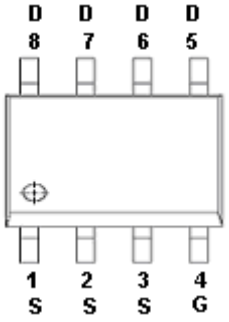
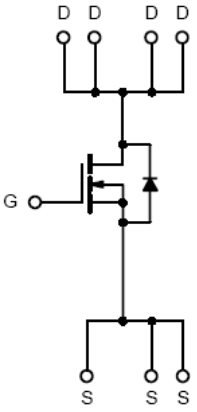
SPN4860
N-Channel Enhancement Mode MOSFET

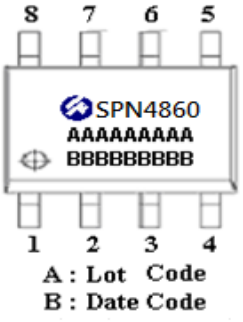
DESCRIPTION
The SPN4860 is the N-Channel logic enhancement mode power field effect transistors are produced using high cell density , DMOS trench technology.
This high density process is especially tailored to minimize on-state resistance.
These devices are particularly suited for low voltage application , notebook computer power management and other battery powered circuits where high-side switching .

APPLICATIONS
- DC/DC Converter
- Load Switch
- Synchronous Buck Converter
- UPS
- Motor Control
- Power Tool

FEATURES
- 60V/20A,$R_{DS(ON)}$=4.8mΩ@V_{GS}=10V
- 60V/20A,$R_{DS(ON)}$=6.3mΩ@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

PIN CONFIGURATION(SOP–8P)




PART MARKING


SPN4860
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
SPN4860S8RGB	SOP-8P	SPN4860

※ SPN4860S8RGB : 13" Tape Reel ; Pb – Free ; Halogen – Free

ABSOULTE MAXIMUM RATINGS

(T_A=25℃ 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℃)	T_A=25℃	I_D	21	A
	T_A=70℃		13	
Pulsed Drain Current		I_{DM}	140	A
Avalanche Energy Single Pulse(L=0.3mH, T_C=25℃)		E_{AS}	240	mJ
Power Dissipation	T_A=25℃	P_D	3.1	W
Operating Junction Temperature		T_J	-55/150	℃
Storage Temperature Range		T_{STG}	-55/150	℃
Thermal Resistance-Junction to Ambient		$R_{\theta JA}$	80	℃/W

SPN4860
N-Channel Enhancement Mode MOSFET

ELECTRICAL CHARACTERISTICS

(T_A=25℃ Unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V,I_D=250uA	60			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=250uA	1.0	1.8	2.4	
Gate Leakage Current	I_{GSS}	V_{DS}=0V,V_{GS}=±20V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=48V,V_{GS}=0V T_J=25℃			1	uA
		V_{DS}=48V,V_{GS}=0V T_J=100℃			100	
Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS}=10V,I_D=20A		3.8	4.8	mΩ
		V_{GS}=4.5V,I_D=20A		4.8	6.3	
Forward Transconductance	gfs	V_{DS}=5V,I_D=20A		58		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}=30V,V_{GS}=10V I_D=20A		49		nC
Total Gate Charge(4.5V)	Q_g			24		
Gate-Source Charge	Q_{gs}			8		
Gate-Drain Charge	Q_{gd}			9		
Input Capacitance	C_{iss}	V_{DS}=30V,V_{GS}=0V f=1MHz		3250		pF
Output Capacitance	C_{oss}			1200		
Reverse Transfer Capacitance	C_{rss}			45		
Turn-On Time	$t_{d(on)}$	V_{DD}=30V, I_D=20A,V_{GEN}=10V R_G=10Ω		12		nS
	t_r			10		
Turn-Off Time	$t_{d(off)}$			55		
	t_f			15		

