



SPN8832

N-Channel Enhancement Mode MOSFET

DESCRIPTION

The SPN8832 is the N-Channel logic enhancement mode power field effect transistors are produced using high cell density, DMOS trench technology. The SPN8832 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.

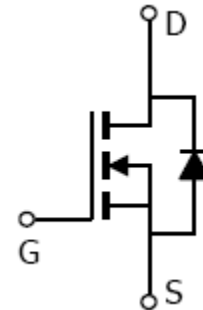
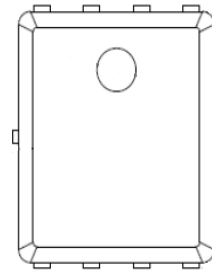
APPLICATIONS

- High Frequency Synchronous Buck Converter
- DC/DC Power System
- Load Switch

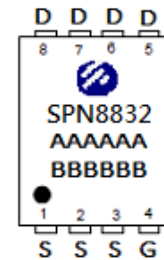
FEATURES

- ◆ 30V/163A, $R_{DS(ON)}=3.0m\Omega@V_{GS}=10V$
- ◆ 30V/163A, $R_{DS(ON)}=4.0m\Omega@V_{GS}=4.5V$
- ◆ Super high density cell design for extremely low $R_{DS(ON)}$
- ◆ Exceptional on-resistance and maximum DC current capability
- ◆ PPAK5x6-8L package design

PIN CONFIGURATION(PPAK5x6-8L)



PART MARKING



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



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PIN DESCRIPTION

Pin	Symbol	Description
1	S	Source
2	S	Source
3	S	Source
4	G	Gate
5	D	Drain
6	D	Drain
7	D	Drain
8	D	Drain

ORDERING INFORMATION

Part Number	Package	Part Marking
SPN8832DN8RGB	PPAK5x6-8L	SPN8832

※ SPN8832DN8RGB : Tape Reel ; Pb – Free ; Halogen - Free

ABSOLUTE MAXIMUM RATINGS

(TA=25°C Unless otherwise noted)

Parameter	Symbol	Typical	Unit
Drain-Source Voltage	V _{DSS}	30	V
Gate –Source Voltage	V _{GSS}	±20	V
Continuous Drain Current(Silicon Limited)	I _D	T _C =25°C	163
		T _C =100°C	103
Pulsed Drain Current	I _{DM}	325	A
Avalanche Current	I _{AS}	70.2	A
Single Pulse Avalanche Energy	E _{AS}	246.4	mJ
Power Dissipation	P _D	83	W
Operating Junction Temperature	T _J	150	°C
Storage Temperature Range	T _{STG}	-55/150	°C
Thermal Resistance-Junction to Case	R _{θJC}	1.5	°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	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	30			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1.2		2.5	V
Gate Leakage Current	I_{GSS}	$V_{DS}=0V, V_{GS}=\pm 20V$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=24V, V_{GS}=0V$			1	uA
		$V_{DS}=24V, V_{GS}=0V, T_J=55^\circ C$			5	
Gate Resistance	R_g	$V_{DS}=V_{GS}=0V, f=1MHz$		0.9		Ω
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=30A$			3	m Ω
		$V_{GS}=4.5V, I_D=15A$			4	
Forward Transconductance	g_{fs}	$V_{DS}=5V, I_D=30A$		60		S
Diode Forward Voltage	V_{SD}	$I_S=1A, V_{GS}=0V$			1.2	V
Dynamic						
Total Gate Charge (4.5V)	Q_g	$V_{DS}=15V, V_{GS}=10V$ $I_D=15A$		56		nC
Gate-Source Charge	Q_{gs}			18		
Gate-Drain Charge	Q_{gd}			21		
Input Capacitance	C_{iss}	$V_{DS}=15V, V_{GS}=0V$ $f=1MHz$		5935		pF
Output Capacitance	C_{oss}			725		
Reverse Transfer Capacitance	C_{rss}			538		
Turn-On Time	$t_{d(on)}$	$V_{DD}=15V, I_D=15A, V_{GS}=10V$ $R_G=3.3\Omega$		22		nS
	t_r			43.6		
Turn-Off Time	$t_{d(off)}$			100		
	t_f			33.6		



