SPN160T15
N-Channel Enhancement Mode MOSFET

DESCRIPTION

The SPN160T15 is the N-Channel enhancement mode power field effect transistors are produced using high cell density, DMOS trench technology. The SPN160T15 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.

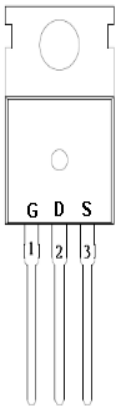
APPLICATIONS

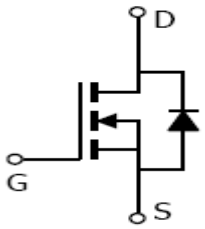
- DC/DC Converter
- Load Switch
- SMPS Secondary Side Synchronous Rectifier
- Motor Control
- Power Tool

FEATURES

- 150V/160A,$R_{DS(ON)}$= 6mΩ@V_{GS}=10V
- Super high density cell design for extremely low $R_{DS\ (ON)}$
- Exceptional on-resistance and maximum DC current capability

PIN CONFIGURATION





PART MARKING

SPN160T15
N-Channel Enhancement Mode MOSFET

PIN DESCRIPTION
TO-220-3L

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

ORDERING INFORMATION

Part Number	Package	Part Marking
SPN160T15T220TGB	TO-220-3L	SPN160T15

※ SPN160T15T220TGB : Tube ; Pb – Free ; Halogen – Free

ABSOULTE MAXIMUM RATINGS
(T_A=25℃ Unless otherwise noted)

Parameter		Symbol	Typical	Unit
Drain-Source Voltage		V_{DSS}	150	V
Gate –Source Voltage		V_{GSS}	±20	V
Continuous Drain Current (Silicon Limited)	T_C=25℃	I_D	160	A
	T_C=100℃		113	
Pulsed Drain Current		I_{DM}	545	A
Single Pulse Avalanche Energy (T_C=25℃, L=0.4mH.)		E_{AS}	720	mJ
Power Dissipation (TO-220-3L)	T_C=25℃	P_D	355	W
Operating Junction Temperature		T_J	-55~150	℃
Storage Temperature Range		T_{STG}	-55~150	℃
Thermal Resistance-Junction to Case (TO-220-3L)		$R_{\theta JC}$	0.35	℃/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	150			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=250uA	2.0		4.0	
Gate Leakage Current	I_{GSS}	V_{DS}=0V,V_{GS}=±20V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=150V,V_{GS}=0V T_J=25℃,			1	uA
		V_{DS}=150V,V_{GS}=0V, T_J=100℃			100	
Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS}=10V,I_D=20A		5.4	6	mΩ
Forward Transconductance	gfs	V_{DS}=5V,I_D=20A		80		S
Gate resistance	Rg	V_{DS}=0V,V_{GS}=0V f=1MHz		2.7		Ω
Diode Forward Voltage	V_{SD}	I_F=20A,V_{GS} =0V		0.9	1.2	V
Dynamic						
Total Gate Charge	Qg	V_{DS}=75V,V_{GS}=10V I_D=20A		80		nC
Gate-Source Charge	Q_{gs}			28		
Gate-Drain Charge	Q_{gd}			12		
Input Capacitance	C_{iss}	V_{DS}=75V,V_{GS}=0V f=1MHz		6320		pF
Output Capacitance	C_{oss}			462		
Reverse Transfer Capacitance	C_{rss}			7.5		
Turn-On Time	$t_{d(on)}$	V_{DD}=75V, I_D=20A,V_{GS}=10V R_G=10Ω		27		nS
	t_r			21		
Turn-Off Time	$t_{d(off)}$			38		
	t_f			14		
Reverse Recovery Time	t_{rr}	VR=75V,I_F=20A, dI_F/dt=100A/uS		86		nS
Reverse Recovery Charge	Q_{rr}			160		nC

