SPN8878B
N-Channel Enhancement Mode MOSFET

DESCRIPTION

The SPN8878B is the N-Channel logic enhancement mode power field effect transistors are produced using high cell density , DMOS trench technology. The SPN8878B has been designed specifically to improve the overall 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.

APPLICATIONS

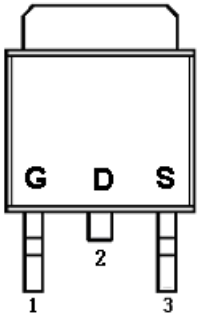
- Power Management in Note book
- Powered System
- DC/DC Converter
- Load Switch

FEATURES

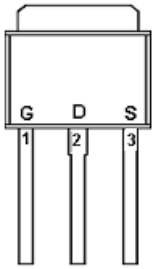
- 30V/20A,$R_{DS(ON)}$=14mΩ@V_{GS}=10V
- 30V/15A,$R_{DS(ON)}$=19mΩ@V_{GS}=4.5V
- Super high density cell design for extremely low $R_{DS\ (ON)}$
- Exceptional on-resistance and maximum DC current capability
- TO-252-2L and TO-251S-3L package design

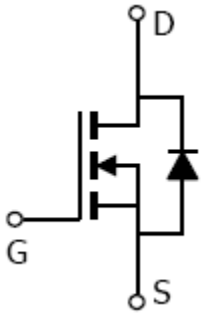
PIN CONFIGURATION

TO-252-2L



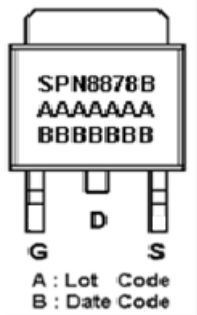
TO-251S-3L



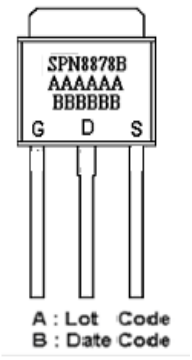


PART MARKING

TO-252-2L



TO-251S-3L



SPN8878B
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
SPN8878BT252RGB	TO-252-2L	SPN8878B
SPN8878BT251TGB	TO-251S-3L	SPN8878B

※ SPN8878BT252RGB : Tape Reel ; Pb – Free ; Halogen - Free
※ SPN8878BT251TGB : Tube ; Pb – Free ; Halogen - Free

ABSOULTE MAXIMUM RATINGS

(T_A=25℃ Unless otherwise noted)

Parameter			Symbol	Typical	Unit
Drain-Source Voltage			V_{DSS}	30	V
Gate –Source Voltage			V_{GSS}	±20	V
Continuous Drain Current	T_A=25℃		I_D	18	A
	T_A=100℃			13	
Pulsed Drain Current			I_{DM}	40	A
Continuous Drain Current			I_S	5	A
Power Dissipation	T_A=25℃	TO-252-2L	P_D	40	W
		TO-251		55	
Avalanche Energy with Single Pulse (Tj=25℃, L = 0.14mH , I_{AS} = 30A , V_{DD} = 20V.)			E_{AS}	63	mJ
Operating Junction Temperature			T_J	-55/150	℃
Storage Temperature Range			T_{STG}	-55/150	℃
Thermal Resistance-Junction to Ambient			$R_{\theta JA}$	100	℃/W

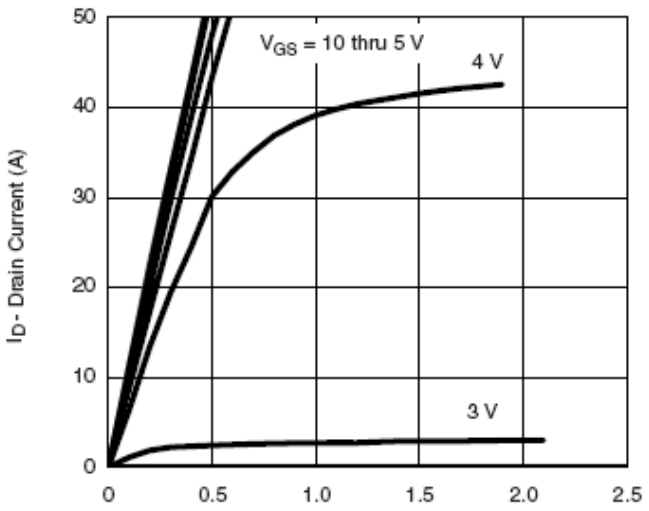
SPN8878B
N-Channel Enhancement Mode MOSFET