TYPICAL CHARACTERISTICS

Fig 1. Typical Output Characteristics

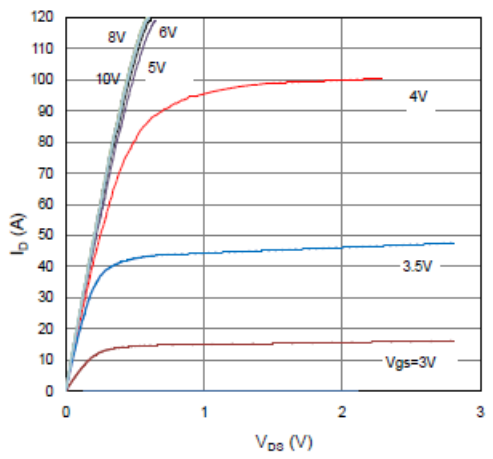


Figure 2. On-Resistance vs. Gate-Source Voltage

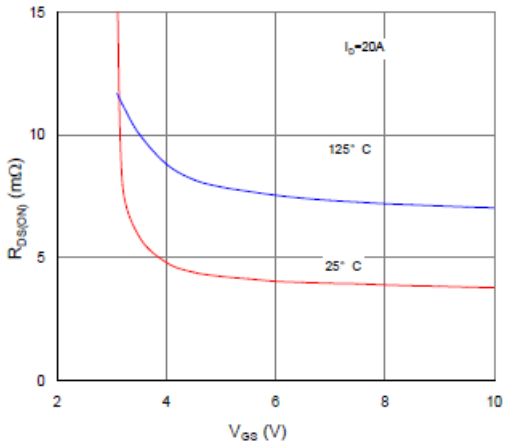


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

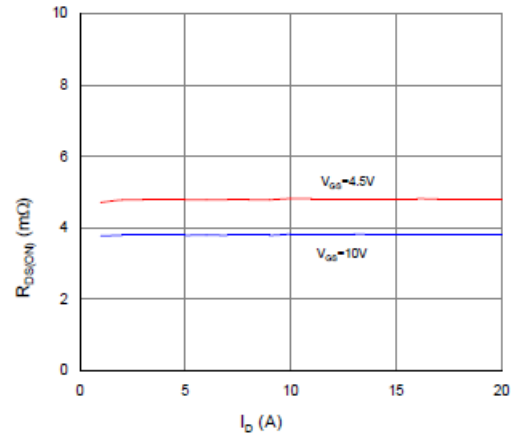


Figure 4. Normalized On-Resistance vs. Junction Temperature

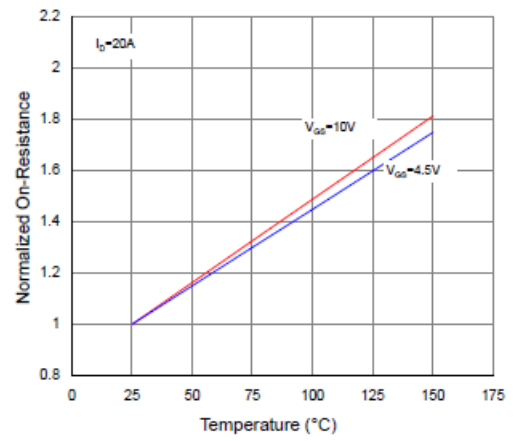


Figure 5. Typical Transfer Characteristics

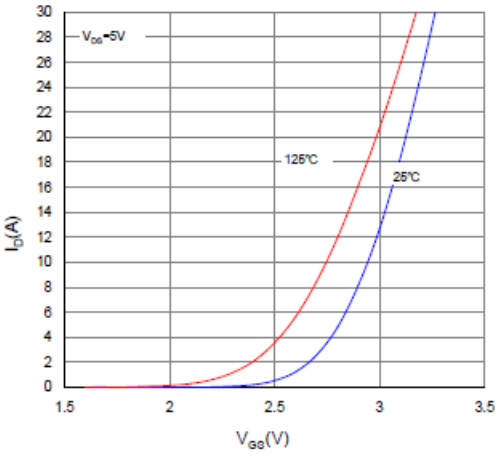
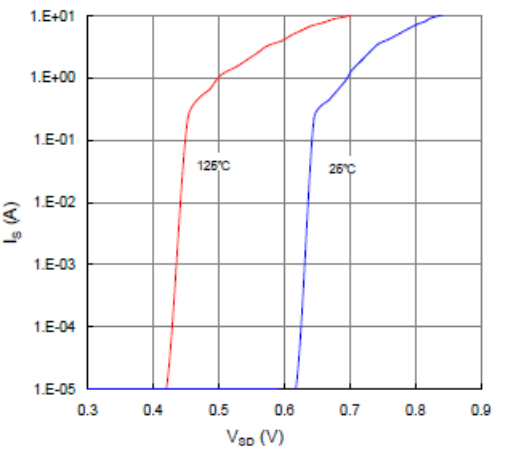


