



SPN80N10

N-Channel Enhancement Mode MOSFET

DESCRIPTION

The SPN80N10 is the N-Channel enhancement mode power field effect transistor which is produced using super high cell density DMOS trench technology. The SPN80T10 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

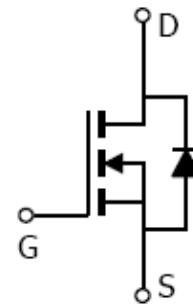
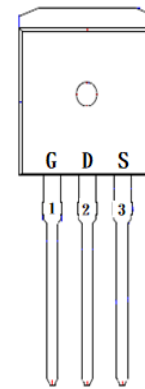
- ◆ 100V/73A, $R_{DS(ON)}=8.0m\Omega@V_{GS}=10V$
- ◆ High density cell design for extremely low $R_{DS(ON)}$
- ◆ Exceptional on-resistance and maximum DC current capability
- ◆ TO-262-3L package design

APPLICATIONS

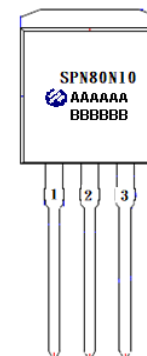
- AC/DC Synchronous Rectifier
- Load Switch
- UPS
- Motor Control
- Power Tool

PIN CONFIGURATION

TO-262-3L



PART MARKING



A : Lot Code
B : Date Code



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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
SPN80N10T263TGB	TO-262-3L	SPN80N10

※ SPN80N10T263TGB : Tube ; 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	73	A
		T _C =100°C	46	
Pulsed Drain Current	I _{DM}	260	A	
Avalanche Energy, Single Pulse, L=0.1mH	E _{AS}	245	mJ	
Power Dissipation@ TA=25°C (TO-262-3L)	P _D	104	W	
Operating Junction Temperature	T _J	-55/150	°C	
Storage Temperature Range	T _{STG}	-55/150	°C	
Thermal Resistance-Junction to Case (TO-262-3L)	R _{θJC}	0.85	°C/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	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	100			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}	$V_{DS}=80V, V_{GS}=0V$ $T_J=25^\circ C$			1	uA
		$V_{DS}=80V, V_{GS}=0V$ $T_J=100^\circ C$			100	
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=20A$		6.5	8.0	mΩ
Forward Transconductance	g_{fs}	$V_{DS}=5V, I_D=20A$		60		S
Gate Resistance	R_G	$V_{GS}=0V, V_{DS}=\text{Open},$ $f=1\text{MHz}$		1.3		Ω
Diode Forward Voltage	V_{SD}	$I_S=20A, V_{GS}=0V$		0.9	1.2	V
Dynamic						
Total Gate Charge	Q_g	$V_{DS}=50V, V_{GS}=10V$ $I_D=20A$		32		nC
Gate-Source Charge	Q_{gs}			6		
Gate-Drain Charge	Q_{gd}			4		
Input Capacitance	C_{iss}	$V_{DS}=50V, V_{GS}=0V$ $f=1\text{MHz}$		1876		pF
Output Capacitance	C_{oss}			348		
Reverse Transfer Capacitance	C_{rss}			5.6		
Turn-On Time	$t_{d(on)}$	$V_{DD}=50V, R_L=1\Omega$ $I_D=20A, V_{GS}=10V$ $R_G=10\Omega$		7		nS
	t_r			4		
Turn-Off Time	$t_{d(off)}$			20		
	t_f			3		