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TYPICAL CHARACTERISTICS

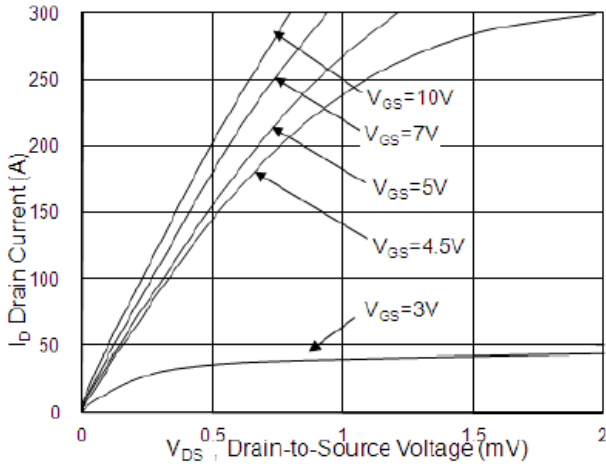


Fig.1 Typical Output Characteristics

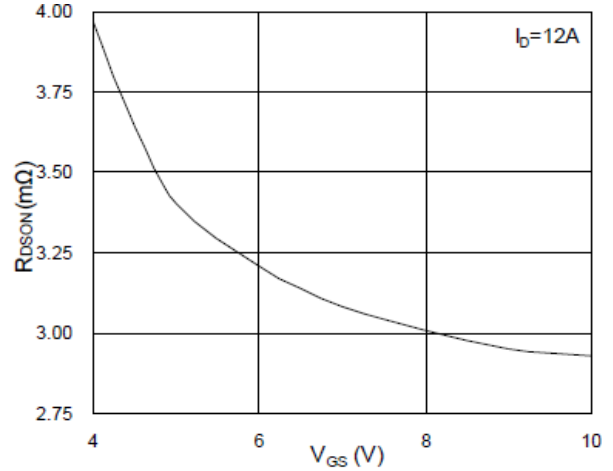


Fig.2 On-Resistance v.s Gate-Source

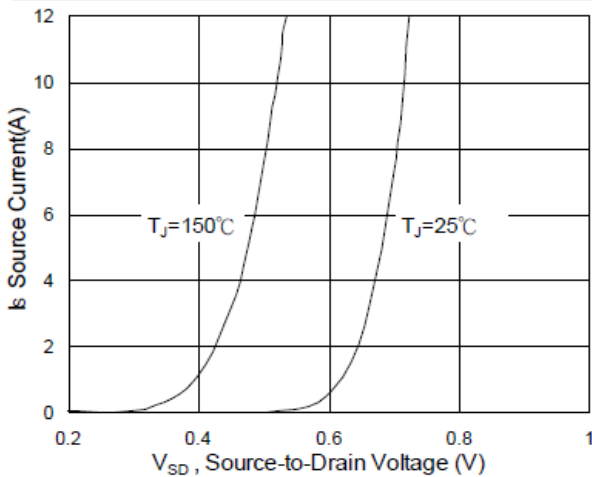


Fig.3 Forward Characteristics of Reverse

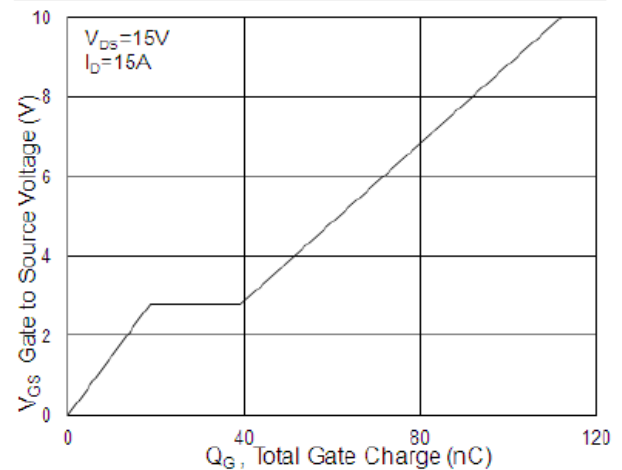


