



SPN4844 N-Channel Enhancement Mode MOSFET

DESCRIPTION

The SPN4844 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 .

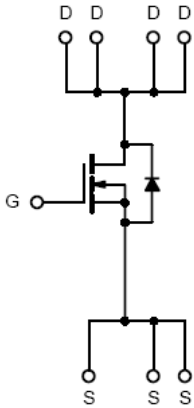
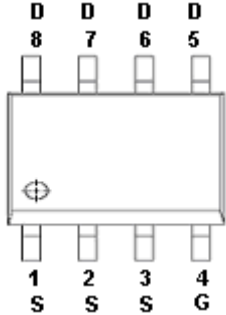
FEATURES

- ◆ 45V/15A, $R_{DS(ON)}=9.5m\Omega@V_{GS}=10V$
- ◆ 45V/8A, $R_{DS(ON)}=14m\Omega@V_{GS}=4.5V$
- ◆ Super high density cell design for extremely low $R_{DS(ON)}$
- ◆ Exceptional on-resistance and maximum DC current capability
- ◆ SOP – 8P package design

APPLICATIONS

- DC/DC Converter
- Load Switch
- Synchronous Buck Converter
- Charger Adapter
- LED Lighting

PIN CONFIGURATION(SOP – 8P)



PART MARKING





SPN4844

N-Channel Enhancement Mode MOSFET

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
SPN4844S8RGB	SOP-8P	SPN4844

※ SPN4844S8RGB : 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}	45	V	
Gate –Source Voltage	V _{GSS}	±20	V	
Continuous Drain Current	I _D	T _C =25°C	13.5	A
		T _C =100°C	8.5	
Pulsed Drain Current	I _{DM}	50	A	
Single Pulse Avalanche Energy	E _{AS}	20	mJ	
Power Dissipation	P _D	3.1	W	
Operating Junction Temperature	T _J	-55/150	°C	
Storage Temperature Range	T _{STG}	-55/150	°C	
Thermal Resistance-Junction to Ambient	R _{θJA}	75	°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	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	45			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1.0	1.55	2.2	
Gate Leakage Current	I_{GSS}	$V_{DS}=0V, V_{GS}=\pm 20V$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=45V, V_{GS}=0V, T_J=25^\circ C$			1	uA
		$V_{DS}=45V, V_{GS}=0V, T_J=100^\circ C$			100	
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=15A$			9.5	mΩ
		$V_{GS}=4.5V, I_D=8A$			14	
Forward Transconductance	g_{fs}	$V_{DS}=5V, I_D=10A$		8		S
Diode Forward Voltage	V_{SD}	$I_S=20A, V_{GS}=0V$		0.9	1.2	V
Dynamic						
Total Gate Charge (10V)	Q_g	$V_{DS}=20V, V_{GS}=10V$ $I_D=10A$		14.5		nC
Total Gate Charge (4.5V)	Q_g			7		
Gate-Source Charge	Q_{gs}			2		
Gate-Drain Charge	Q_{gd}			2.5		
Input Capacitance	C_{iss}	$V_{DS}=20V, V_{GS}=0V$ $f=1MHz$		942		pF
Output Capacitance	C_{oss}			309		
Reverse Transfer Capacitance	C_{rss}			29		
Turn-On Time	$t_{d(on)}$	$V_{DD}=20V, I_D=10A, V_{GS}=10V$ $R_G=10\Omega$		6		nS
	t_r			5		
Turn-Off Time	$t_{d(off)}$			21		
	t_f			5		
Gate resistance	R_g	$V_{GS}=0V, V_{DS}=0V, f=1MHz$		1.5		Ω



