



SPN8814

N-Channel Enhancement Mode MOSFET

DESCRIPTION

The SPN8814 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 .

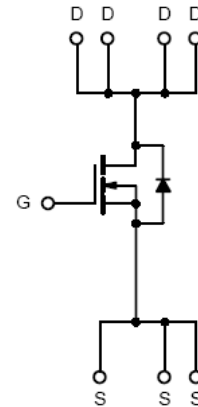
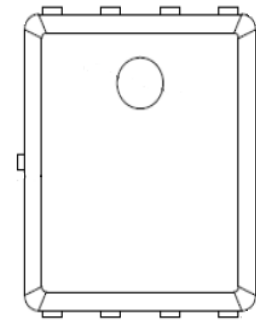
FEATURES

- ◆ 100V/71A, $R_{DS(ON)}=10m\Omega@V_{GS}=10V$
- ◆ 100V/71A, $R_{DS(ON)}=15m\Omega@V_{GS}=4.5V$
- ◆ Super high density cell design for extremely low $R_{DS(ON)}$
- ◆ Exceptional on-resistance and maximum DC current capability
- ◆ PPAK5x6-8L package design

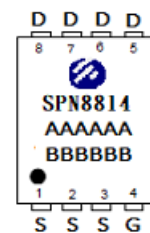
APPLICATIONS

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

PIN CONFIGURATION(PPAK5x6-8L)



PART MARKING



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



SPN8814

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
SPN8814DN8RGB	PPAK5x6-8L	SPN8814

※ SPN8814DN8RGB : 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/-14	V
Continuous Drain Current(Silicon Limited)	I _D	T _C =25°C	71
		T _C =100°C	45
Pulsed Drain Current	I _{DM}	170	A
Avalanche Current	I _{AS}	18	A
Avalanche Energy, Single Pulse (L=0.1mH , T _C =25°C)	E _{AS}	16.2	mJ
Power Dissipation	P _D	83	W
Operating Junction Temperature	T _J	-55/150	°C
Storage Temperature Range	T _{STG}	-55/150	°C
Thermal Resistance-Junction to Case (PPAK5x6)	R _{θJC}	1.5	°C/W



SPN8814

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	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1.1		2.3	
Gate Leakage Current	I_{GSS}	$V_{DS}=0V, V_{GS}=+20/-14$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=80V, V_{GS}=0V$ $T_J=25^\circ C$			1	uA
		$V_{DS}=80V, V_{GS}=0V$ $T_J=100^\circ C$			100	
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=13A$			10	mΩ
		$V_{GS}=4.5V, I_D=8A$			15	
Gate Resistance	R_G	$V_{GS}=0V, V_{DS}=Open,$ $f=1MHz$		0.5	0.9	Ω
Diode Forward Voltage	V_{SD}	$I_S=1A, V_{GS}=0V$			1.2	V
Dynamic						
Total Gate Charge	$Q_g(4.5V)$	$V_{DS}=50V, V_{GS}=4.5V$ $I_D=13A$		13		nC
Gate-Source Charge	Q_{gs}			6		
Gate-Drain Charge	Q_{gd}			3		
Input Capacitance	C_{iss}	$V_{DS}=50V, V_{GS}=0V$ $f=1MHz$		2048		pF
Output Capacitance	C_{oss}			684		
Reverse Transfer Capacitance	C_{rss}			7		
Turn-On Time	$t_{d(on)}$	$V_{DD}=50V, V_{GS}=10V$ $R_G=3\Omega$		7.6		nS
	t_r			2.7		
Turn-Off Time	$t_{d(off)}$			23.5		
	t_f			3.5		

Note :

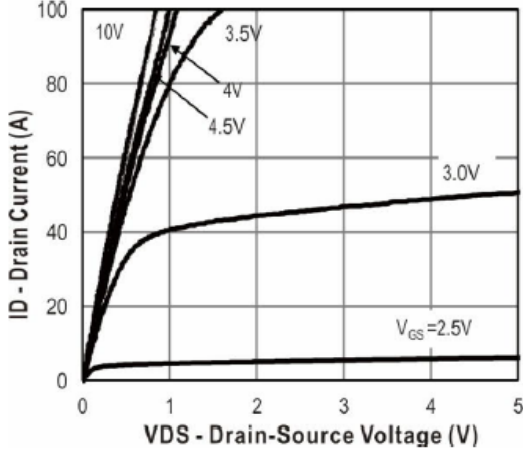
The maximum current rating is package limited at 80A for PPAK5x6-8L



