_D	104	W	
Avalanche Energy with Single Pulse ($T_C=25^{\circ}\text{C}$, $L=1\text{mH}$)	EAS	702	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 Case	$R_{\theta JC}$	1.2	$^{\circ}\text{C}/\text{W}$	



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ELECTRICAL CHARACTERISTICS

(TA=25°C Unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	60			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	2	3	4	
Gate Leakage Current	I_{GSS}	$V_{DS}=0V, V_{GS}=\pm 20V$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=60V, V_{GS}=0V$ $T_J = 25^\circ C$			1	uA
		$V_{DS}=60V, V_{GS}=0V$ $T_J = 100^\circ C$			100	
On-State Drain Current	$I_{D(on)}$	$V_{DS} \geq 5V, V_{GS} = 10V$	60			A
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=20A$		1.67	1.9	mΩ
Forward Transconductance	g_{fs}	$V_{DS}=5V, I_D=20A$		92		S
Gate Resistance	R_G	$V_{GS}=0V, V_{DS}=\text{Open},$ $f=1\text{MHz}$		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}	$V_{DS}=30V, V_{GS}=0V$ $f=1\text{MHz}$		10570		pF
Output Capacitance	C_{oss}			4050		
Reverse Transfer Capacitance	C_{rss}			84		
Turn-On Time	$t_{d(on)}$	$V_{DD}=30V, I_D=20A,$ $V_{GS}=10V, R_G=3\Omega$		35		nS
	t_r			27		
Turn-Off Time	$t_{d(off)}$			70		
	t_f			15		