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TYPICAL CHARACTERISTICS

Fig 1. Typical Output Characteristics

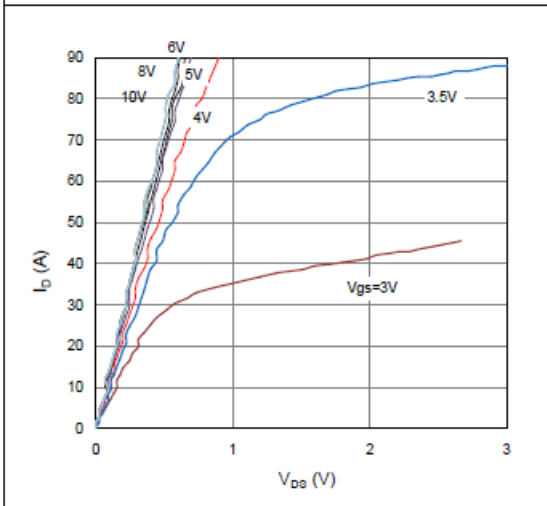


Figure 2. On-Resistance vs. Gate-Source Voltage

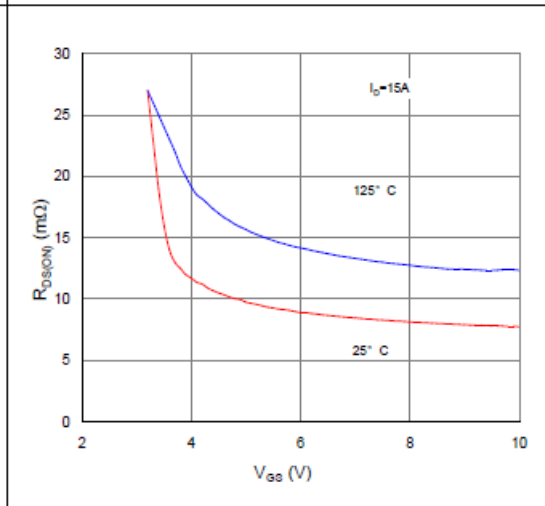


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

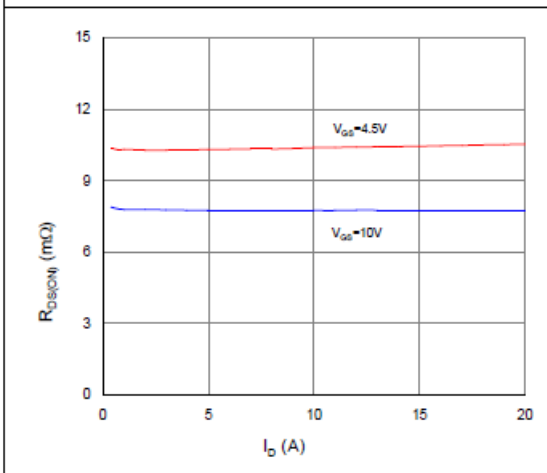


Figure 4. Normalized On-Resistance vs. Junction Temperature

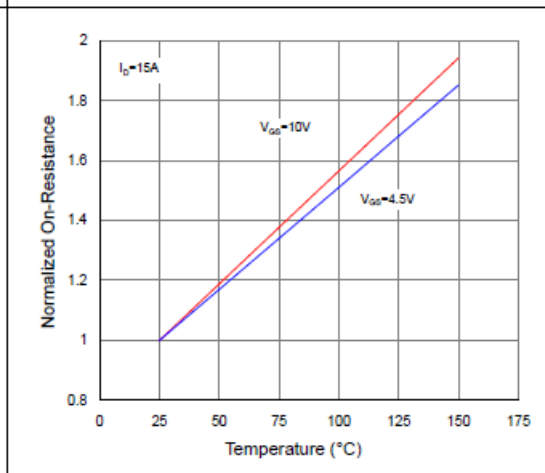


Figure 5. Typical Transfer Characteristics

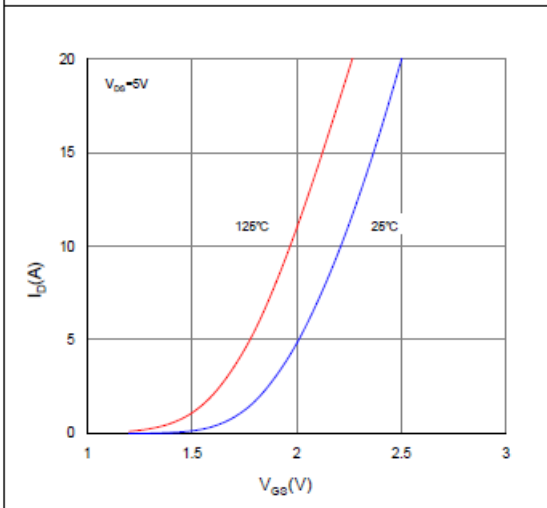
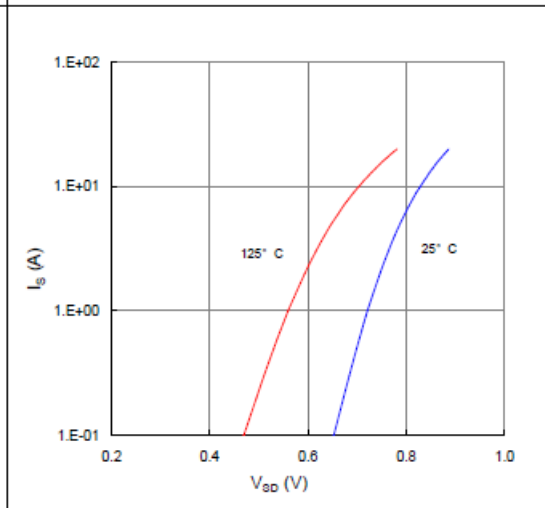