ELECTRICAL CHARACTERISTICS

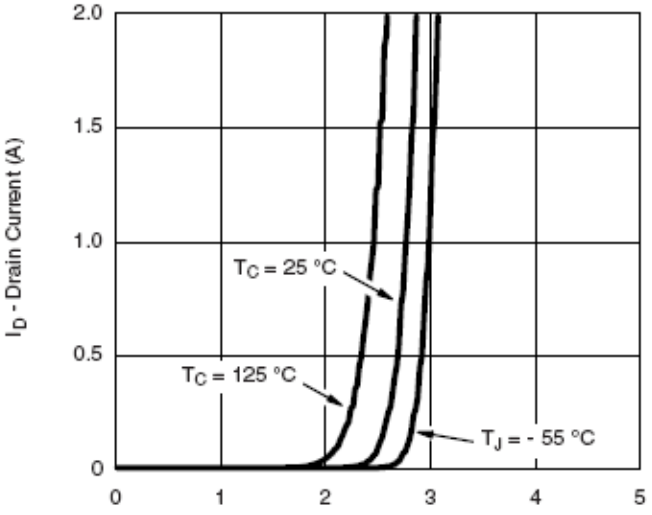
(T_A=25℃ Unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V,I_D=250uA	30			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=250uA	0.6		1.8	
Gate Leakage Current	I_{GSS}	V_{DS}=0V,V_{GS}=±20V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=24V,V_{GS}=0V			1	uA
		V_{DS}=24V,V_{GS}=0V T_J=55℃			5	
On-State Drain Current	$I_{D(on)}$	V_{DS}≥5V,V_{GS}=10V	40			A
Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS}= 10V,I_D=20A		0.012	0.014	Ω
		V_{GS}=4.5V,I_D=15A		0.015	0.019	
Forward Transconductance	gfs	V_{DS}=15V,I_D=20A	15			S
Diode Forward Voltage	V_{SD}	I_S=40A,V_{GS}=0V		0.8	1.5	V
Dynamic						
Total Gate Charge	Q_g	V_{DS}=15V,V_{GS}=10V I_D=50A		10	18	nC
Gate-Source Charge	Q_{gs}			2.8		
Gate-Drain Charge	Q_{gd}			2.0		
Input Capacitance	C_{iss}	V_{DS}=15V_{GS}=0V f=1MHz		850		pF
Output Capacitance	C_{oss}			158		
Reverse Transfer Capacitance	C_{rss}			120		
Turn-On Time	$t_{d(on)}$	V_{DD}=15V,R_L=0.3Ω I_D=50A,V_{GEN}=10V R_G=1Ω		10	15	nS
	t_r			4	12	
Turn-Off Time	$t_{d(off)}$			15	30	
	t_f			10	15	

