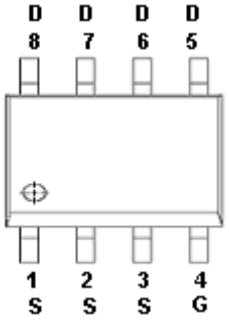
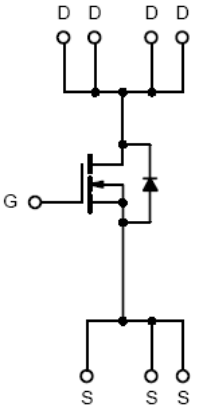
SPN4812
N-Channel Enhancement Mode MOSFET

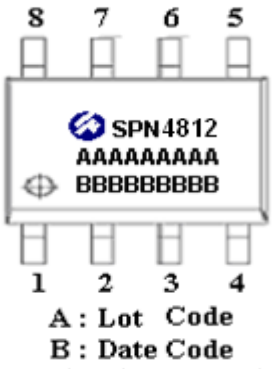
DESCRIPTION
The SPN4812 is the N-Channel logic enhancement mode power field effect transistors are produced using high cell density , DMOS trench technology.
This high density process is especially tailored to minimize on-state resistance.
These devices are particularly suited for low voltage application , 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 $R_{DS\ (ON)}$
- Exceptional on-resistance and maximum DC current capability
- SOP–8P package design

PIN CONFIGURATION(SOP–8P)




PART MARKING


SPN4812
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
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 Case		$R_{\theta JC}$	0.85	℃/W
Thermal Resistance-Junction to Ambient (steady state)		$R_{\theta JA}$	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