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TYPICAL CHARACTERISTICS

Fig 1. Typical Output Characteristics

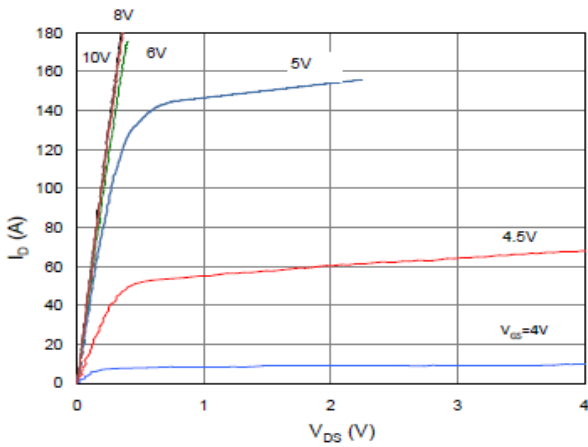


Figure 2. On-Resistance vs. Gate-Source Voltage

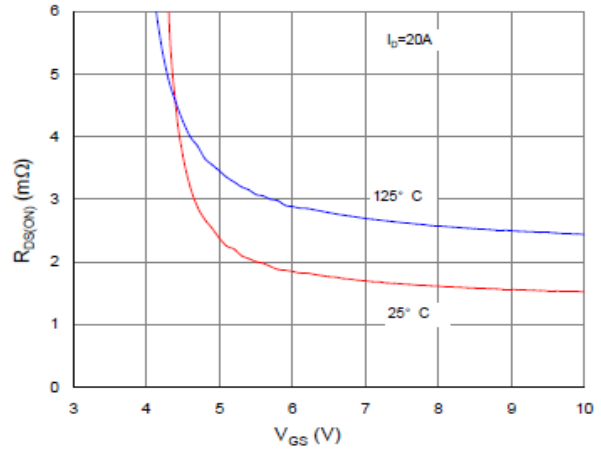


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

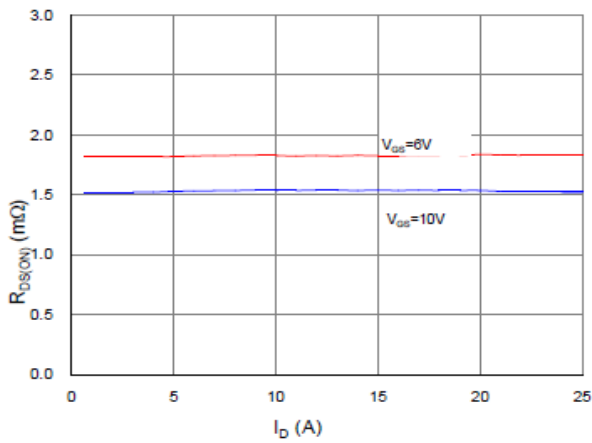


Figure 4. Normalized On-Resistance vs. Junction Temperature

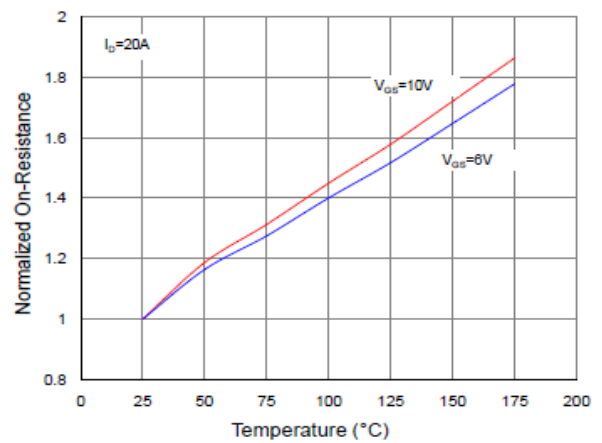


Figure 5. Typical Transfer Characteristics

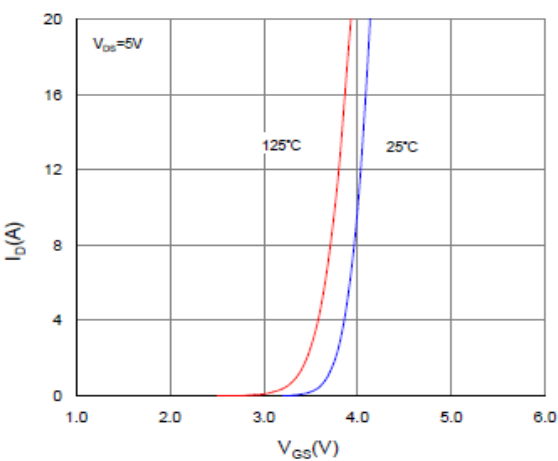
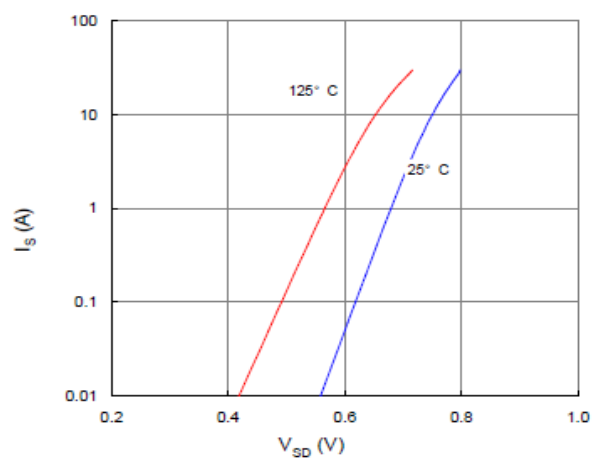


