



SPN4816

N-Channel Enhancement Mode MOSFET

DESCRIPTION

The SPN4816 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 .

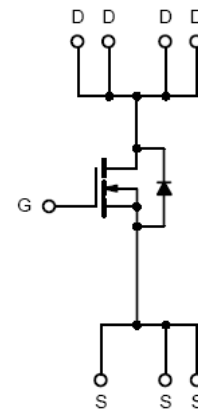
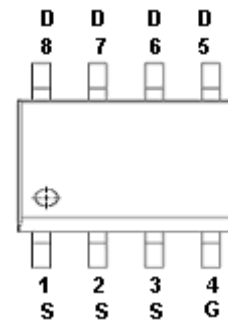
FEATURES

- ◆ 100V/11.5A, $R_{DS(ON)}=12m\Omega@V_{GS}=10V$
- ◆ 100V/9.5A, $R_{DS(ON)}=15.5m\Omega@V_{GS}=4.5V$
- ◆ Super high density cell design for extremely low $R_{DS(ON)}$
- ◆ Exceptional on-resistance and maximum DC current capability
- ◆ SOP-8 package design

APPLICATIONS

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

PIN CONFIGURATION(SOP-8)



PART MARKING





SPN4816

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
SPN4816S8RGB	SOP-8	SPN4816

※ SPN4816S8RGB : 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}	100	V	
Gate –Source Voltage	V _{GSS}	±20	V	
Continuous Drain Current(T _J =150°C)	I _D	TA=25°C	11.5	A
		TA=70°C	9.0	
Pulsed Drain Current	I _{DM}	46	A	
Avalanche Energy, Single Pulse (L=0.3mH , Tc=25°C)	E _{AS}	12	mJ	
Power Dissipation	P _D	TA=25°C	3.1	W
		TA=70°C	2.2	
Operating Junction Temperature	T _J	-55/150	°C	
Storage Temperature Range	T _{STG}	-55/150	°C	
Thermal Resistance-Junction to Case	R _{θJC}	0.85	°C/W	
Thermal Resistance-Junction to Ambient (steady state)	R _{θJA}	75		



SPN4816

N-Channel Enhancement Mode MOSFET

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	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1.0		2.5	V
Gate Leakage Current	I_{GSS}	$V_{DS}=0V, V_{GS}=\pm 20V$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=80V, V_{GS}=0V$ $T_J=25^\circ C$			1	uA
		$V_{DS}=80V, V_{GS}=0V$ $T_J=55^\circ C$			5	
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=11.5A$		9.0	12	mΩ
		$V_{GS}=4.5V, I_D=9.5A$		12	15.5	
Forward Transconductance	g_{fs}	$V_{DS}=5V, I_D=11.5A$		45		S
Gate Resistance	R_G	$V_{GS}=0V, V_{DS}=\text{Open},$ $f=1\text{MHz}$		1.5		Ω
Diode Forward Voltage	V_{SD}	$I_S=1A, V_{GS}=0V, T_J=25^\circ C$			1.1	V
Dynamic						
Total Gate Charge	$Q_g(10V)$	$V_{DS}=50V, V_{GS}=10V$ $I_D=11.5A$		35		nC
Total Gate Charge	$Q_g(4.5V)$			16		
Gate-Source Charge	Q_{gs}			8		
Gate-Drain Charge	Q_{gd}			4		
Input Capacitance	C_{iss}	$V_{DS}=50V, V_{GS}=0V$ $f=1\text{MHz}$		2550		pF
Output Capacitance	C_{oss}			305		
Reverse Transfer Capacitance	C_{rss}			12		
Turn-On Time	$t_{d(on)}$	$V_{DD}=50V,$ $I_D=11.5A, V_{GS}=10V$ $R_G=3\Omega$		9		nS
	t_r			4.5		
Turn-Off Time	$t_{d(off)}$			35		
	t_f			5.5		