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TYPICAL CHARACTERISTICS

Fig 1. Typical Output Characteristics

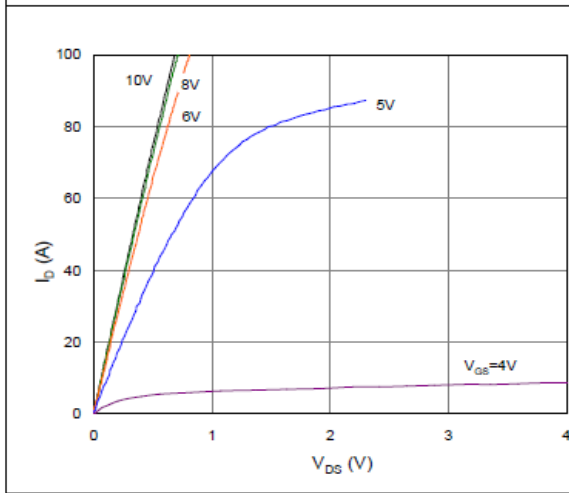


Figure 2. On-Resistance vs. Gate-Source Voltage

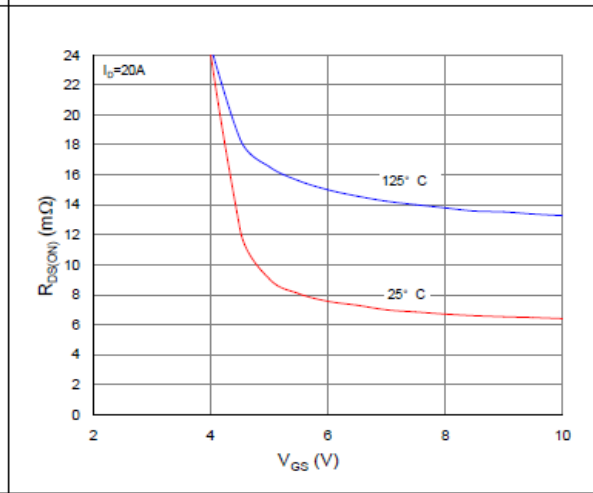


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

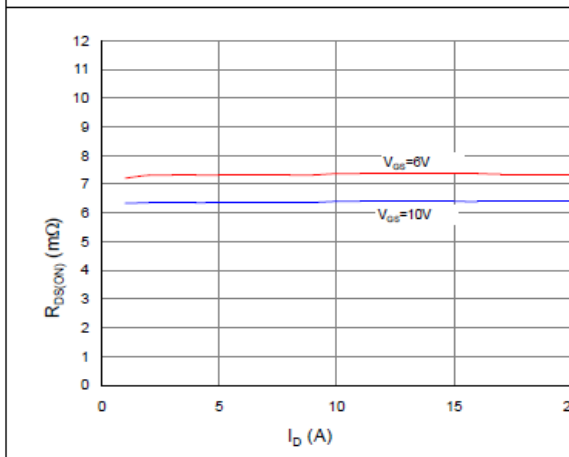


Figure 4. Normalized On-Resistance vs. Junction Temperature

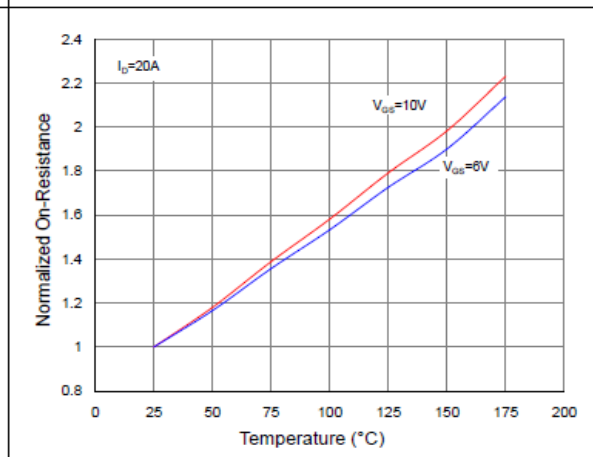


Figure 5. Typical Transfer Characteristics

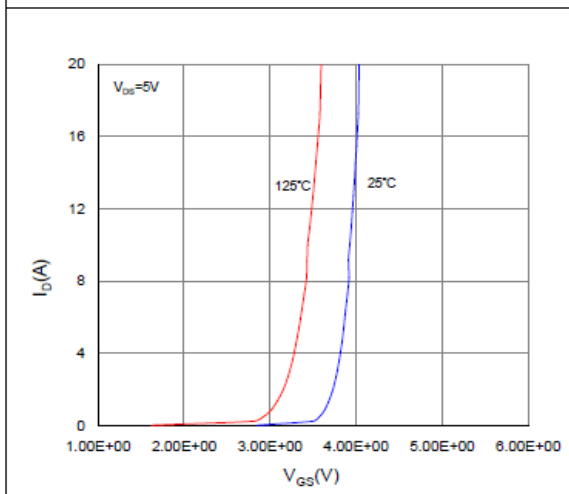
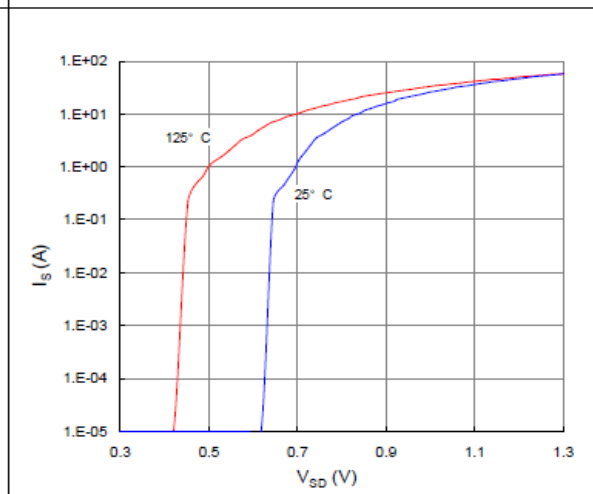


