



SPN8862

N-Channel Enhancement Mode MOSFET

DESCRIPTION

The SPN8862 is the N-Channel logic enhancement mode power field effect transistors are produced using high cell density, DMOS trench technology. This high density process is especially tailored to minimize on-state resistance. These devices are particularly suited for low voltage application, notebook computer power management and other battery powered circuits where high-side switching is required.

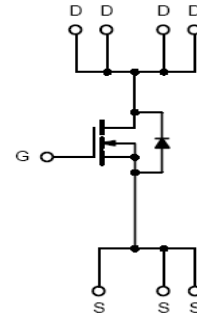
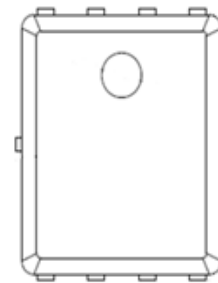
APPLICATIONS

- DC/DC Converter
- Load Switch
- Synchronous Buck Converter

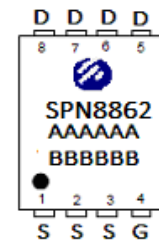
FEATURES

- ◆ 60V/15A, $R_{DS(ON)}=12m\Omega@V_{GS}=10V$
- ◆ 60V/10A, $R_{DS(ON)}=15m\Omega@V_{GS}=4.5V$
- ◆ 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
SPN8862DN8RGB	PPAK5x6-8L	SPN8862

※ SPN8862DN8RGB : 13" Tape Reel ; Pb – Free ; Halogen – Free

ABSOLUTE MAXIMUM RATINGS

(TA=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(T _J =150°C)	I _D	T _C =25°C	60	A
		T _C =70°C	38	
Pulsed Drain Current	I _{DM}	230	A	
Avalanche Current	I _{AS}	38	A	
Power Dissipation	P _D	T _C =25°C	83	W
		T _A =70°C	1.6	
Operating Junction Temperature	T _J	-55/150	°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

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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	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1.0		2.5	
Gate Leakage Current	I_{GSS}	$V_{DS}=0V, V_{GS}=\pm 20V$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=48V, V_{GS}=0V$			1	uA
		$V_{DS}=48V, V_{GS}=0V$ $T_J=55^\circ C$			5	
On-State Drain Current	$I_{D(on)}$	$V_{DS}\geq 5V, V_{GS}=10V$	60			A
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=10A$		10	12	mΩ
		$V_{GS}=4.5V, I_D=8A$		12	15	
Forward Transconductance	g_{fs}	$V_{DS}=10V, I_D=6A$		11.8		S
Diode Forward Voltage	V_{SD}	$I_S=1A, V_{GS}=0V$			1	V
Dynamic						
Total Gate Charge	Q_g	$V_{DS}=48V, V_{GS}=4.5V$ $I_D=12A$		24		nC
Gate-Source Charge	Q_{gs}			6.9		
Gate-Drain Charge	Q_{gd}			10		
Input Capacitance	C_{iss}	$V_{DS}=15V, V_{GS}=0V$ $f=1MHz$		3200		pF
Output Capacitance	C_{oss}			210		
Reverse Transfer Capacitance	C_{rss}			145		
Turn-On Time	$t_{d(on)}$	$V_{DD}=30V,$ $I_D=2A, V_{GEN}=10V$ $R_G=3.3\Omega$		20		nS
	t_r			4		
Turn-Off Time	$t_{d(off)}$			84.5		
	t_f			6.5		