Fig.4 Gate-Charge Characteristics

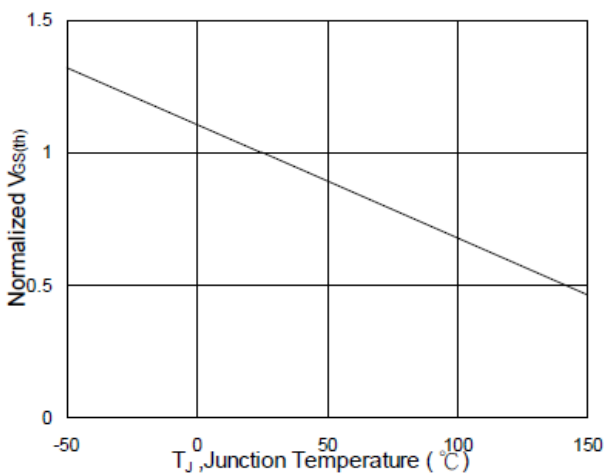


Fig.5 Normalized $V_{GS(th)}$ v.s T_J

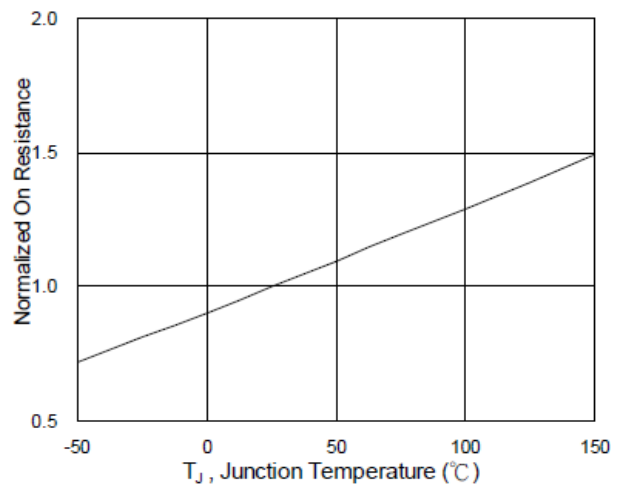


Fig.6 Normalized $R_{DS(on)}$ v.s T_J



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TYPICAL CHARACTERISTICS

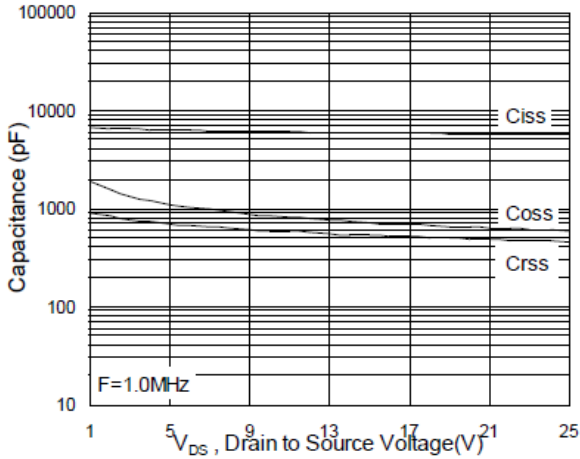


Fig.7 Capacitance

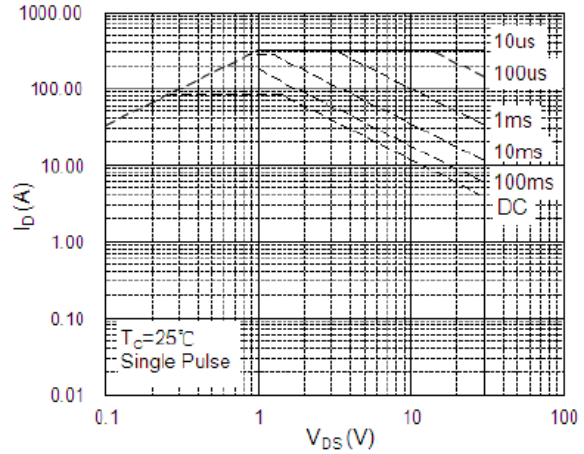


