SPN9912
N-Channel Enhancement Mode MOSFET

DESCRIPTION

The SPN9912 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 most of synchronous buck converter applications.

APPLICATIONS

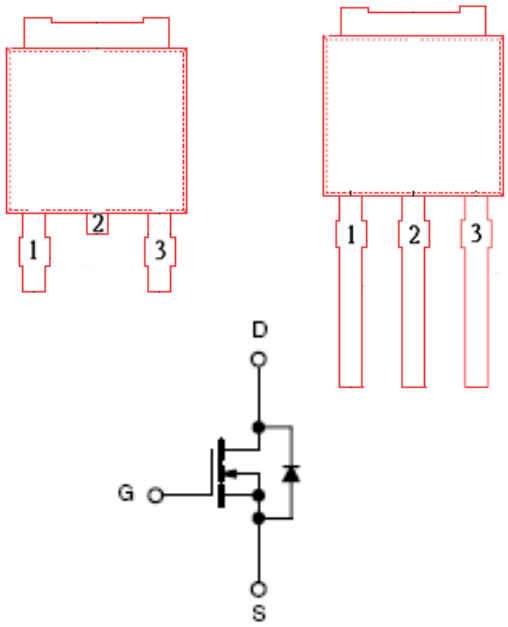
- DC/DC Converter
- Load Switch
- Synchronous Buck Converter

FEATURES

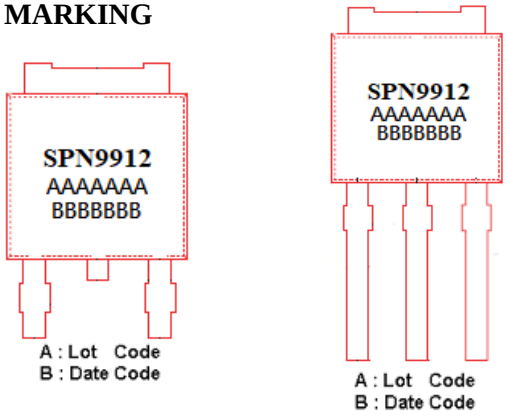
- 60V/20A, $R_{DS(ON)}$=16mΩ@V_{GS}=10V
- 60V/20A, $R_{DS(ON)}$=19mΩ@V_{GS}=4.5V
- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability
- TO-252-2L/TO-251-3L package design

PIN CONFIGURATION

TO-252 **TO-251**



PART MARKING



SPN9912
N-Channel Enhancement Mode MOSFET

PIN DESCRIPTION

Pin	Symbol	Description
1	G	Gate
2	D	Drain
3	S	Source

ORDERING INFORMATION

Part Number	Package	Part Marking
SPN9912T252RGB	TO-252-2L	SPN9912
SPN9912T251TGB	TO-251-3L	SPN9912

※ SPN9912T252RGB: Tape Reel ; Pb – Free; Halogen – Free
※ SPN9912T251TGB: Tube ; Pb – Free; Halogen – Free

ABSOULTE MAXIMUM RATINGS

(T_A=25℃ Unless otherwise noted)

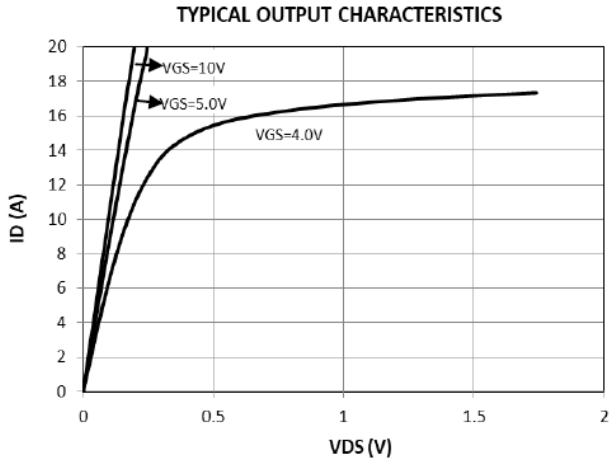
Parameter		Symbol	Typical	Unit
Drain-Source Voltage		V_{DSS}	60	V
Gate –Source Voltage		V_{GSS}	±20	V
Continuous Drain Current(T_J=150℃)	T_A=25℃	I_D	46	A
	T_A=100℃		33	
Pulsed Drain Current		I_{DM}	203	A
Avalanche Current		I_{AS}	27	A
Power Dissipation	T_A=25℃	P_D	71	W
Avalanche Energy with Single Pulse (Tj=25℃, L= 0.1mH , I_{AS} = 38A)		E_{AS}	36	mJ
Operating Junction Temperature		T_J	-55/150	℃
Storage Temperature Range		T_{STG}	-55/150	℃
Thermal Resistance-Junction to Case		$R_{\theta JC}$	2.1	℃/W