Figure 6. Typical Source-Drain Diode Forward Voltage



TYPICAL CHARACTERISTICS

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

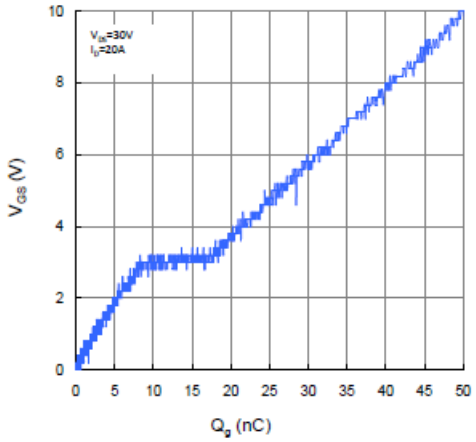


Figure 8. Typical Capacitance vs. Drain-to-Source Voltage

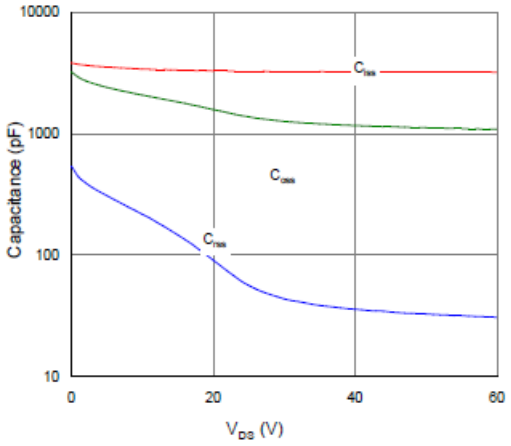


Figure 9. Maximum Safe Operating Area

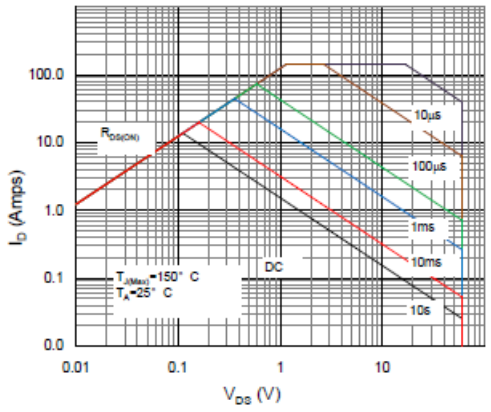


Figure 10. Maximun Drain Current vs. Case Temperature