Fig.8 Safe Operating Area

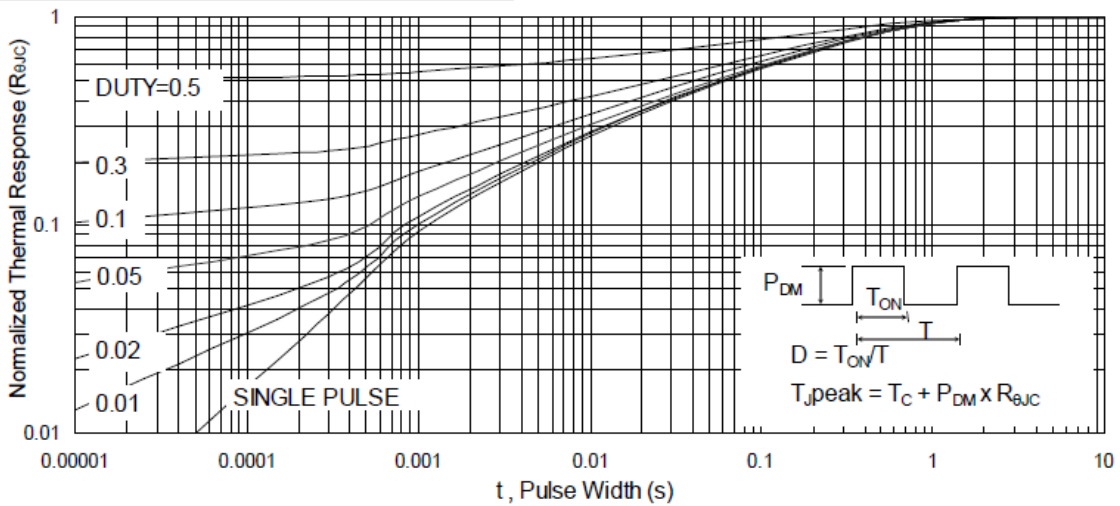


Fig.9 Normalized Maximum Transient Thermal Impedance

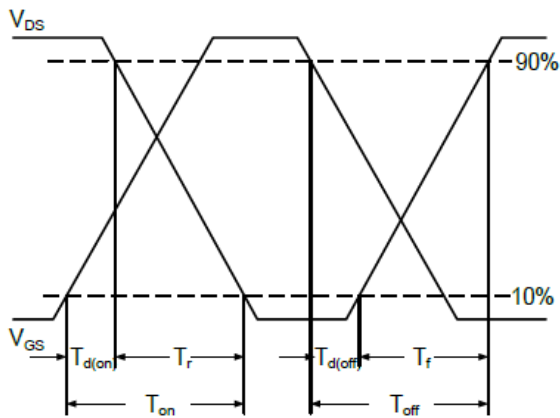


Fig.10 Switching Time Waveform

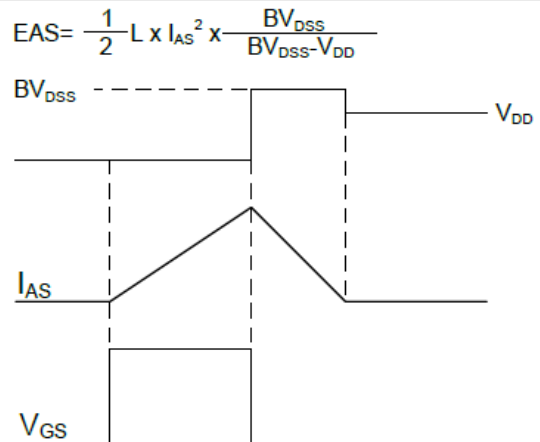


Fig.11 Unclamped Inductive Switching Waveform



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