Figure 6. Typical Source-Drain Diode Forward Voltage





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TYPICAL CHARACTERISTICS

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

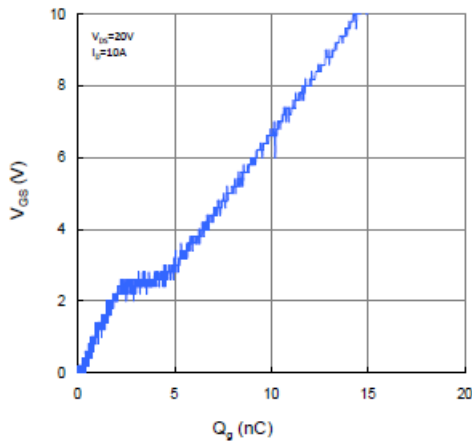


Figure 8. Typical Capacitance vs. Drain-to-Source Voltage

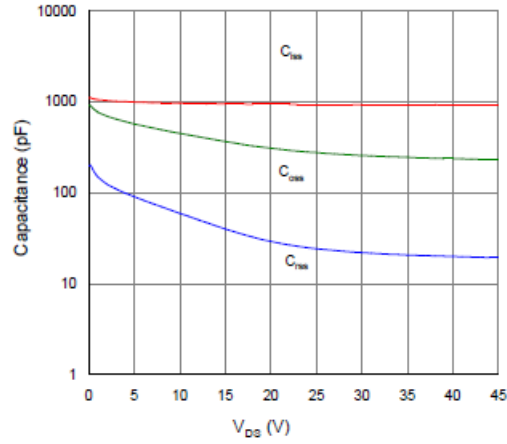


Figure 9. Maximum Safe Operating Area

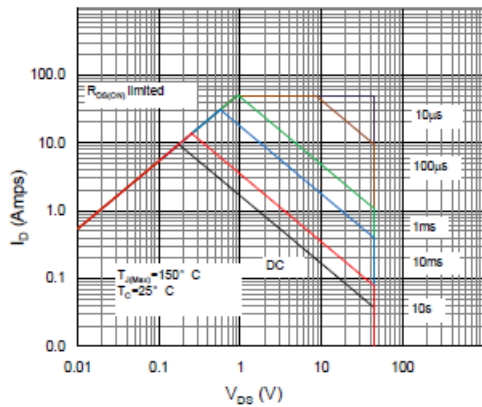


Figure 10. Maximum Drain Current vs. Case Temperature

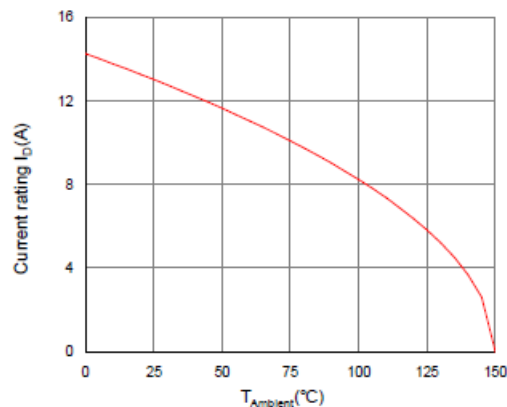
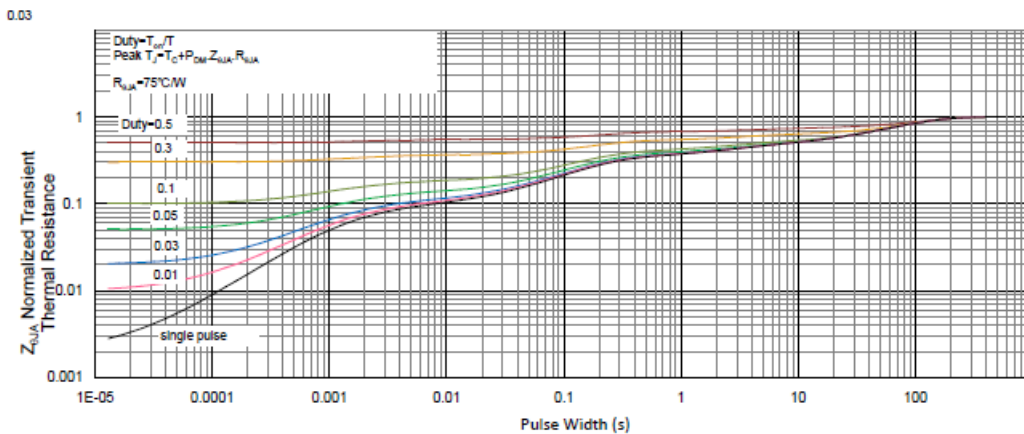