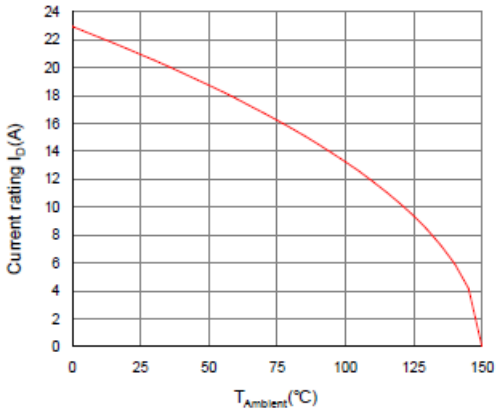
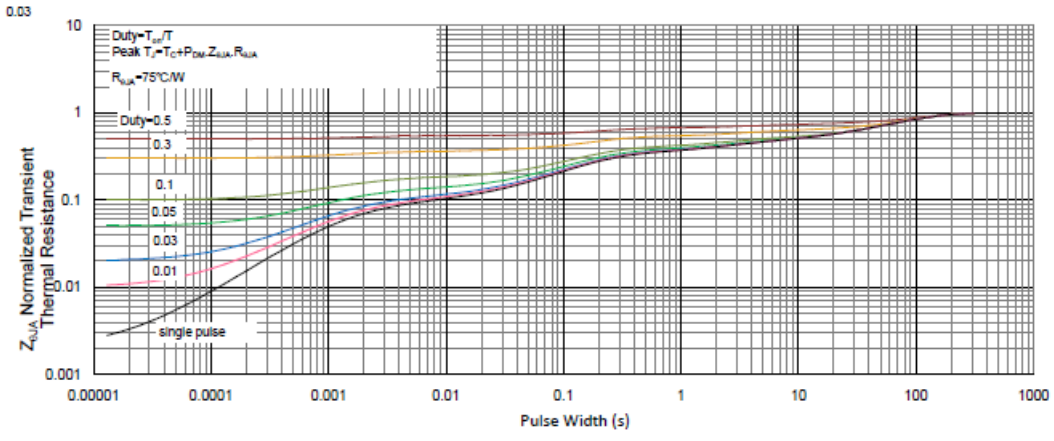
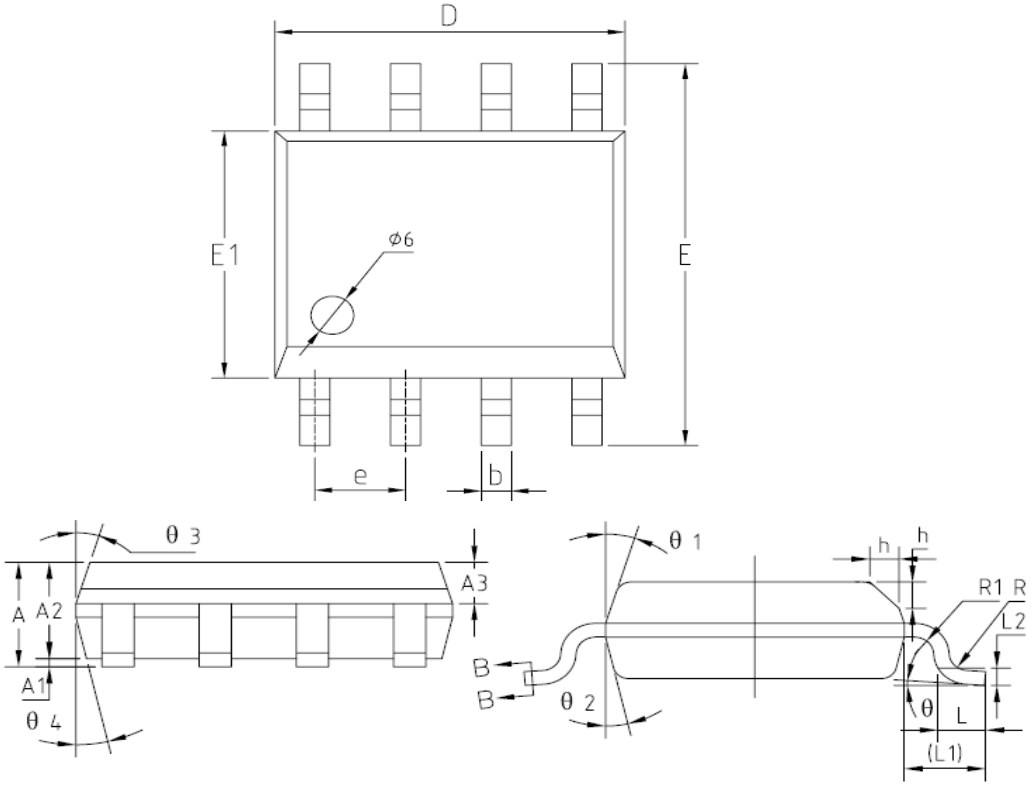


Figure 11. Normalized Maximum Transient Thermal Impedance, Junction-to-Ambient



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°
θ 1	15°	17°	19°
θ 2	11°	13°	15°
θ 3	15°	17°	19°
θ 4	11°	13°	15°

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