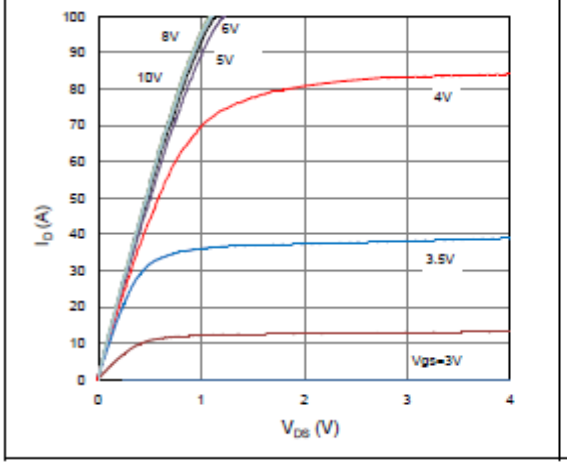


Figure 2. On-Resistance vs. Gate-Source Voltage

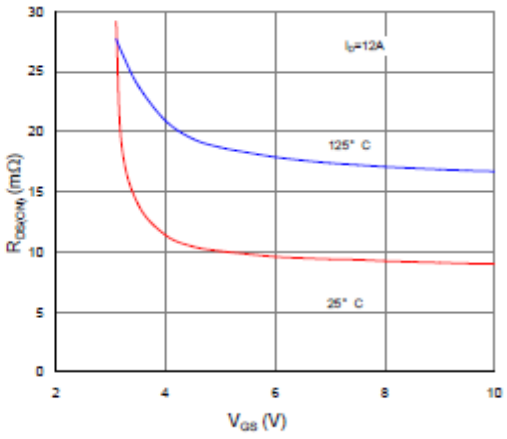


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

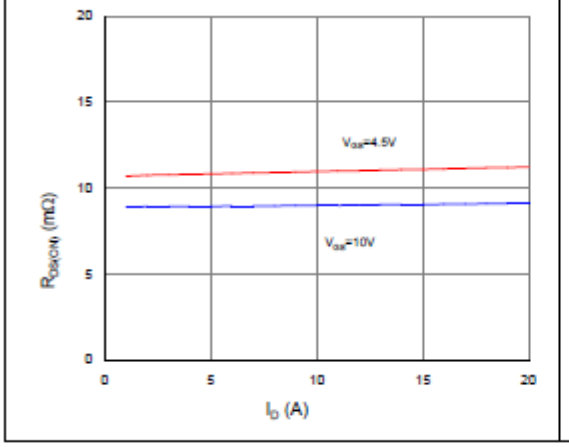


Figure 4. Normalized On-Resistance vs. Junction Temperature

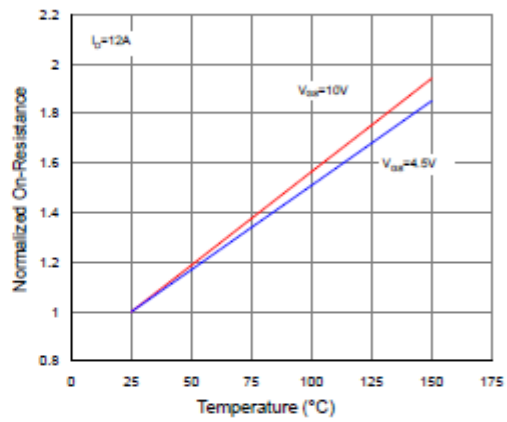


Figure 5. Typical Transfer Characteristics

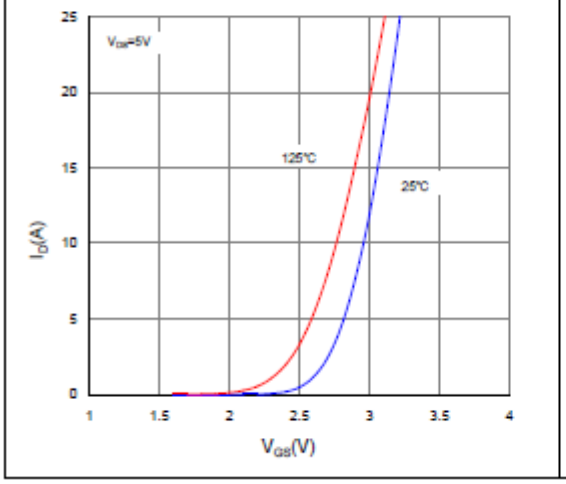
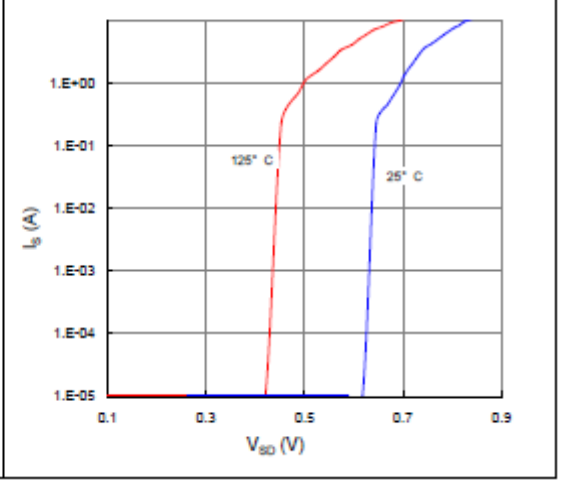