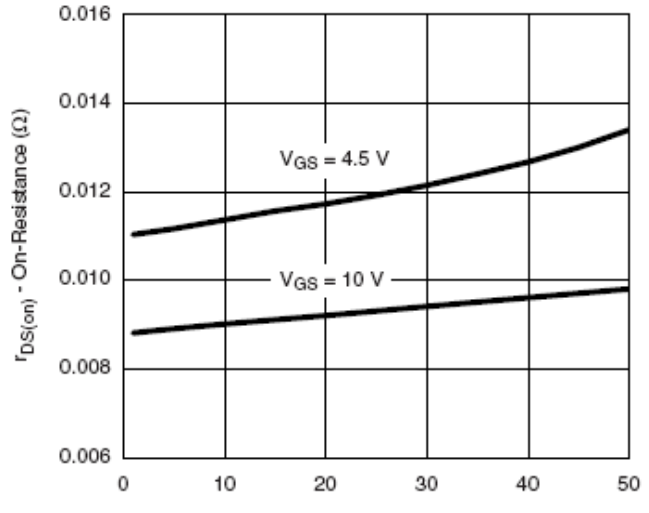
TYPICAL CHARACTERISTICS



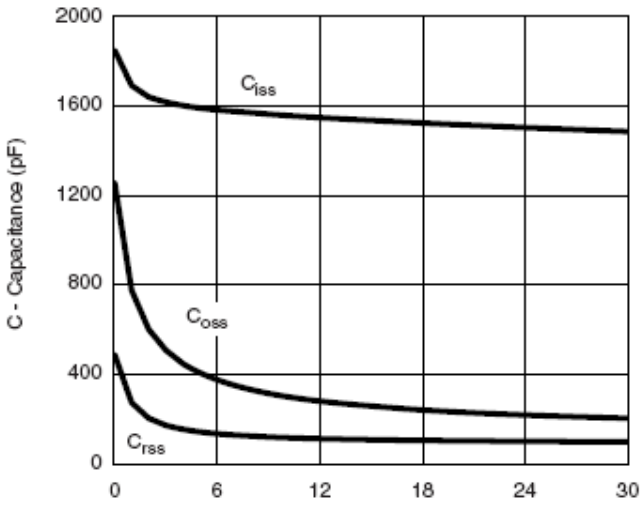
Output Characteristics



Transfer Characteristics

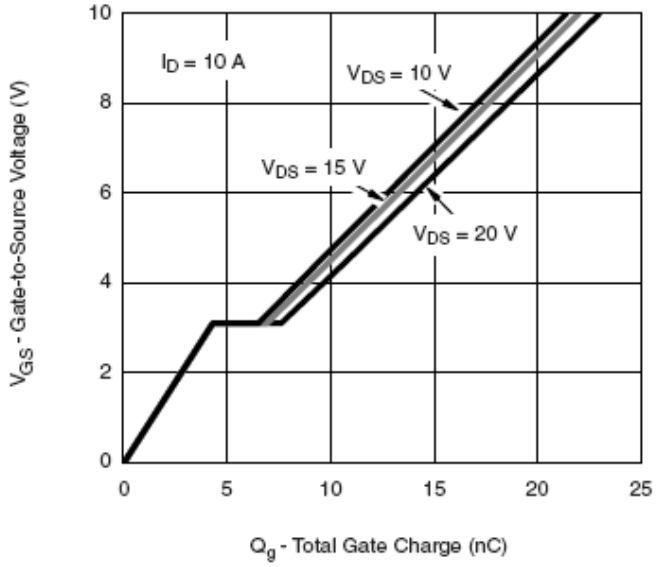


On-Resistance vs. Drain Current and Gate Voltage

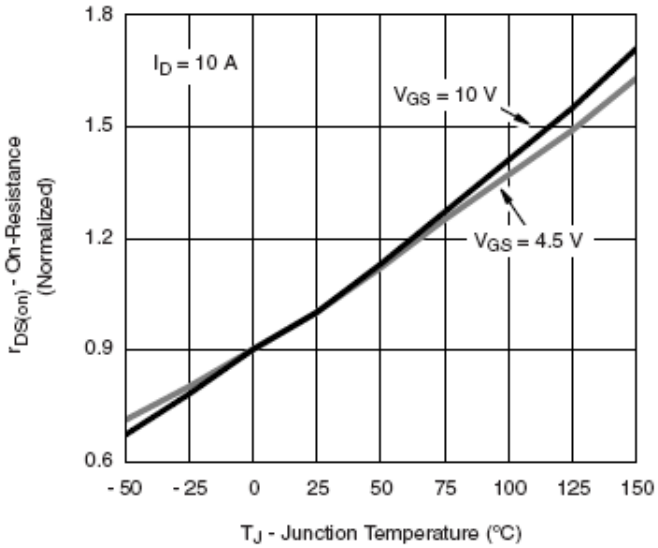