Figure 6. Typical Source-Drain Diode Forward Voltage





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TYPICAL CHARACTERISTICS

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

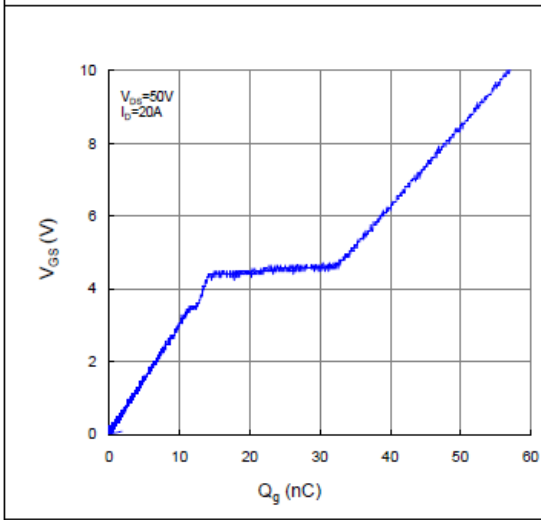


Figure 8. Typical Capacitance vs. Drain-to-Source Voltage

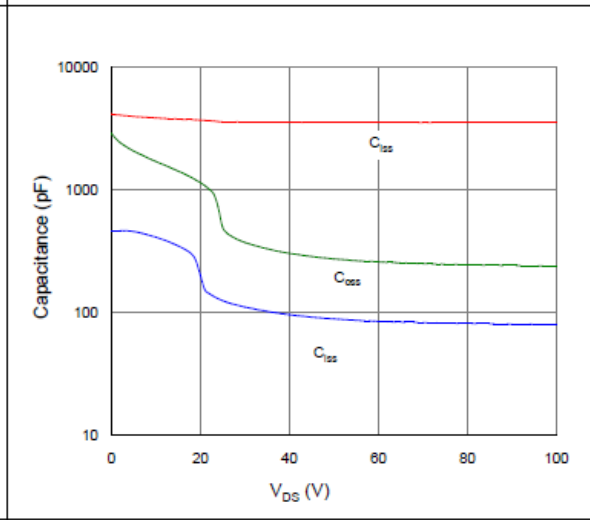


Figure 9. Maximum Safe Operating Area

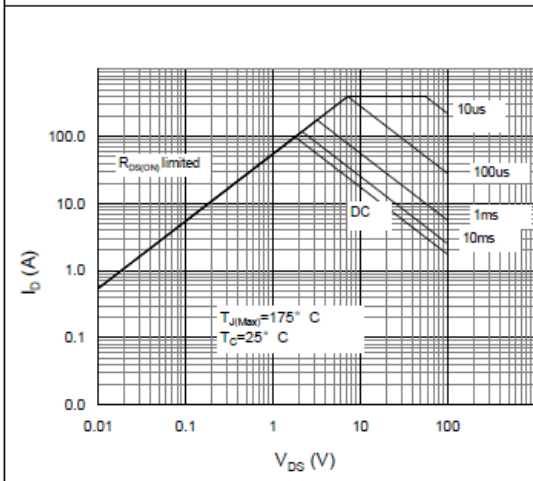


Figure 10. Maximum Drain Current vs. Case Temperature

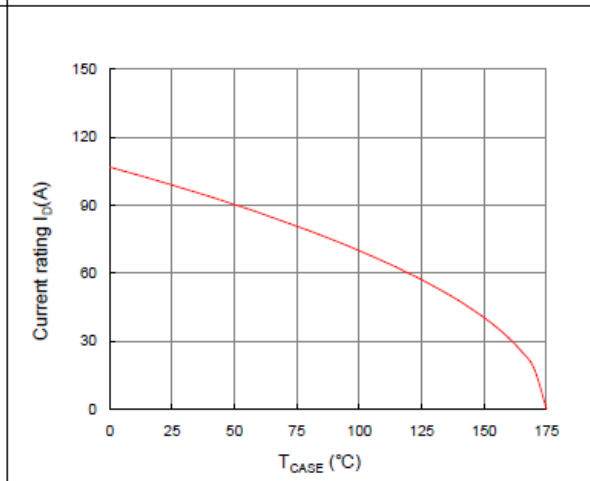
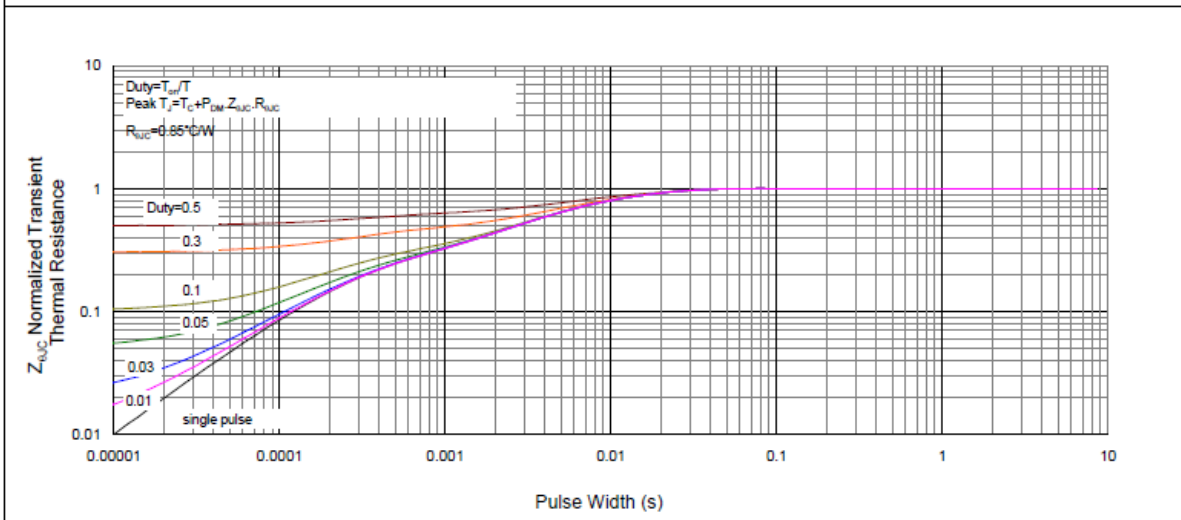