SPN4816 N-Channel Enhancement Mode MOSFET

TYPICAL CHARACTERISTICS

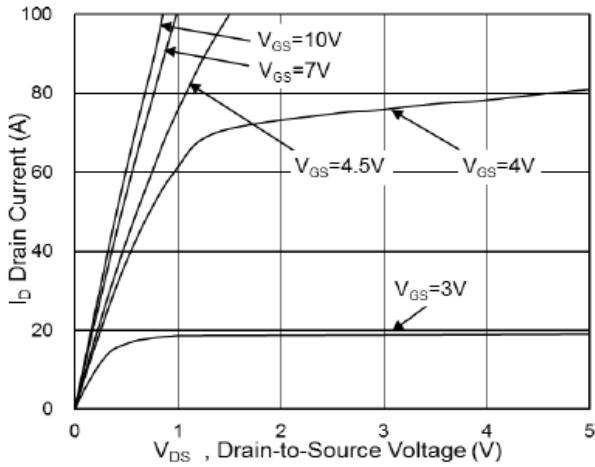


Fig.1 Typical Output Characteristics

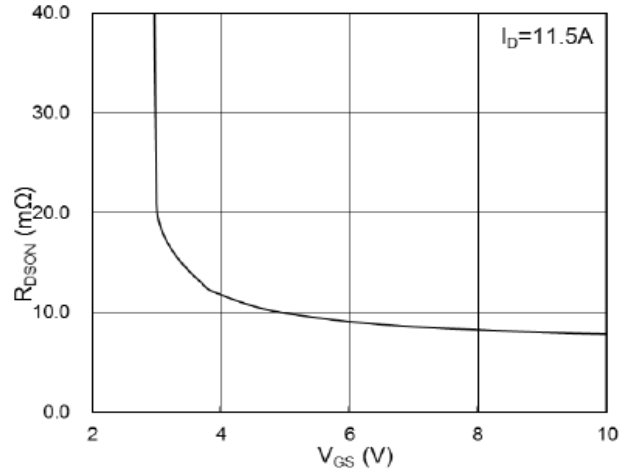


Fig.2 On-Resistance vs. G-S Voltage

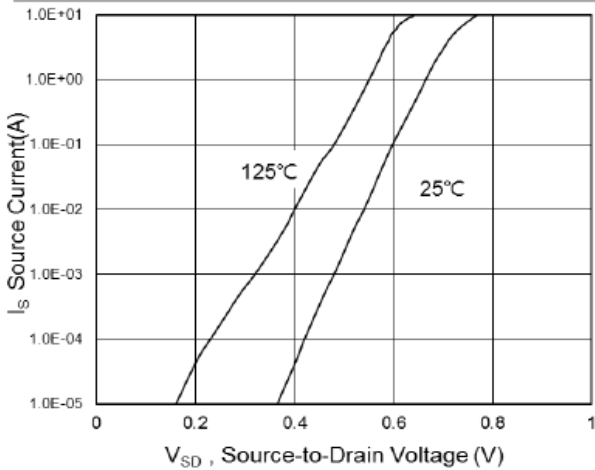


Fig.3 Source-Drain Forward Characteristics

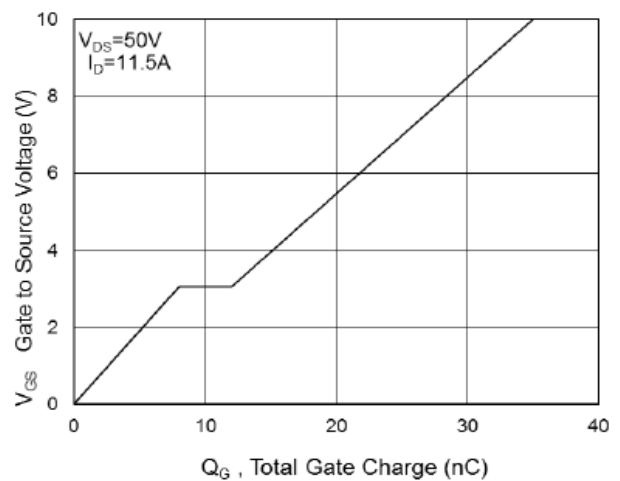


Fig.4 Gate-Charge Characteristics

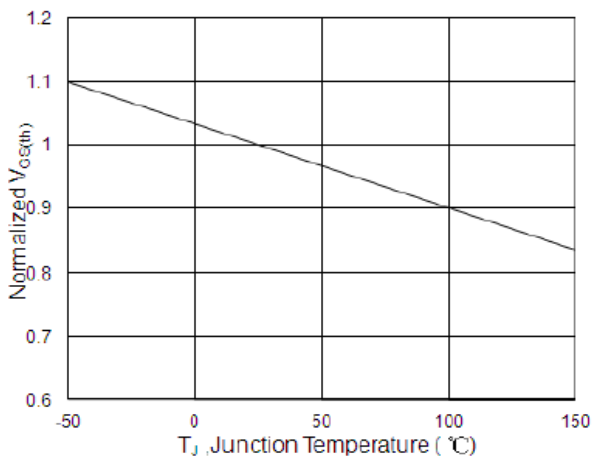


Fig.5 Normalized $V_{GS(th)}$ vs. T_J

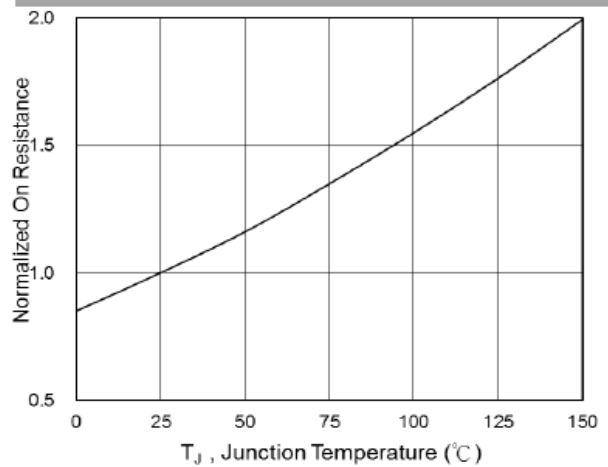


