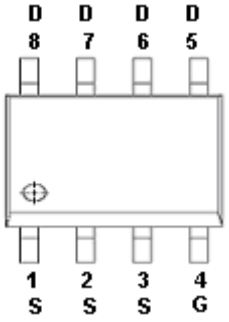
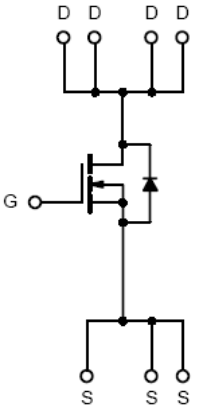
SPN4812
N-Channel Enhancement Mode MOSFET

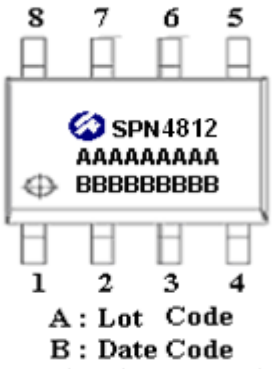
DESCRIPTION
The SPN4812 is the N-Channel logic enhancement mode power field effect transistors are produced using high cell density , DMOS trench technology.
This high density process is especially tailored to minimize on-state resistance.
These devices are particularly suited for low voltage application , notebook computer power management and other battery powered circuits where high-side switching .

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

FEATURES
- 100V/12A,$R_{DS(ON)}$=12mΩ@V_{GS}=10V
- 100V/10A,$R_{DS(ON)}$=15mΩ@V_{GS}=4.5V
- Super high density cell design for extremely low RDS (ON)
- Exceptional on-resistance and maximum DC current capability
- SOP – 8P package design

PIN CONFIGURATION(SOP – 8P)




PART MARKING


SPN4812
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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
SPN4812S8RGB	SOP-8P	SPN4812

※ SPN4812S8RGB : 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}	100	V
Gate –Source Voltage		V_{GSS}	±20	V
Continuous Drain Current(T_J=150℃)	T_A=25℃	I_D	12	A
	T_A=70℃		8	
Pulsed Drain Current		I_{DM}	60	A
Avalanche Energy, Single Pulse (L=0.1mH , Tc=25℃)		E_{AS}	22	mJ
Power Dissipation	T_A=25℃	P_D	3.1	W
	T_A=70℃		2.2	
Operating Junction Temperature		T_J	-55/150	℃
Storage Temperature Range		T_{STG}	-55/150	℃
Thermal Resistance-Junction to Ambient (t≦10s)		$R_{\theta JA}$	40	℃/W
Thermal Resistance-Junction to Ambient (steady state)			75	

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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	100			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=250uA	1.4	1.9	2.4	
Gate Leakage Current	I_{GSS}	V_{DS}=0V,V_{GS}=±20V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=100V,V_{GS}=0V T_J=25℃			1	uA
		V_{DS}=100V,V_{GS}=0V T_J=100℃			100	
Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS}= 10V,I_D=12A		9.5	12	mΩ
		V_{GS}=4.5V,I_D=10A		11.5	15	
Forward Transconductance	gfs	V_{DS}=5V,I_D=12A		45		S
Gate Resistance	R_G	V_{GS}=0V,V_{DS}=Open, f=1MHz		1.5		Ω
Diode Forward Voltage	V_{SD}	I_S=12A,V_{GS} =0V		0.9	1.2	V
Dynamic						
Total Gate Charge	Q_g(10V)	V_{DS}=50V,V_{GS}=10V I_D=14A		29		nC
Total Gate Charge	Q_g(4.5V)			14		
Gate-Source Charge	Q_{gs}			5		
Gate-Drain Charge	Q_{gd}			5		
Input Capacitance	C_{iss}	V_{DS}=50V,V_{GS}=0V f=1MHz		2275		pF
Output Capacitance	C_{oss}			162		
Reverse Transfer Capacitance	C_{rss}			7.9		
Turn-On Time	$t_{d(on)}$	V_{DD}=50V, I_D=14A,V_{GS}=10V R_G=10Ω		8		nS
	t_r			3		
Turn-Off Time	$t_{d(off)}$			26		
	t_f			4		