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TYPICAL CHARACTERISTICS

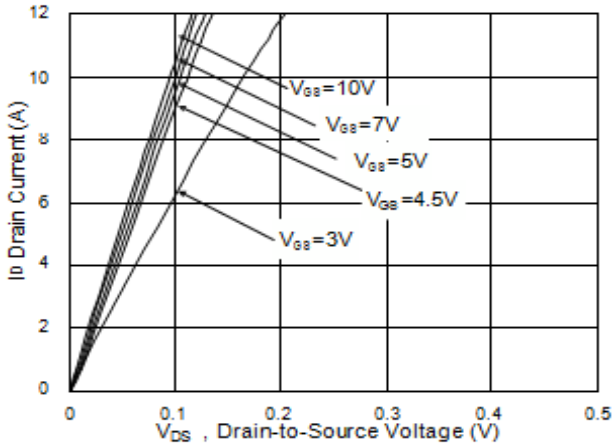


Fig. 1 Typical Output Characteristics

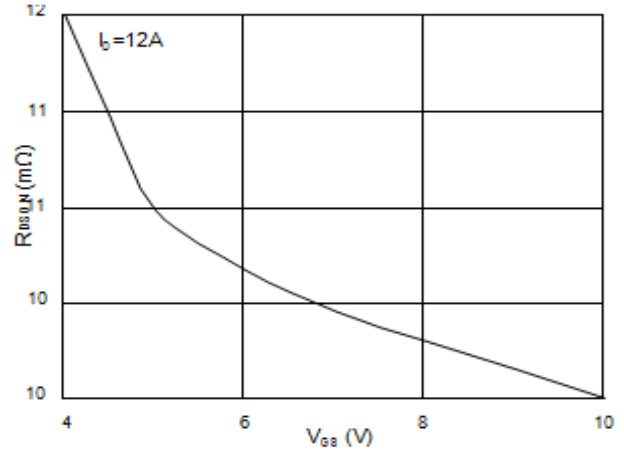


Fig. 2 On-Resistance vs. Gate Voltage

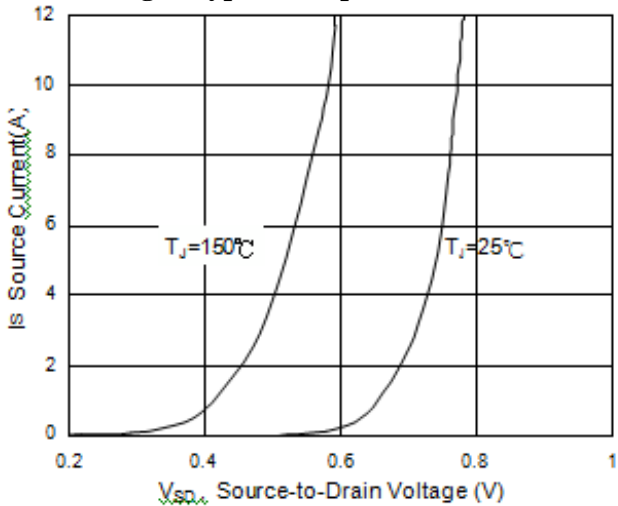


Fig. 3 Forward Characteristics
Reverse Diodes

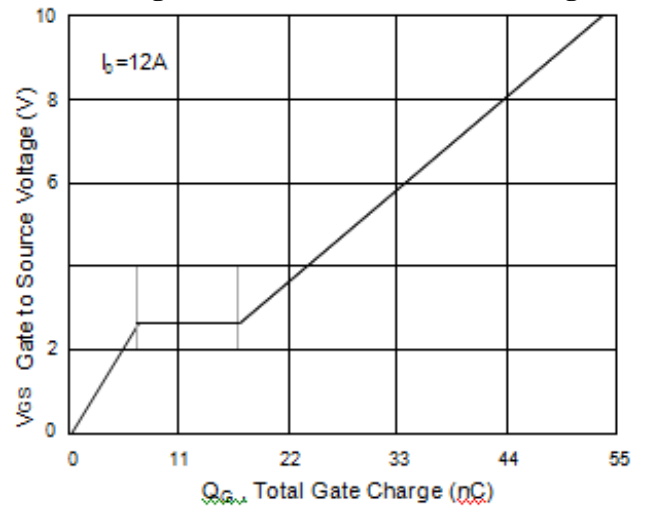