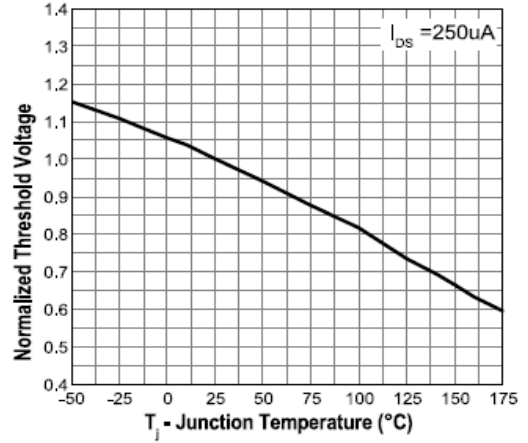
SPN8814 N-Channel Enhancement Mode MOSFET

TYPICAL CHARACTERISTICS

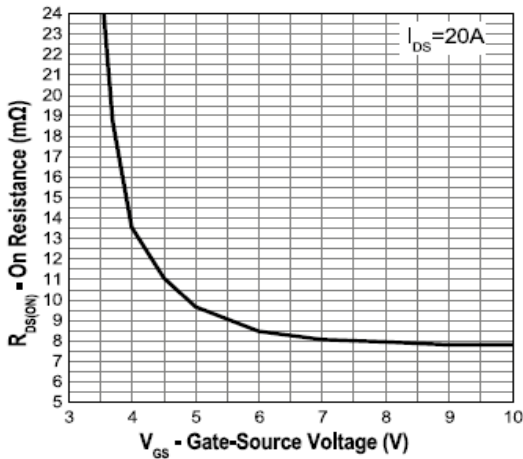
Output Characteristics



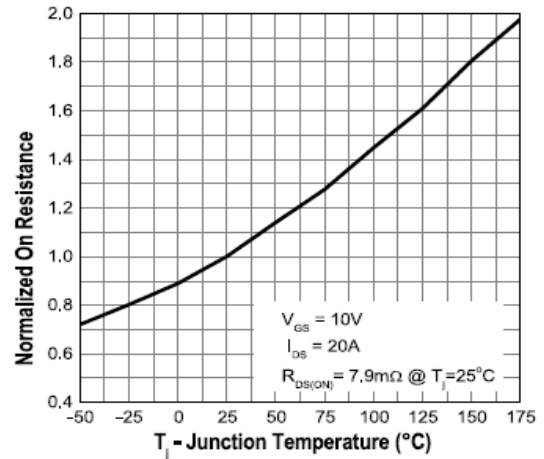
Gate Threshold Voltage



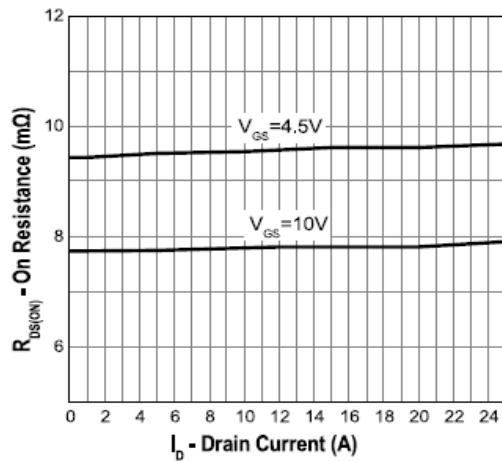
Gate-Source On Resistance



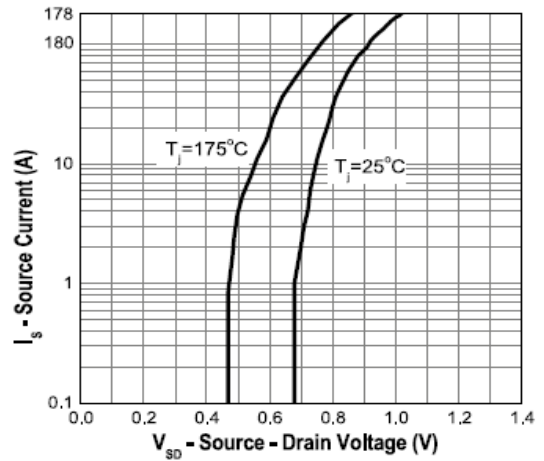
Drain-Source On Resistance



Drain-Source On Resistance



Source-Drain Diode Forward

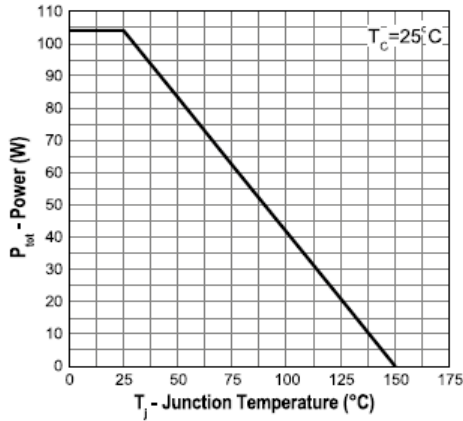




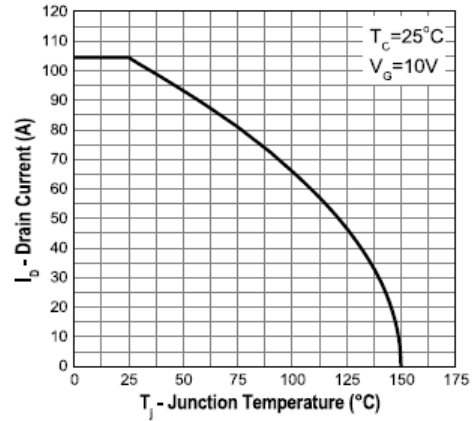
SPN8814 N-Channel Enhancement Mode MOSFET