Figure 6. Typical Source-Drain Diode Forward Voltage





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TYPICAL CHARACTERISTICS

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

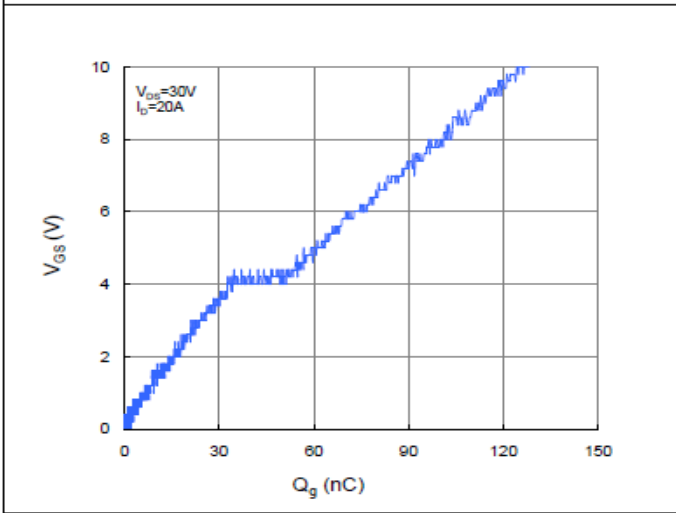


Figure 8. Typical Capacitance vs. Drain-to-Source Voltage

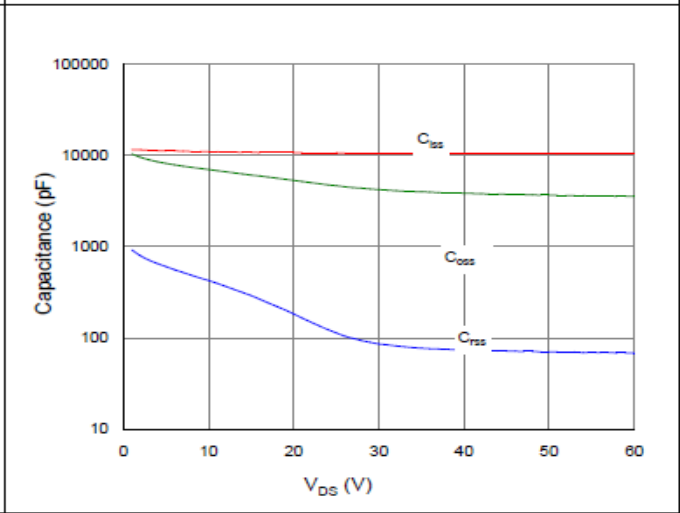


Figure 9. Maximum Safe Operating Area

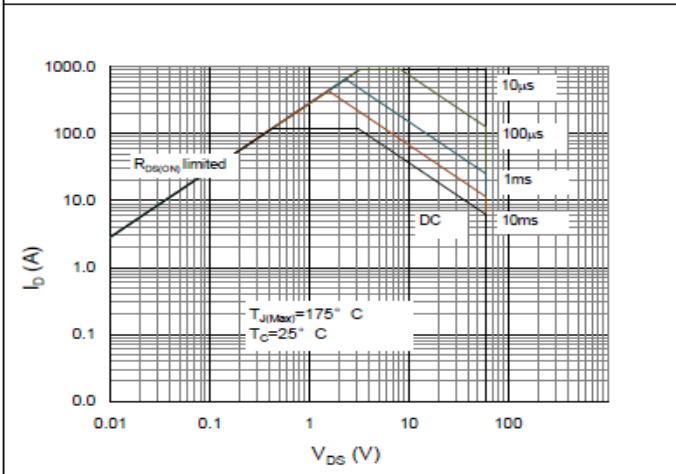