Figure 11. Normalized Maximum Transient Thermal Impedance, Junction-to-Case

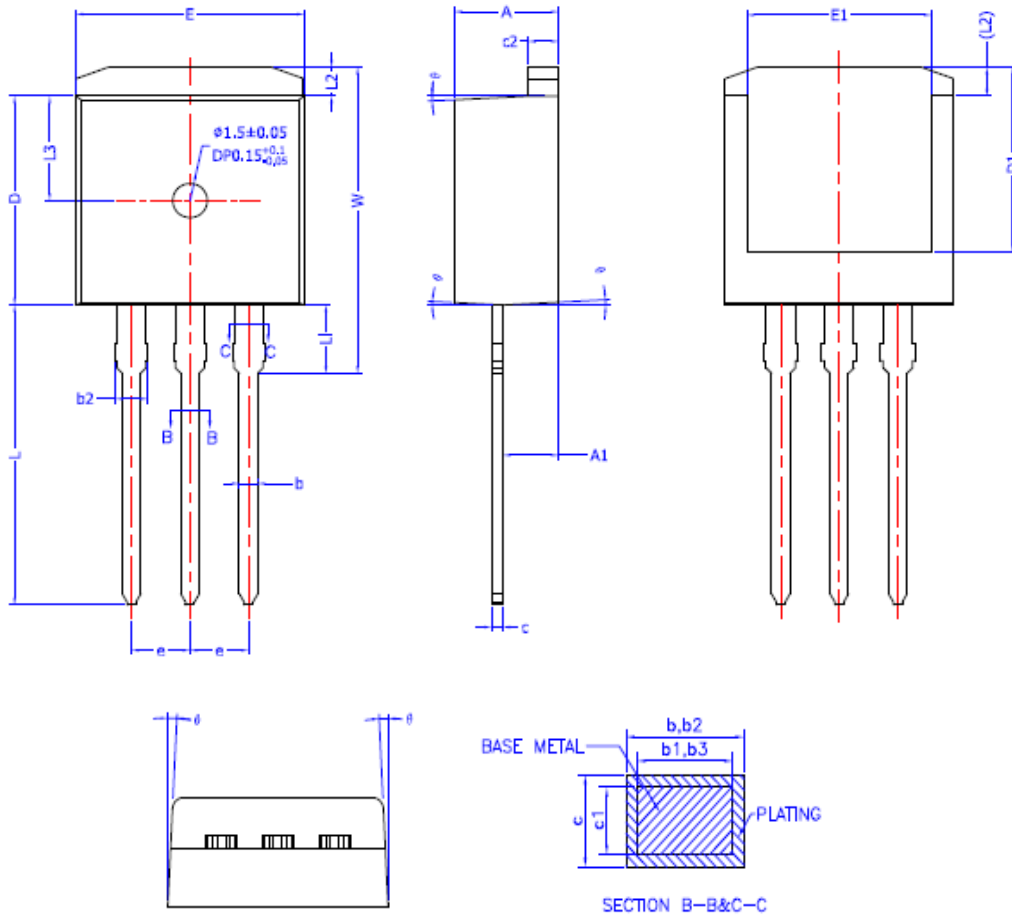




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TO-262-3L PACKAGE OUTLINE



COMMON DIMENSIONS
(UNITS OF MEASURE =MILLIMETER)

SYMBOL	MIN	NOM	MAX
A	4.40	4.50	4.60
A1	2.20	2.40	2.60
b	0.76	—	0.89
b1	0.75	0.80	0.85
b2	1.23	—	1.37
b3	1.22	1.27	1.32
c	0.47	—	0.60
c1	0.46	0.51	0.56
c2	1.25	1.30	1.35
D	9.10	9.20	9.30
D1	8.00	—	—
E	9.80	9.90	10.00
E1	7.80	—	—
e	2.54 BSC		
L	12.90	13.20	13.50
L1	2.80	3.00	3.20
L2	1.17	1.27	1.40
L3	4.60 REF		
W	13.25	—	14.00
θ	1°	3°	5°



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