Fig. 4 Gate Charge Characteristics

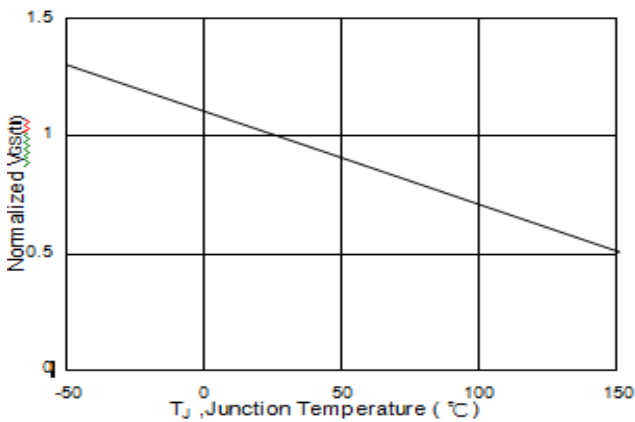


Fig. 5 Vgs vs. Junction Temperature

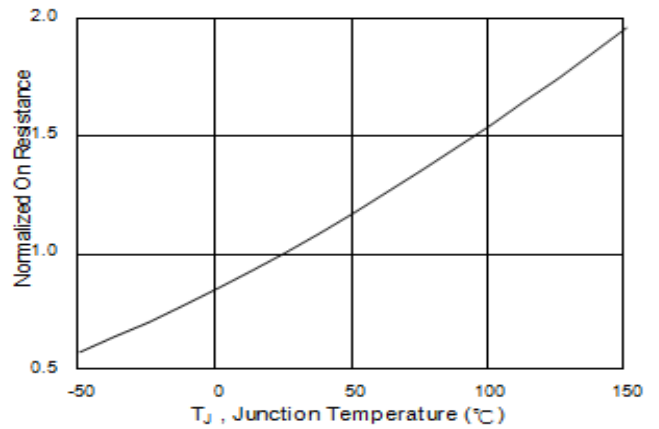


Fig. 6 On-Resistance vs. Temperature



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TYPICAL CHARACTERISTICS

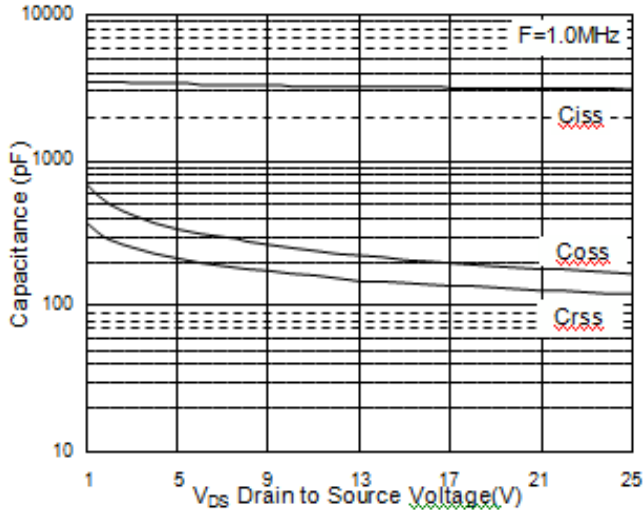


Fig. 7 Typical Capacitance Characteristics