TYPICAL CHARACTERISTICS

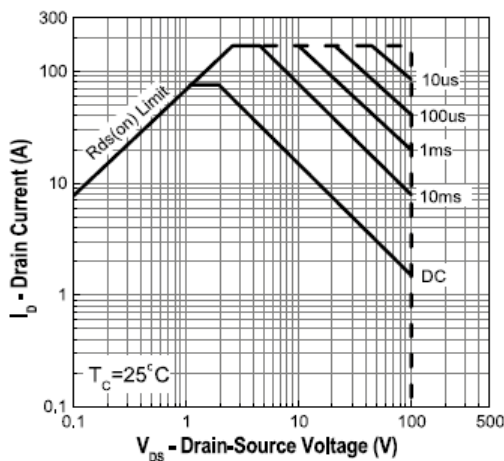
Power Dissipation



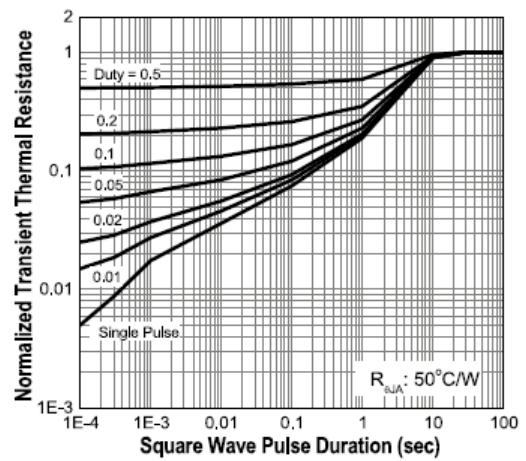
Drain Current



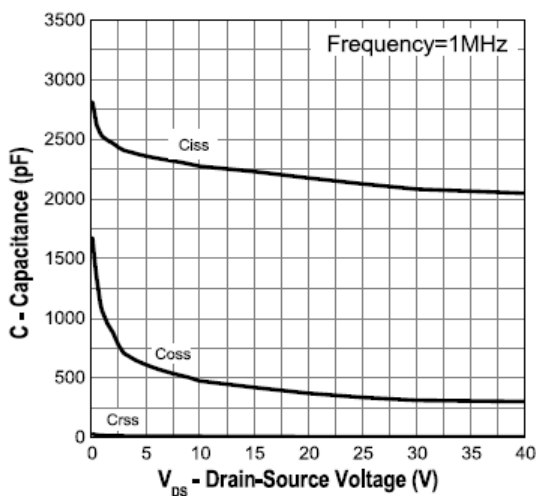
Safe Operation Area



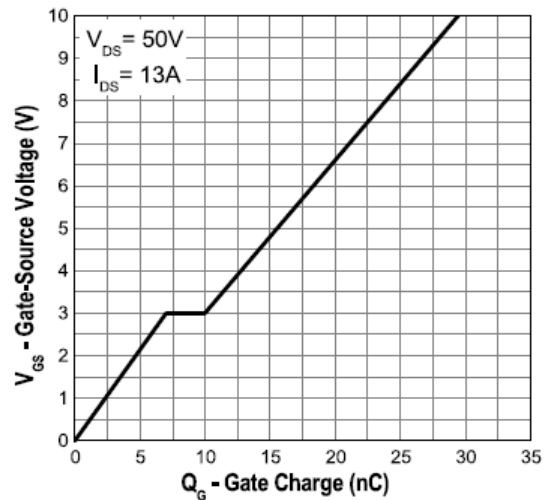
Transient Thermal Impedance



Capacitance



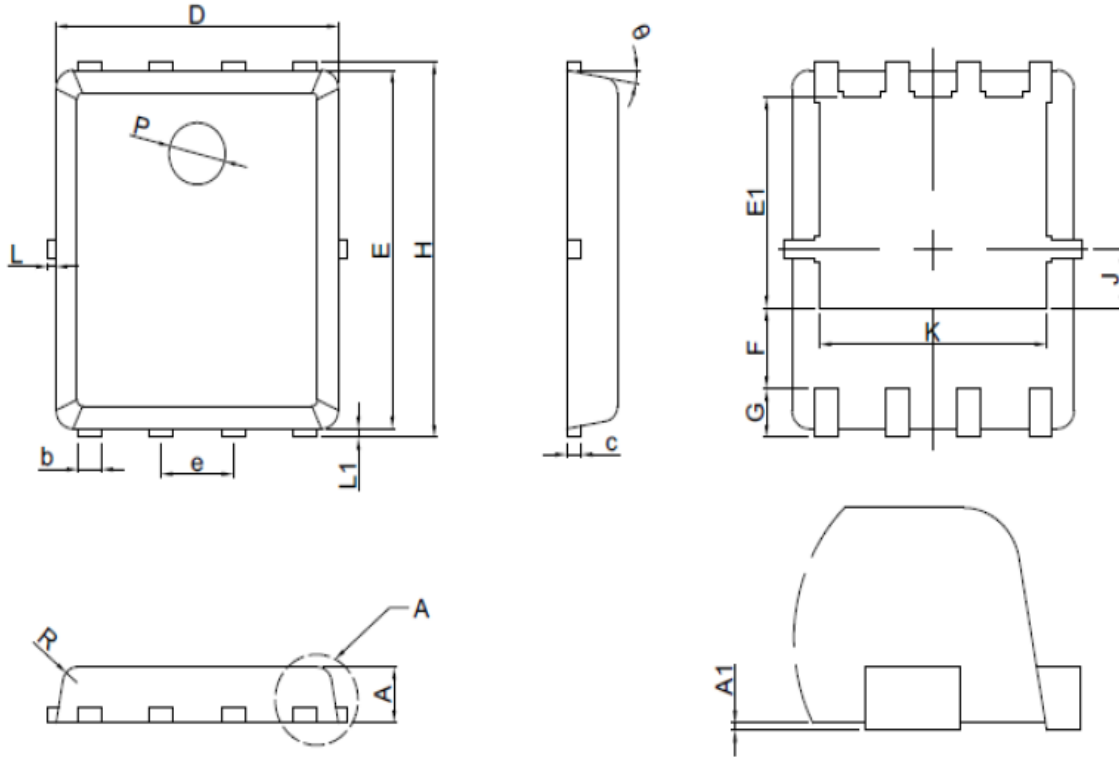
Gate Charge





SPN8814 N-Channel Enhancement Mode MOSFET

PPAK5x6-8L PACKAGE OUTLINE



SYMBOL	MILLIMETERS		
	MIN	NOM	MAX
A	0.8	0.95	1.1
A1	0.00	0.03	0.05
b	0.33	0.41	0.51
c	0.254 REF		
D	4.80	4.95	5.10
F	1.40 REF		
E	5.70	5.80	5.90
e	1.27 BSC		
H	5.90	6.05	6.20
L1	0.06	0.13	0.20
G	0.60 REF		
K	4.00 REF		
L	---	----	0.20
P	1.00 REF		
E1	3.40REF		
θ	6°	10°	14°
R	0.25REF		



SPN8814

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

© 2019 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>