



# SPN11T11

## N-Channel Enhancement Mode MOSFET

### DESCRIPTION

The SPN11T11 is the N-Channel logic enhancement mode power field effect transistor which is produced using super high cell density DMOS trench technology. The SPN11T11 has been designed specifically to improve the over all efficiency of DC/DC converters using either synchronous or conventional switching PWM controllers. It has been optimized for low gate charge, low  $R_{DS(ON)}$  and fast switching speed.

### FEATURES

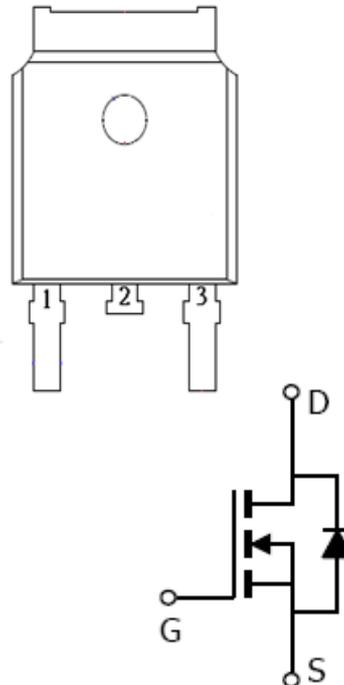
- ◆ 110V/12A,  $R_{DS(ON)}=108m\Omega@V_{GS}=10V$
- ◆ 110V/12A,  $R_{DS(ON)}=137m\Omega@V_{GS}=4.5V$
- ◆ High density cell design for extremely low  $R_{DS(ON)}$
- ◆ Exceptional on-resistance and maximum DC current capability
- ◆ TO-252-2L , package design

### APPLICATIONS

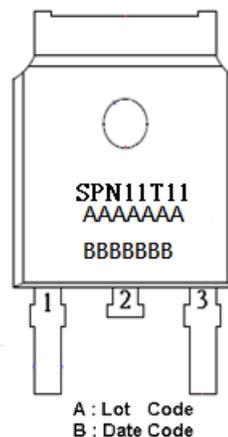
- Powered System
- DC/DC Converter
- Load Switch

### PIN CONFIGURATION

TO-252-2L



### PART MARKING





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### PIN DESCRIPTION

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

### ORDERING INFORMATION

Part Number	Package	Part Marking
SPN11T11T252RGB	TO-252-2L	SPN11T11

※ SPN11T11T252RGB : Tape Reel ; Pb – Free ; Halogen - Free

### ABSOLUTE MAXIMUM RATINGS

(TA=25°C Unless otherwise noted)

Parameter	Symbol	Typical	Unit	
Drain-Source Voltage	V <sub>DSS</sub>	110	V	
Gate –Source Voltage	V <sub>GSS</sub>	±20	V	
Continuous Drain Current(T <sub>J</sub> =150°C)	I <sub>D</sub>	T <sub>C</sub> =25°C	12	A
		T <sub>C</sub> =70°C	8.0	
Pulsed Drain Current	I <sub>DM</sub>	24	A	
Avalanche Current	I <sub>AS</sub>	14	A	
Power Dissipation @ T <sub>C</sub> =25°C	P <sub>D</sub>	40	W	
Operating Junction Temperature	T <sub>J</sub>	150	°C	
Storage Temperature Range	T <sub>STG</sub>	-55/150	°C	
Thermal Resistance-Junction to Ambient	R <sub>θJA</sub>	110	°C/W	



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### ELECTRICAL CHARACTERISTICS