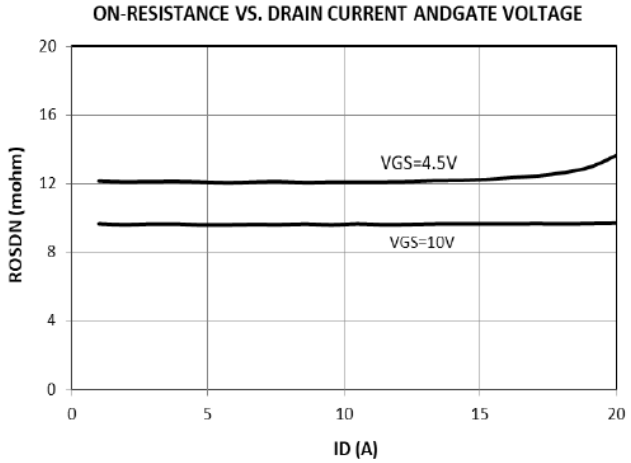
ELECTRICAL CHARACTERISTICS

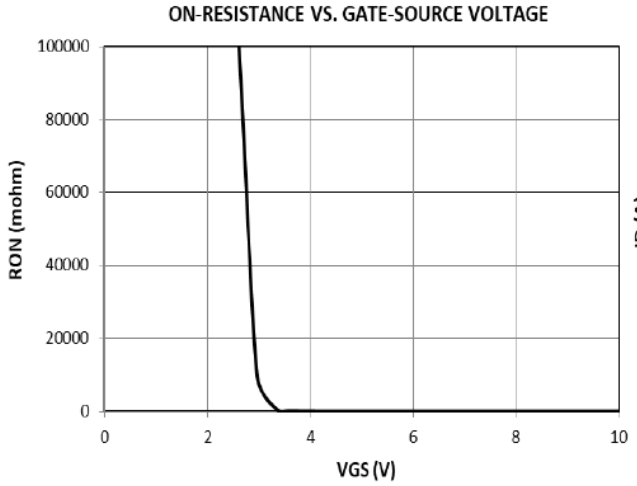
(T_A=25℃ Unless otherwise noted)

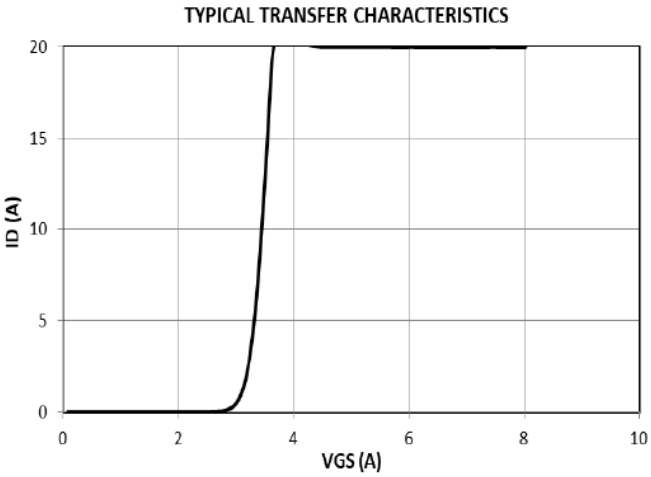
Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V,I_D=250uA	60			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=250uA	1.0		3.0	V
Gate Leakage Current	I_{GSS}	V_{DS}=0V,V_{GS}=±20V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=48V,V_{GS}=0V			1	uA
		V_{DS}=48V,V_{GS}=0V T_J=150℃			100	uA
Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS}=10V,I_D=20A		13	16	mΩ
		V_{GS}=4.5V,I_D=20A		16	19	mΩ
Gate Resistance	R_G			1.3		Ω
Forward Transconductance	gfs	V_{DS}=15V,I_D=20A		15		S
Diode Forward Voltage	V_{SD}	I_S=40A,V_{GS} =0V			1.2	V
Dynamic						
Total Gate Charge	$Q_{g(10V)}$	V_{DS}=48V,V_{GS}=10V I_D=40A		29		nC
Gate-Source Charge	Q_{gs}			4		nC
Gate-Drain Charge	Q_{gd}			8		nC
Total Gate Charge	$Q_{g(4.5V)}$	V_{DS}=48V,V_{GS}=4.5V I_D=40A		15		nC
Input Capacitance	C_{iss}	V_{DS}=25V,V_{GS}=0V f=1MHz		1400		pF
Output Capacitance	C_{oss}			137		pF
Reverse Transfer Capacitance	C_{rss}			95		pF
Turn-On Time	$t_{d(on)}$	V_{DD}=48V, I_D=40A, V_{GEN}=10V, R_G=2.5Ω		8.4		nS
	t_r			12.4		nS
Turn-Off Time	$t_{d(off)}$			26		nS
	t_f			4.4		nS