Figure 10. Maximum Drain Current vs. Case Temperature

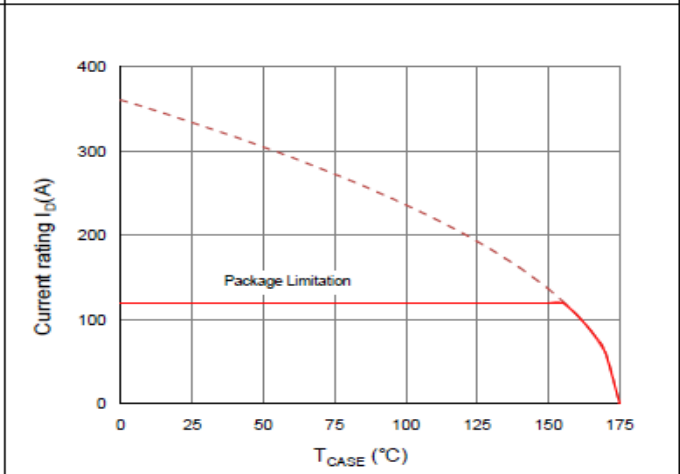
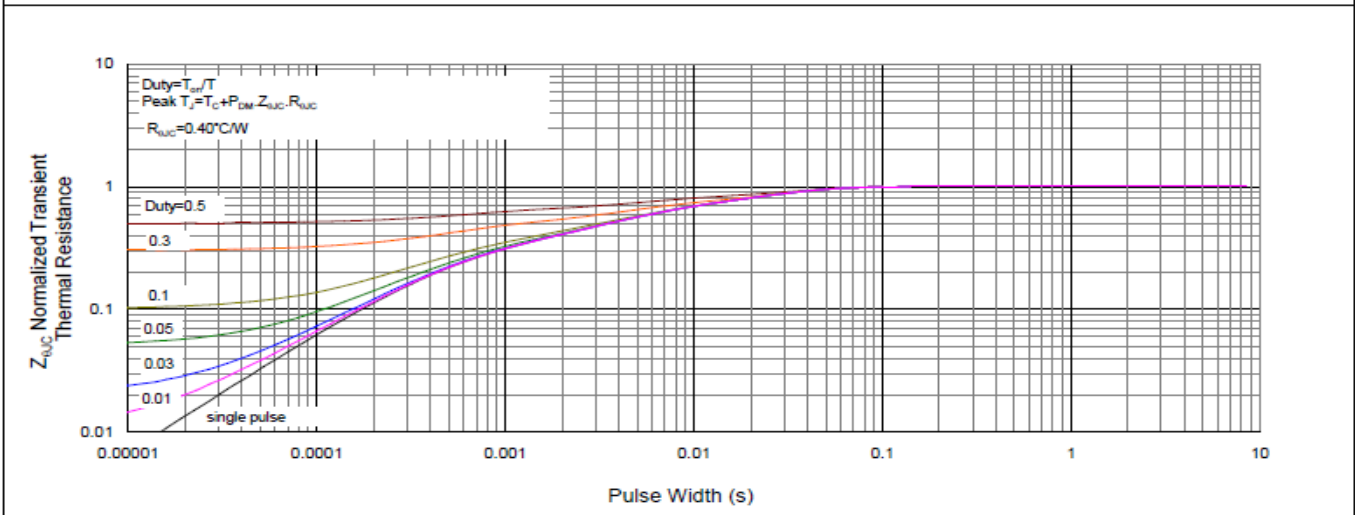


Figure 11. Normalized Maximum Transient Thermal Impedance, Junction-to-Case

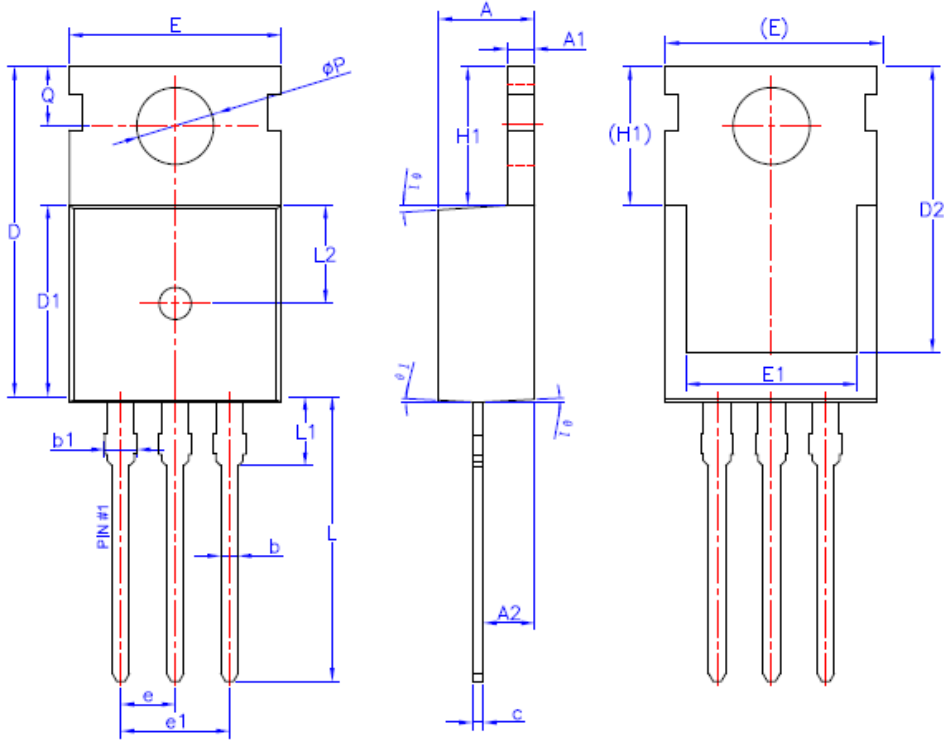




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TO-220-3L PACKAGE OUTLINE



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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