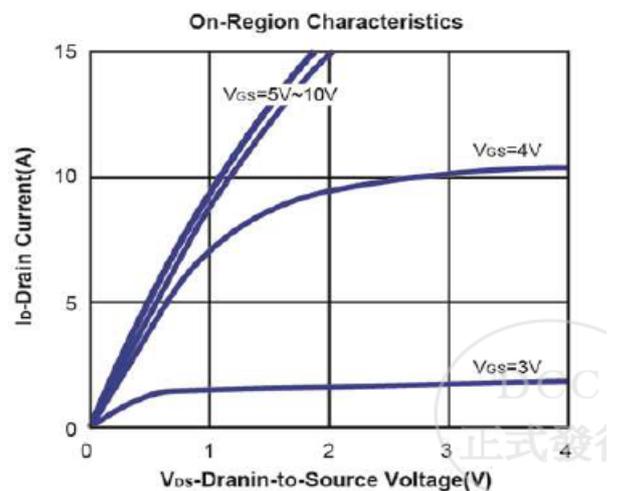
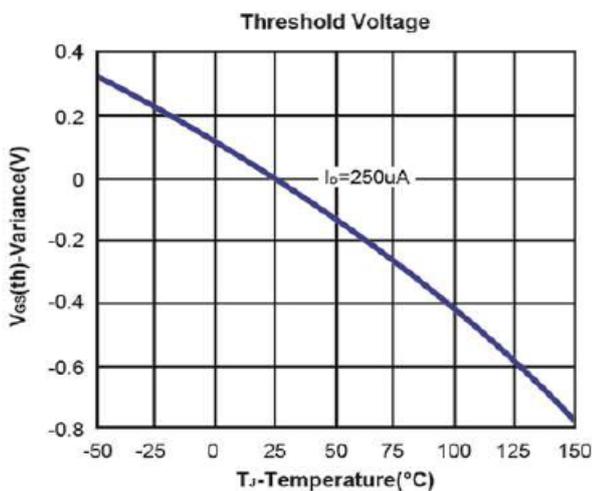
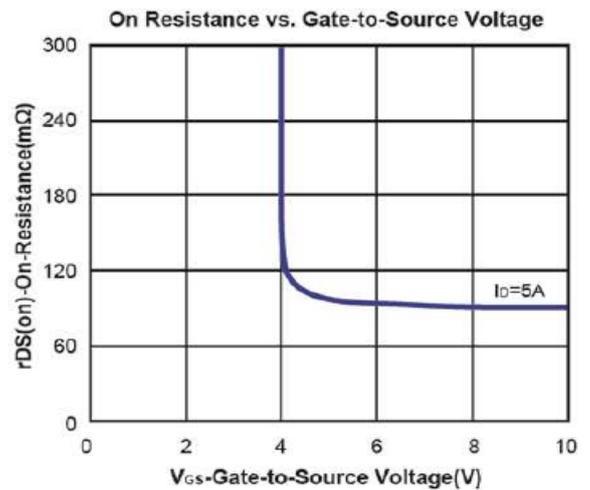
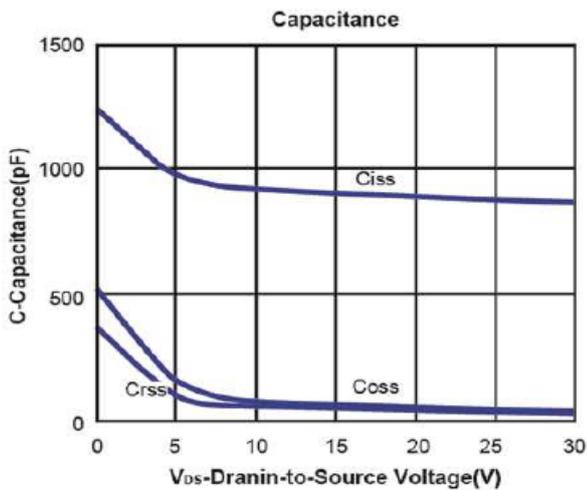
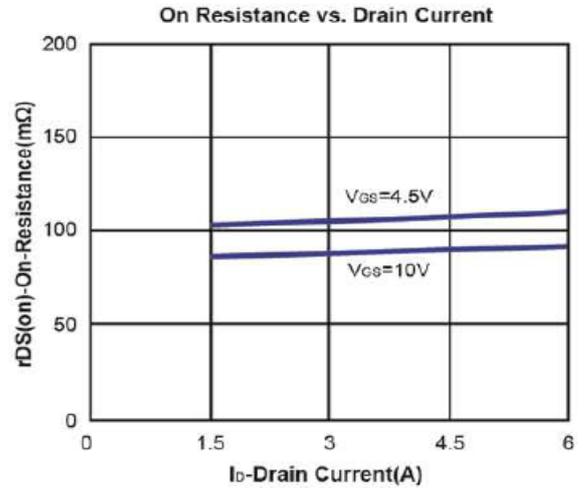
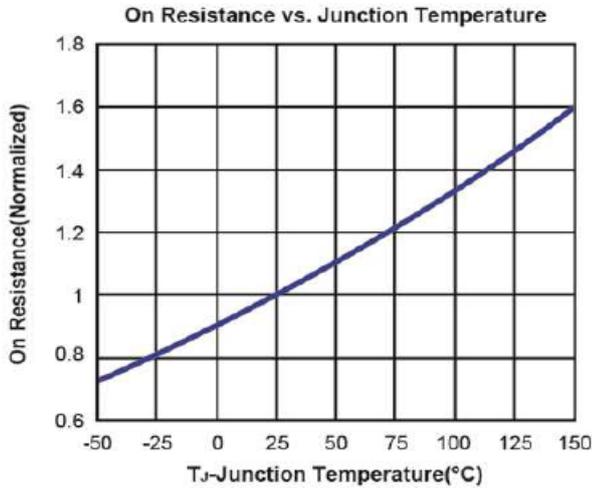
(TA=25°C Unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
<b>Static</b>						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	110			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1		3	
Gate Leakage Current	$I_{GSS}$	$V_{DS}=0V, V_{GS}=\pm 20V$			$\pm 100$	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=80V, V_{GS}=0V$			1	$\mu A$
On-State Drain Current	$I_{D(on)}$	$V_{DS}\geq 5V, V_{GS}=10V$	12			A
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=5A$		90	108	$m\Omega$
		$V_{GS}=4.5V, I_D=3A$		105	137	$m\Omega$
Diode Forward Voltage	$V_{SD}$	$I_S=1A, V_{GS}=0V$		0.9	1.2	V
<b>Dynamic</b>						
Total Gate Charge (10V)	$Q_g$	$V_{DS}=50V, I_D=5A$		22.3		nC
Total Gate Charge (4.5V)	$Q_g$			11.9		
Gate-Source Charge	$Q_{gs}$			4.8		
Gate-Drain Charge	$Q_{gd}$			6.4		
Input Capacitance	$C_{iss}$	$V_{DS}=15V, V_{GS}=0V$ $f=1MHz$		895		pF
Output Capacitance	$C_{oss}$			56		
Reverse Transfer Capacitance	$C_{rss}$			43		
Turn-On Time	$t_{d(on)}$	$V_{DD}=50V, I_D=5A,$ $V_{GEN}=10V, R_G=1\Omega$		13.3		nS
	$t_r$			25.4		
Turn-Off Time	$t_{d(off)}$			27.5		
	$t_f$			16.2		