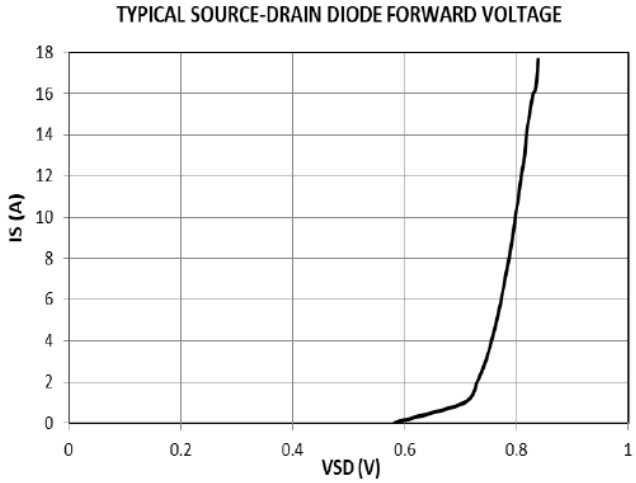
TYPICAL CHARACTERISTICS

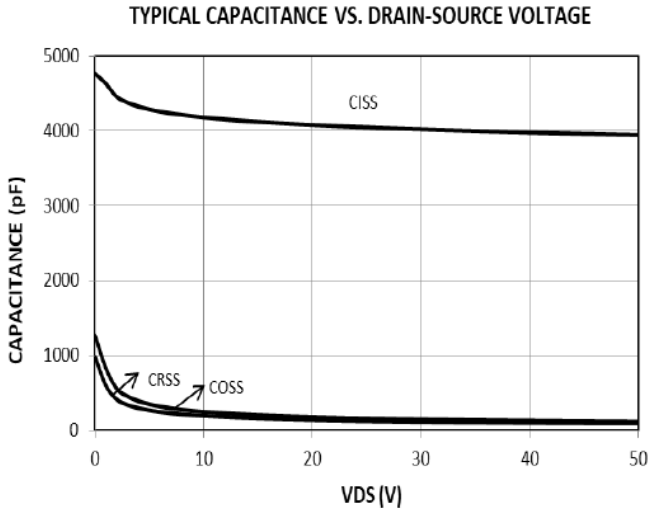












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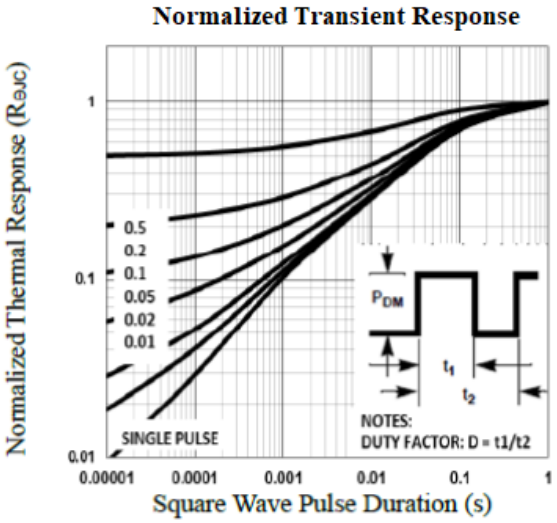

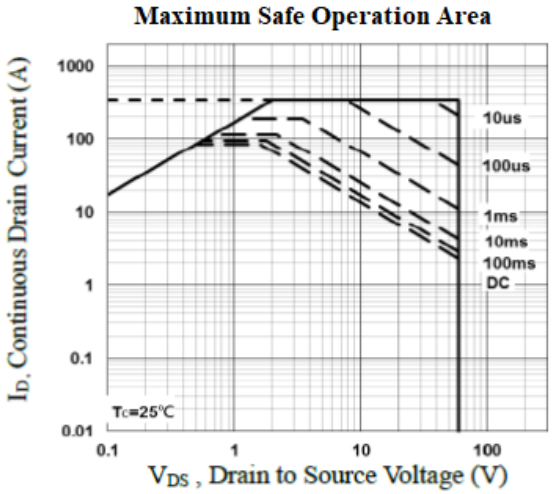

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