Figure 11. Normalized Maximum Transient Thermal Impedance, Junction-to-Ambient

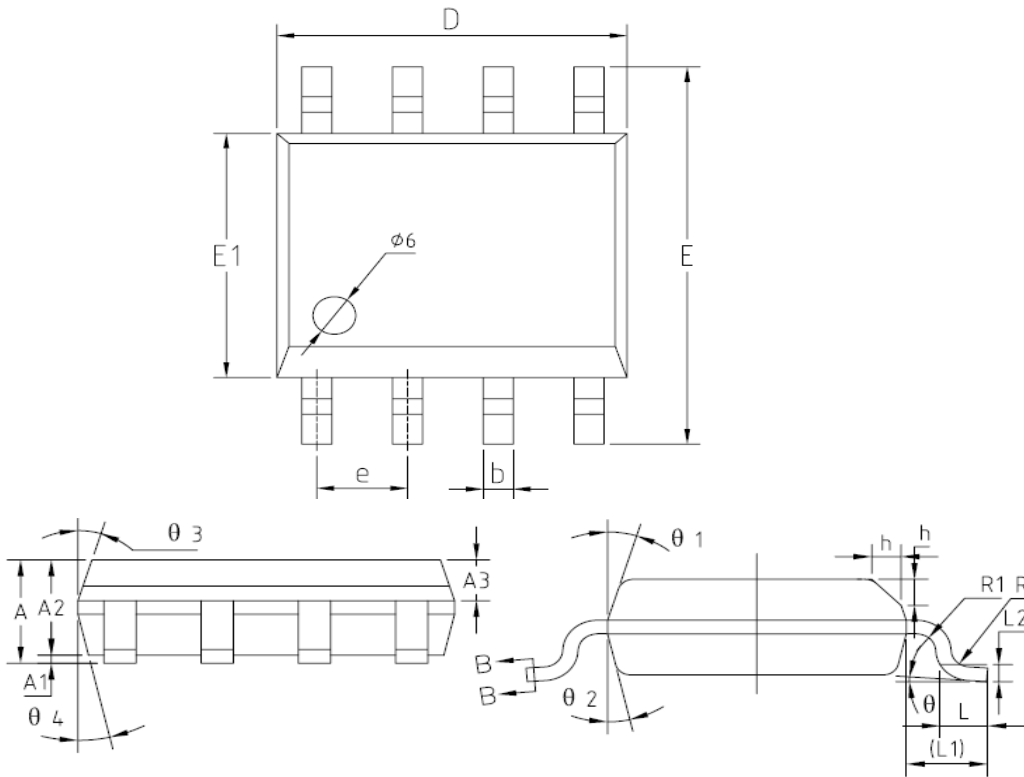




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SOP- 8 PACKAGE OUTLINE



SYMBOL	MIN	NOM	MAX
A	1.35	--	1.75
A1	0.10	--	0.25
A2	1.25	1.40	1.65
A3	0.50	0.60	0.70
b	0.33	-	0.51
c	0.17	--	0.25
D	4.80	4.93	5.05
E	5.80	6.00	6.20
E1	3.80	3.90	4.00
e	1.17	1.27	1.37
L	0.45	0.60	0.80
L1	1.04 REF		
L2	0.25BSC		
R	0.07	--	--
R1	0.07	--	0.20
h	0.25	--	0.50
θ	0°	--	8°
$\theta 1$	15°	17°	19°
$\theta 2$	11°	13°	15°
$\theta 3$	15°	17°	19°
$\theta 4$	11°	13°	15°



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