Figure 6. Typical Source-Drain Diode Forward Voltage



TYPICAL CHARACTERISTICS

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

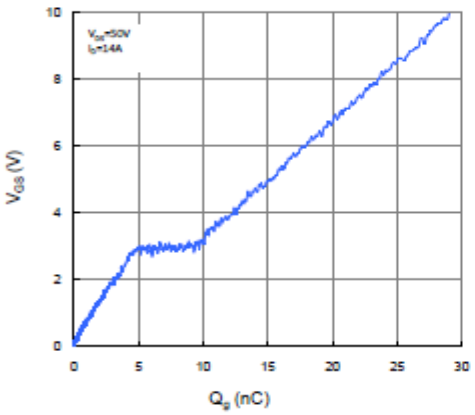


Figure 8. Typical Capacitance vs. Drain-to-Source Voltage

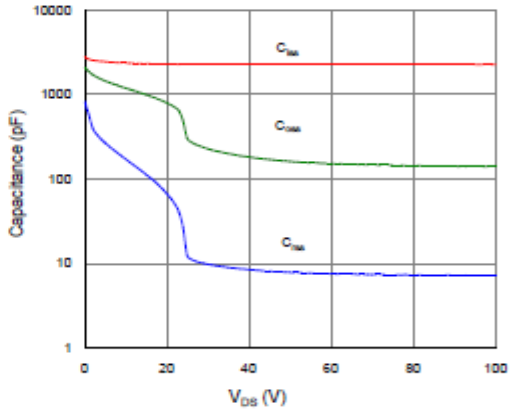


Figure 9. Maximum Safe Operating Area

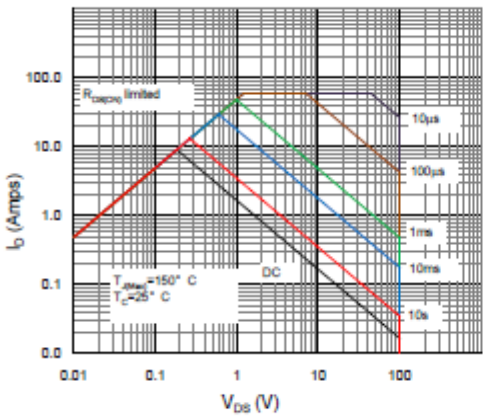


Figure 10. Maximun Drain Current vs. Case Temperature

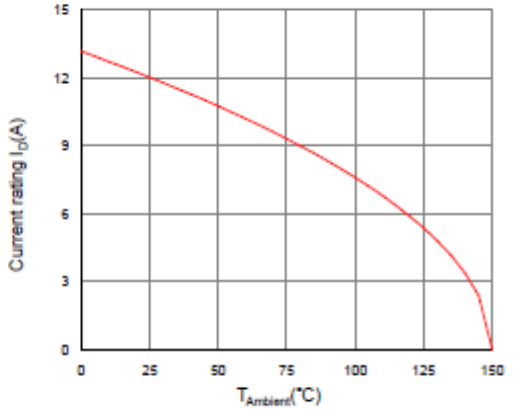
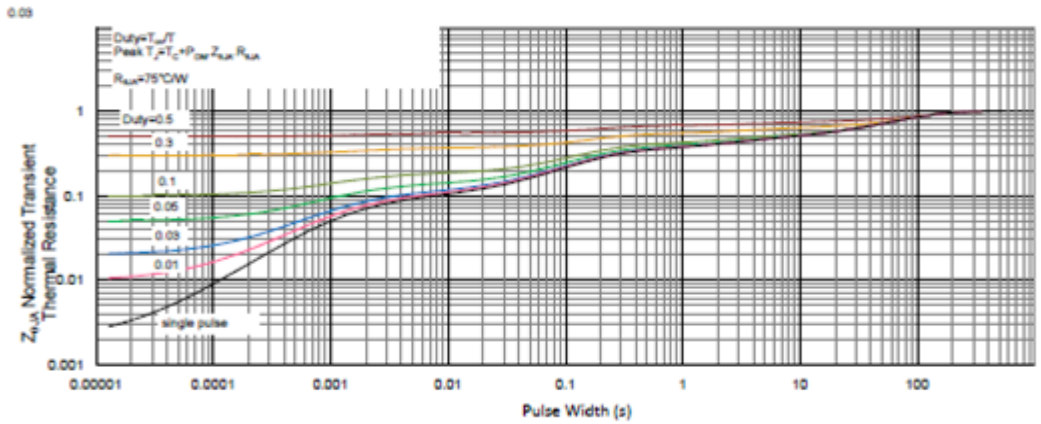
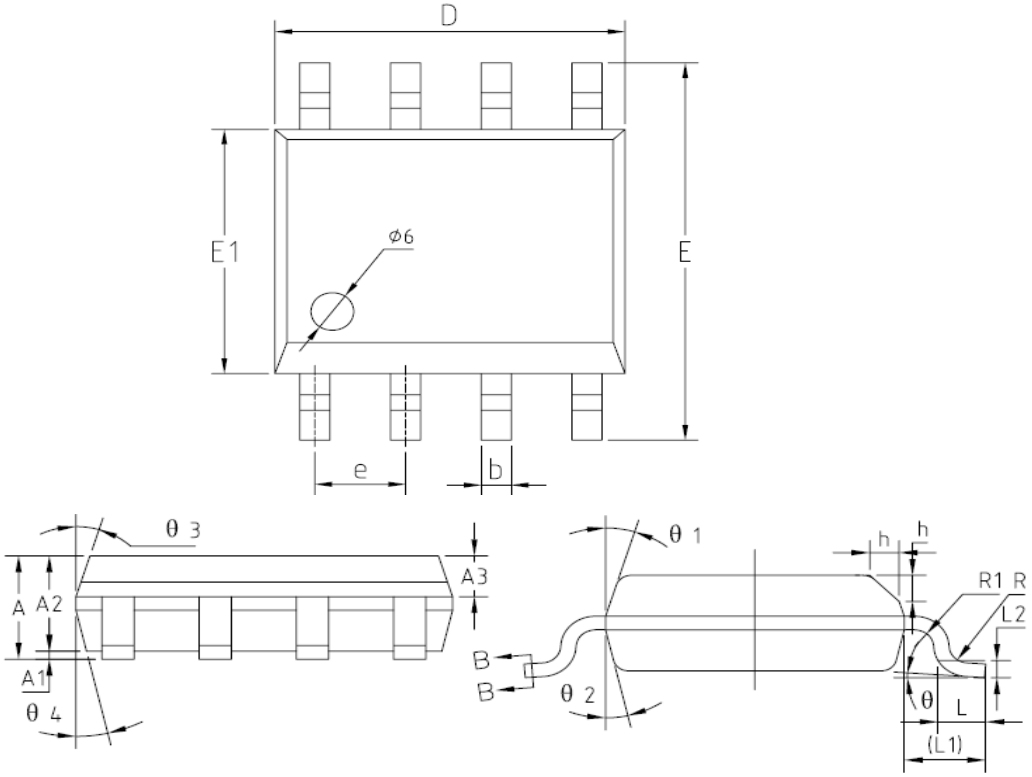


Figure 11. Normalized Maximum Transient Thermal Impedance, Junction-to-Ambient



SOP-8P 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°

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