TYPICAL CHARATERISTICS

Fig 1. Typical Output Characteristics

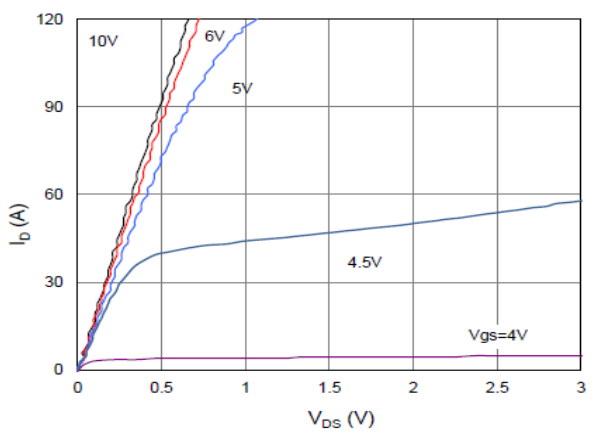


Figure 2. On-Resistance vs. Gate-Source Voltage

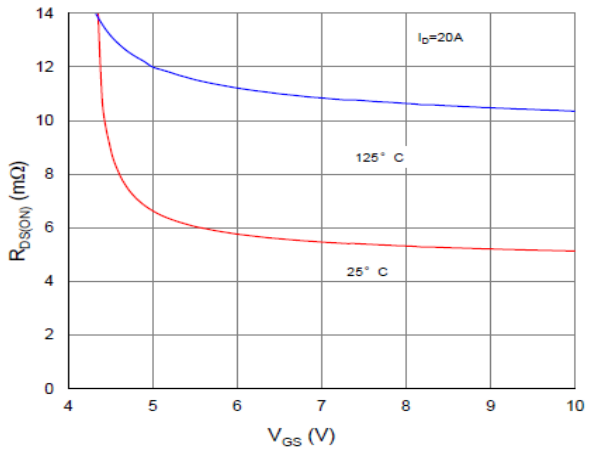


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

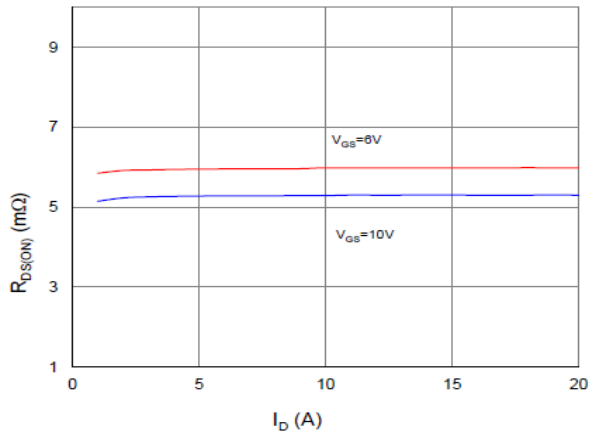


Figure 4. Normalized On-Resistance vs. Junction Temperature

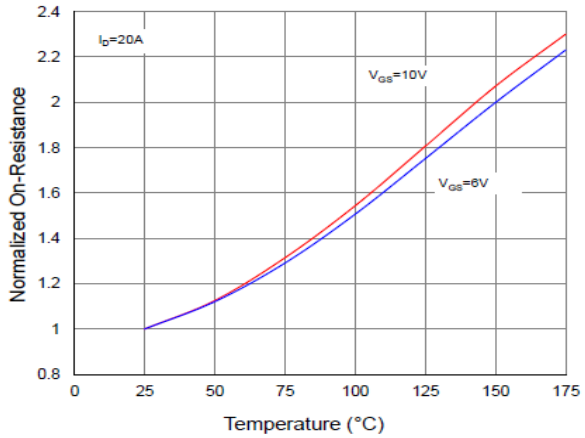


Figure 5. Typical Transfer Characteristics

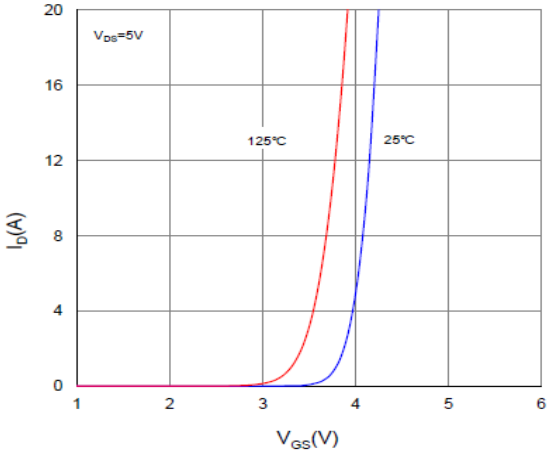
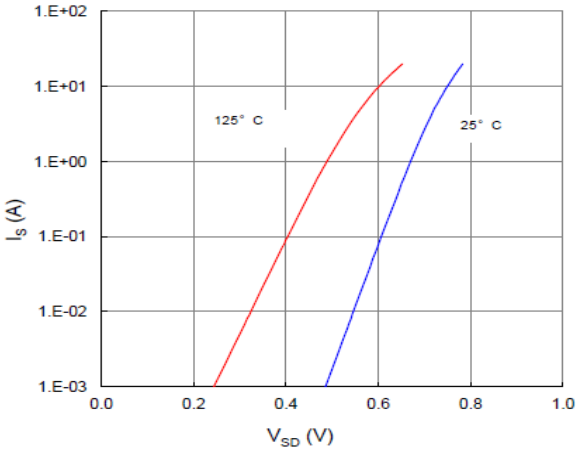