TYPICAL CHARACTERISTICS

Fig 1. Typical Output Characteristics

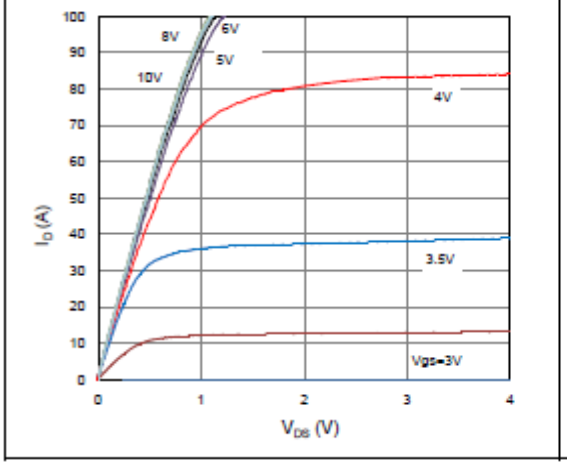


Figure 2. On-Resistance vs. Gate-Source Voltage

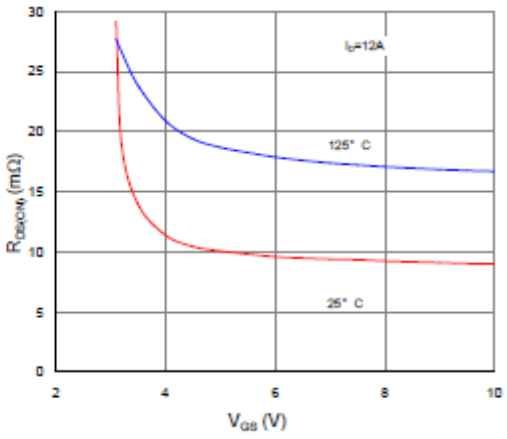


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

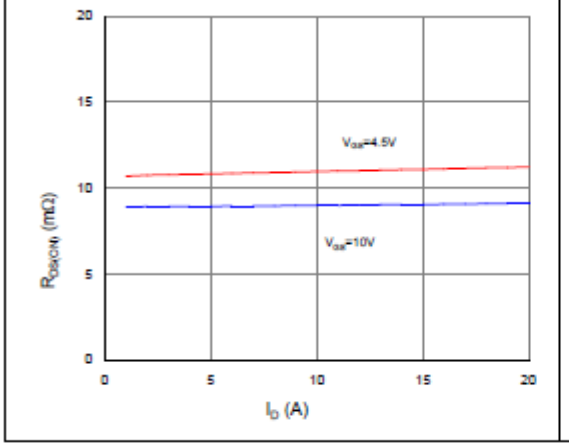


Figure 4. Normalized On-Resistance vs. Junction Temperature

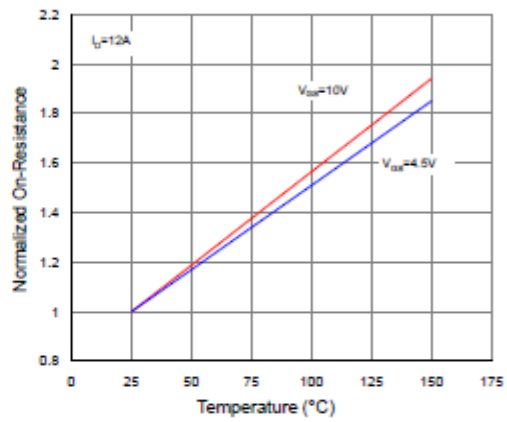


Figure 5. Typical Transfer Characteristics

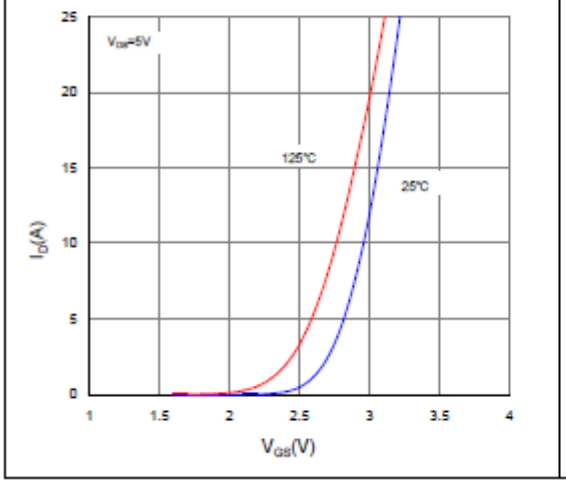
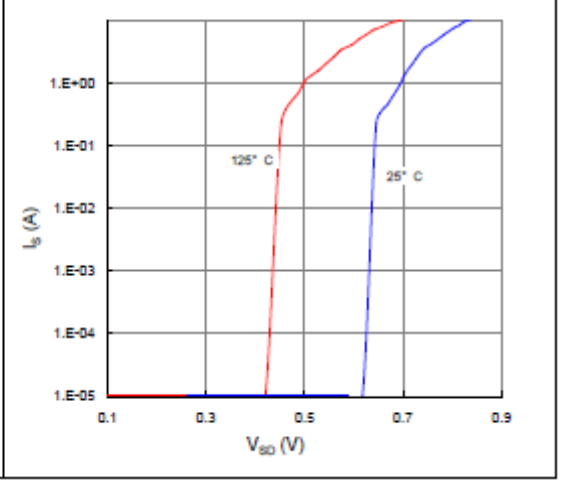