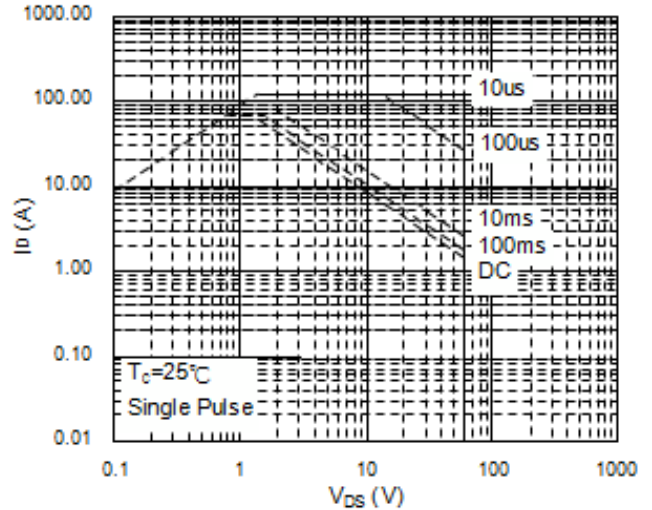


Fig. 8 Maximum Safe Operation Area

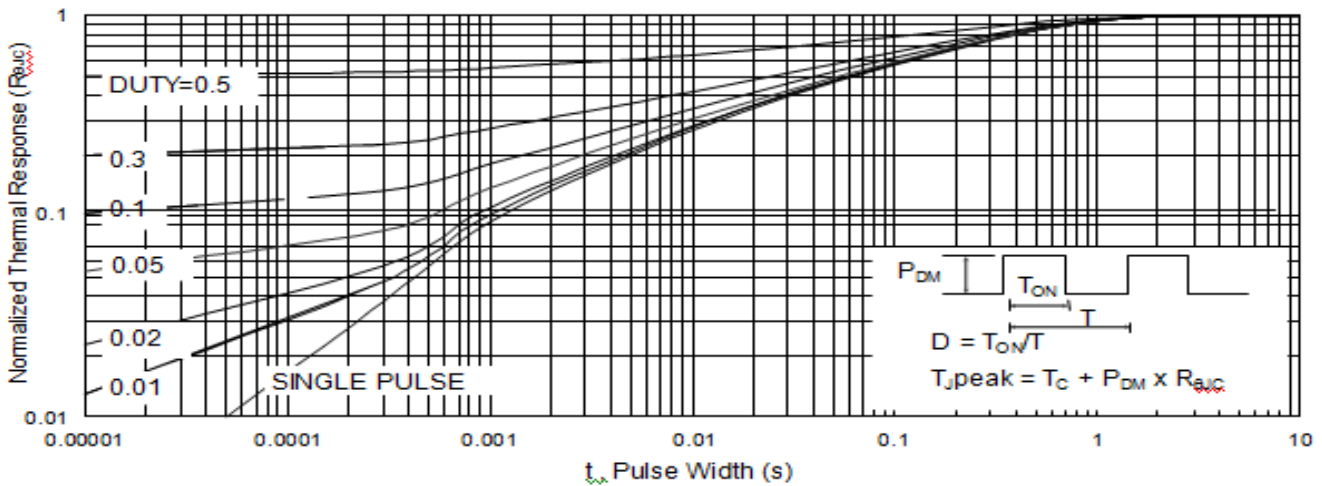


Fig. 9 Effective Transient Thermal Impedance

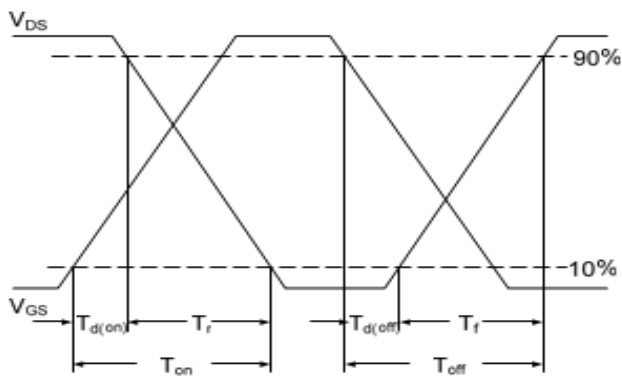


Fig. 10 Switching Time Waveform

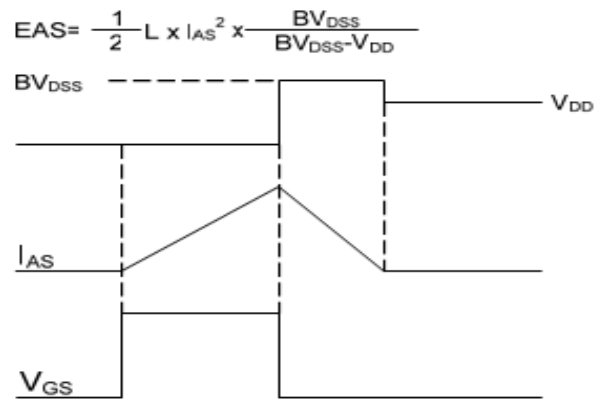


Fig. 11 Unclamped Inductive Waveform



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