Figure 6. Typical Source-Drain Diode Forward Voltage



TYPICAL CHARATERISTICS

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

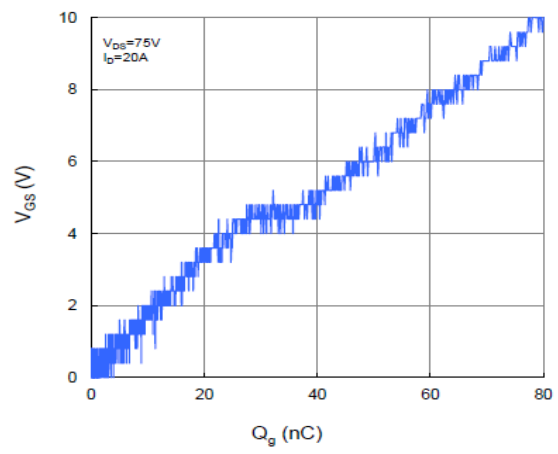


Figure 8. Typical Capacitance vs. Drain-to-Source Voltage

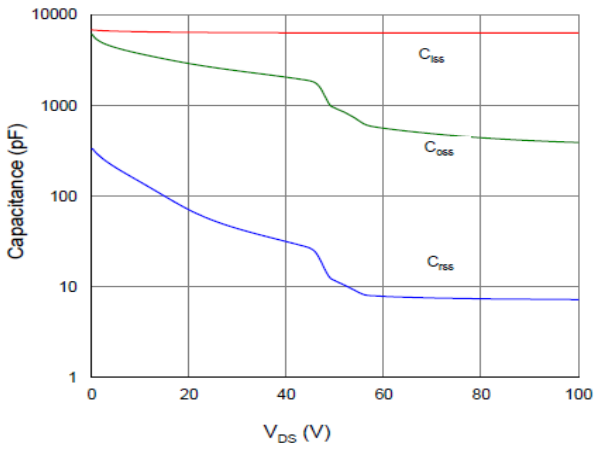


Figure 9. Maximum Safe Operating Area

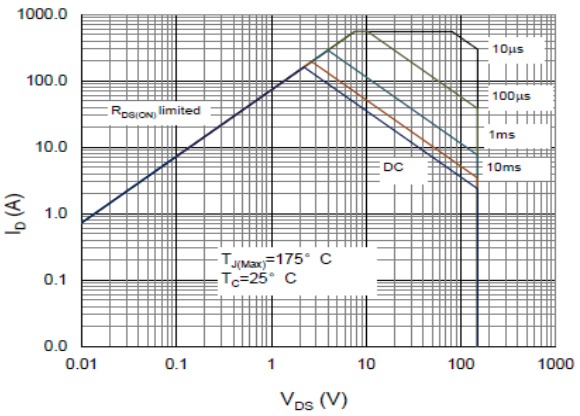


Figure 10. Maximun Drain Current vs. Case Temperature

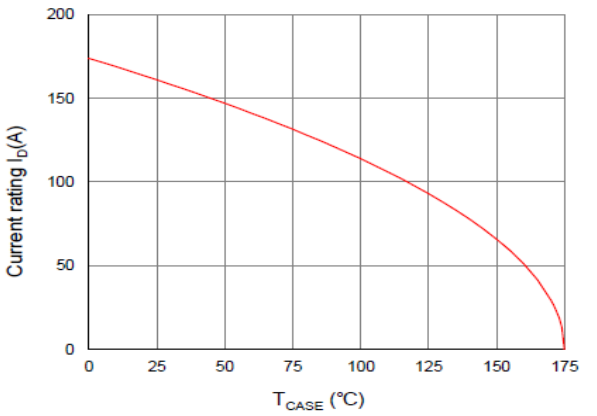
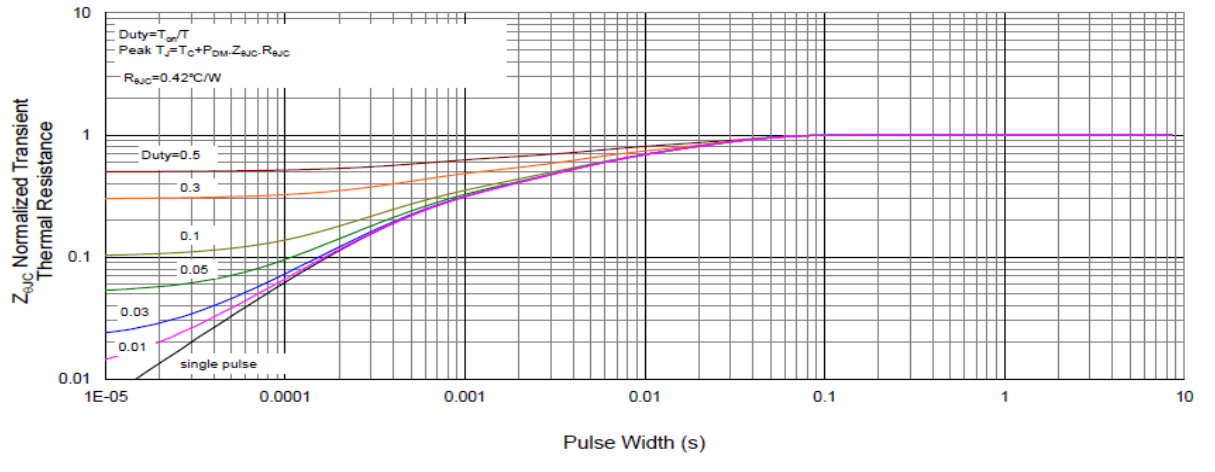


Figure 11. Normalized Maximum Transient Thermal Impedance, Junction-to-Case



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