Capacitance

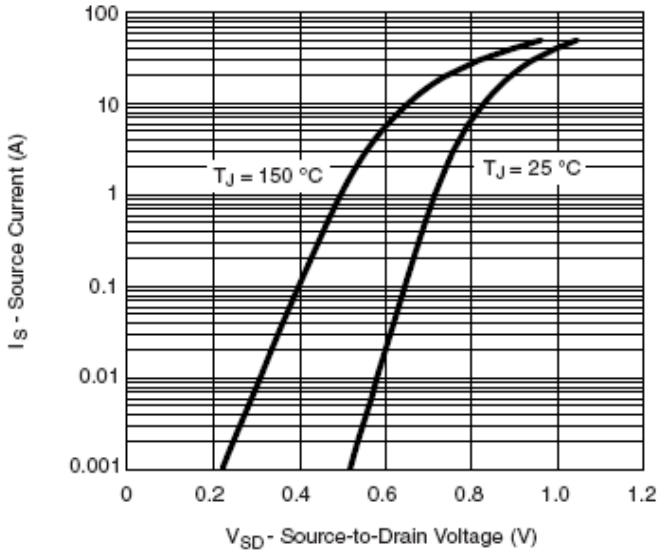
TYPICAL CHARACTERISTICS



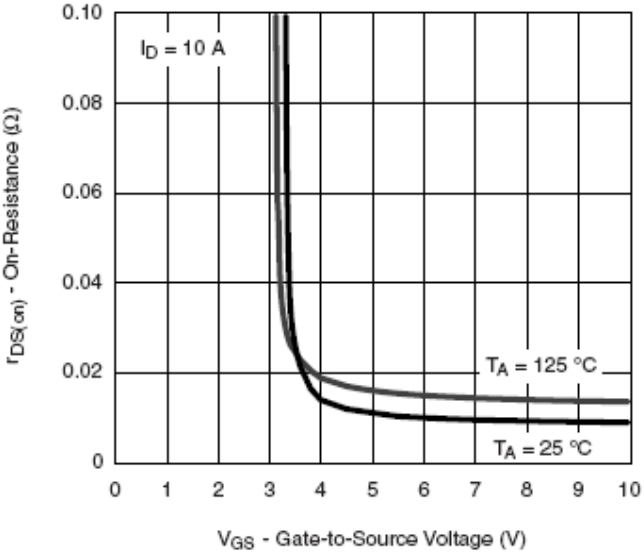
Gate Charge



On-Resistance vs. Junction Temperature

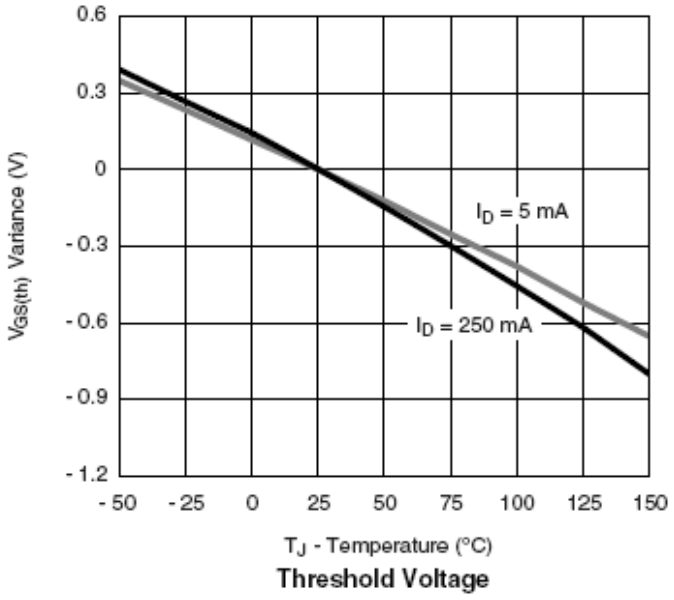


Source-Drain Diode Forward Voltage