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## TYPICAL CHARACTERISTICS

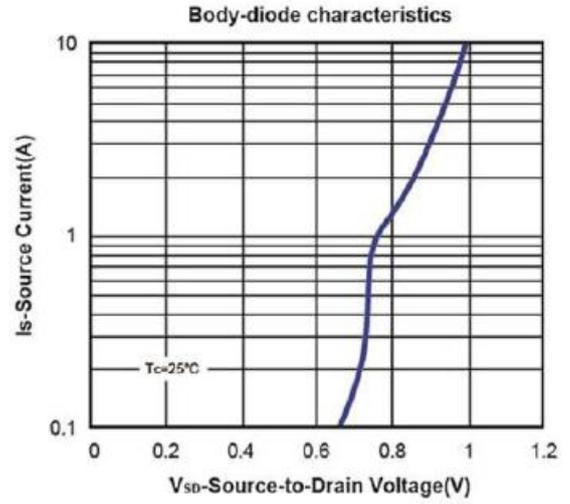
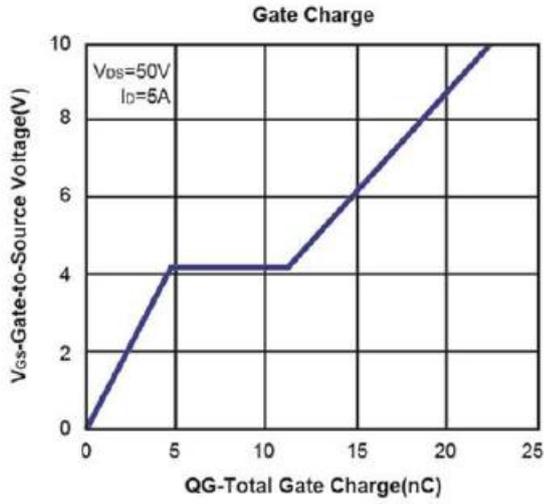




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### TYPICAL CHARACTERISTICS





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