Fig.6 Normalized $R_{DS(on)}$ vs. T_J



SPN4816 N-Channel Enhancement Mode MOSFET

TYPICAL CHARACTERISTICS

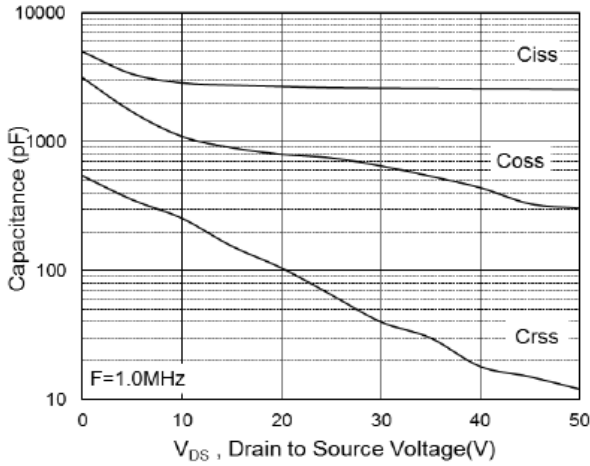


Fig.7 Capacitance

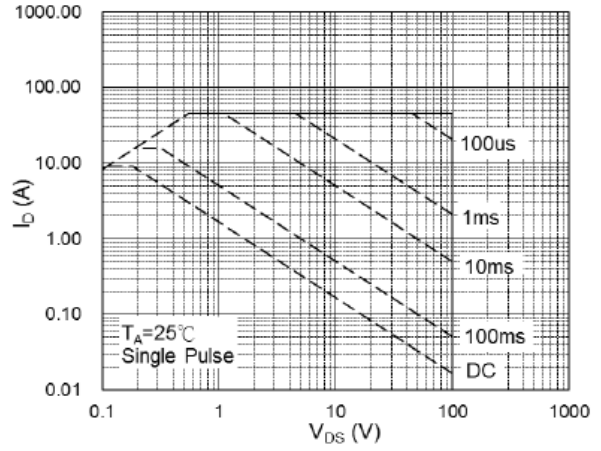


Fig.8 Safe Operating Area

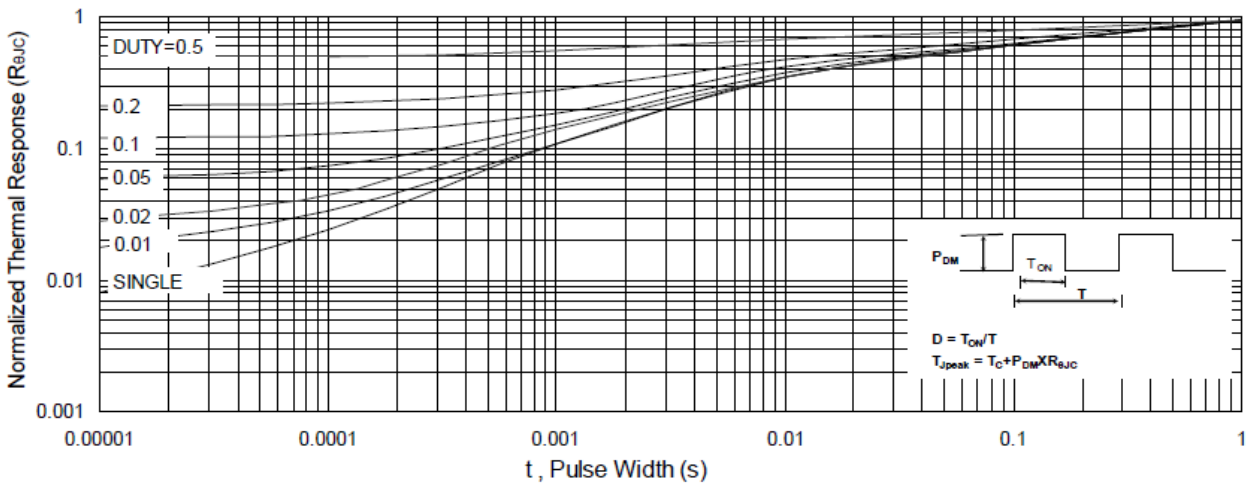


Fig.9 Normalized Maximum Transient Thermal Impedance

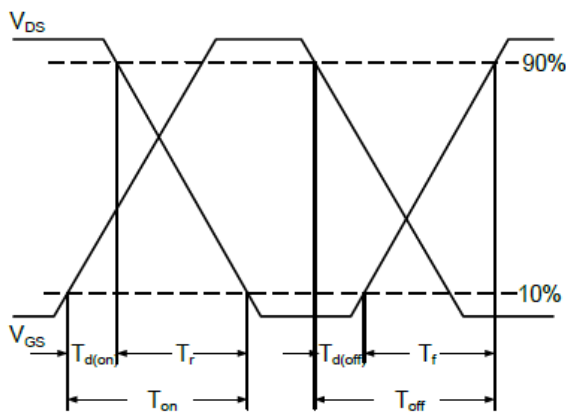


Fig.10 Switching Time Waveform

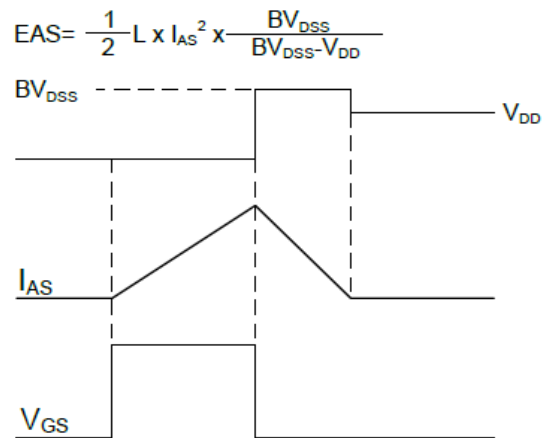


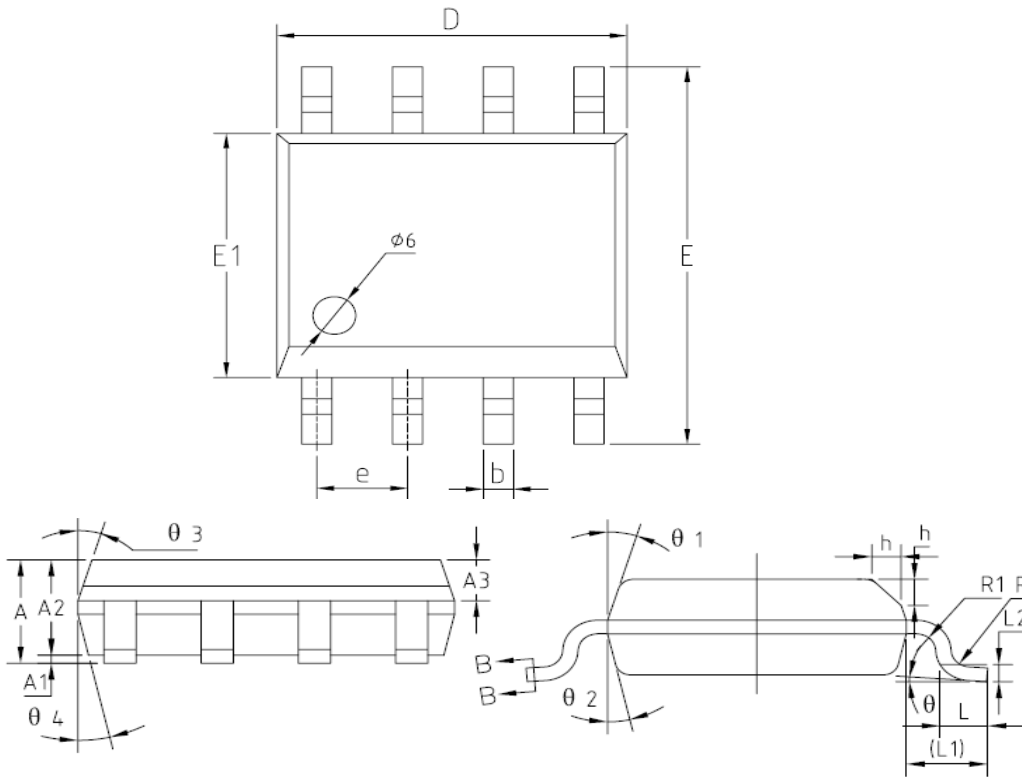
Fig.11 Unclamped Inductive Switching Waveform



SPN4816

N-Channel Enhancement Mode MOSFET

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°



SPN4816

N-Channel Enhancement Mode MOSFET

Information provided is alleged to be exact and consistent. SYNC Power Corporation presumes no responsibility for the penalties of use of such information or for any violation of patents or other rights of third parties which may result from its use. No license is granted by allegation or otherwise under any patent or patent rights of SYNC Power Corporation. Conditions mentioned in this publication are subject to change without notice. This publication surpasses and replaces all information previously supplied. SYNC Power Corporation products are not authorized for use as critical components in life support devices or systems without express written approval of SYNC Power Corporation.

© The SYNC Power logo is a registered trademark of SYNC Power Corporation

© 2018 SYNC Power Corporation – Printed in Taiwan – All Rights Reserved

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>