Figure 6. Typical Source-Drain Diode Forward Voltage



TYPICAL CHARACTERISTICS

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

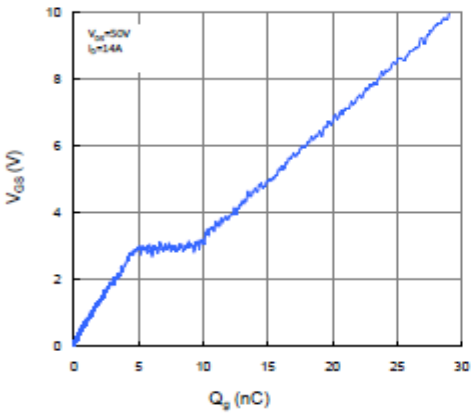


Figure 8. Typical Capacitance vs. Drain-to-Source Voltage

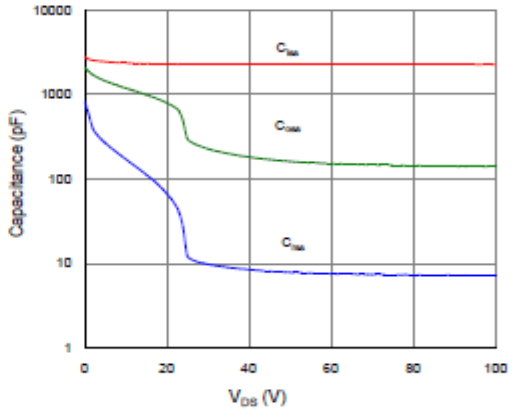


Figure 9. Maximum Safe Operating Area

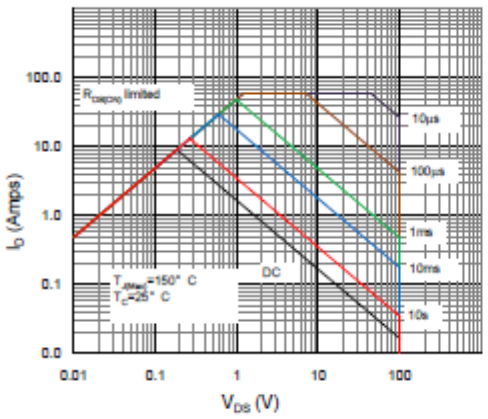


Figure 10. Maximun Drain Current vs. Case Temperature

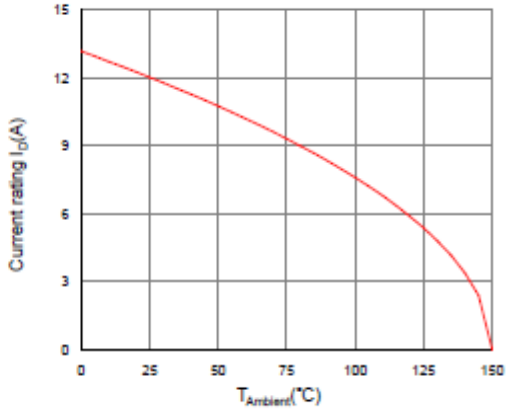