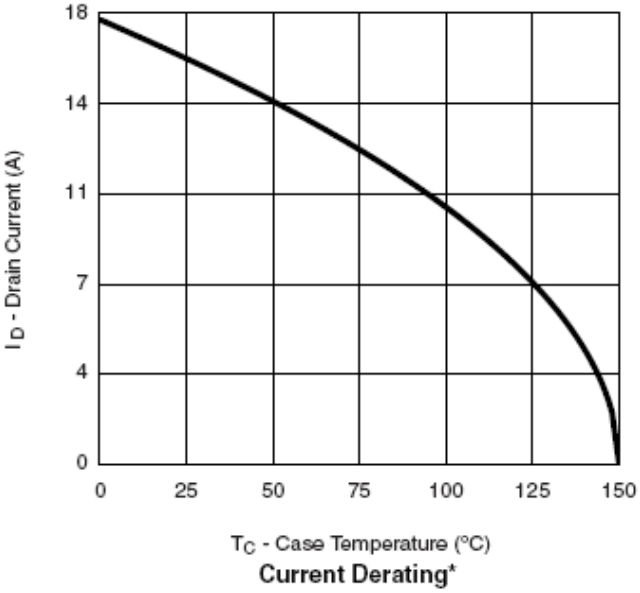


On-Resistance vs. Gate-to-Source Voltage

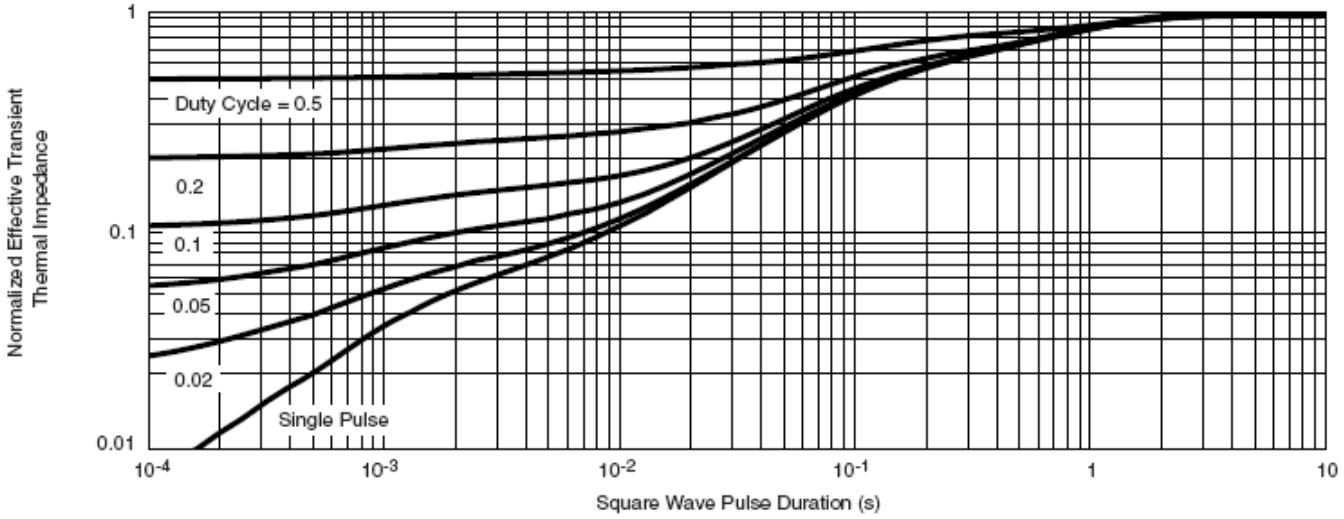
TYPICAL CHARACTERISTICS



Threshold Voltage



Current Derating*



Normalized Thermal Transient Impedance, Junction-to-Case

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