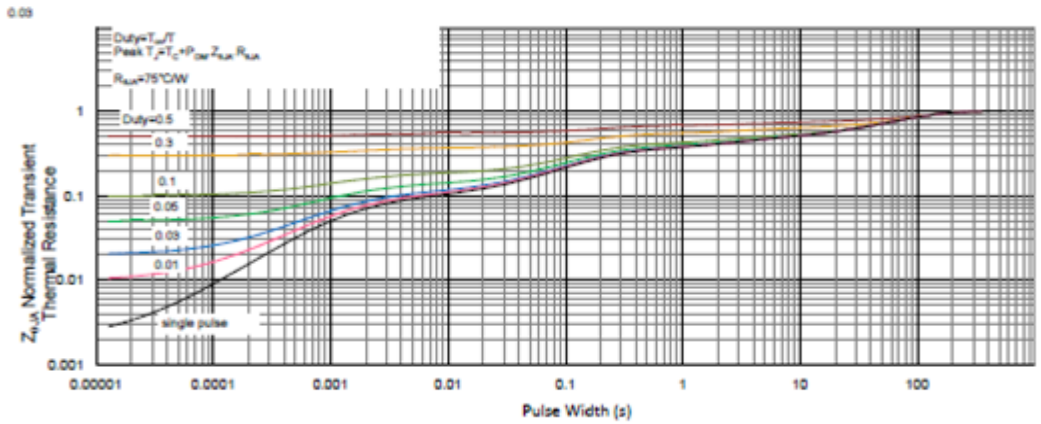
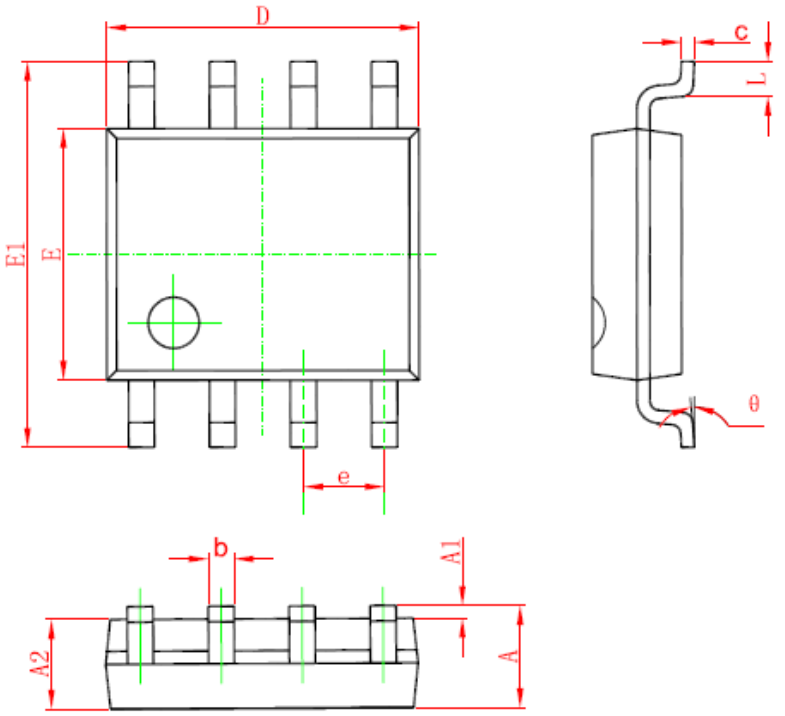


Figure 11. Normalized Maximum Transient Thermal Impedance, Junction-to-Ambient



SOP- 8 PACKAGE OUTLINE



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.006	0.010
D	4.700	5.100	0.185	0.200
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
e	1.270(BSC)		0.050(BSC)	
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°

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