SPN8878
N-Channel Enhancement Mode MOSFET

DESCRIPTION

The SPN8878 is the N-Channel logic enhancement mode power field effect transistors are produced using high cell density , DMOS trench technology. The SPN8878 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

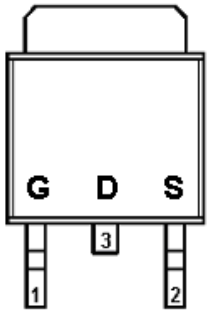
- Power Management in Note book
- Powered System
- DC/DC Converter
- Load Switch

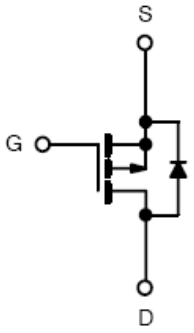
FEATURES

- 30V/20A,$R_{DS(ON)}$= 12mΩ@V_{GS}=10V
- 30V/15A,$R_{DS(ON)}$= 17mΩ@V_{GS}=4.5V
- Super high density cell design for extremely low RDS (ON)
- Exceptional on-resistance and maximum DC current capability
- TO-252 package design

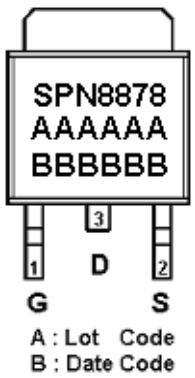
PIN CONFIGURATION

TO-252





PART MARKING



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PIN DESCRIPTION

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

ORDERING INFORMATION

Part Number	Package	Part Marking
SPN8878T252RGB	TO-252	SPN8878

※ SPN8878T252RGB : Tape Reel ; 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	
Operating Junction Temperature			T_J	150	℃
Storage Temperature Range			T_{STG}	-55/150	℃
Thermal Resistance-Junction to Ambient			$R_{\theta JA}$	100	℃/W

ELECTRICAL CHARACTERISTICS

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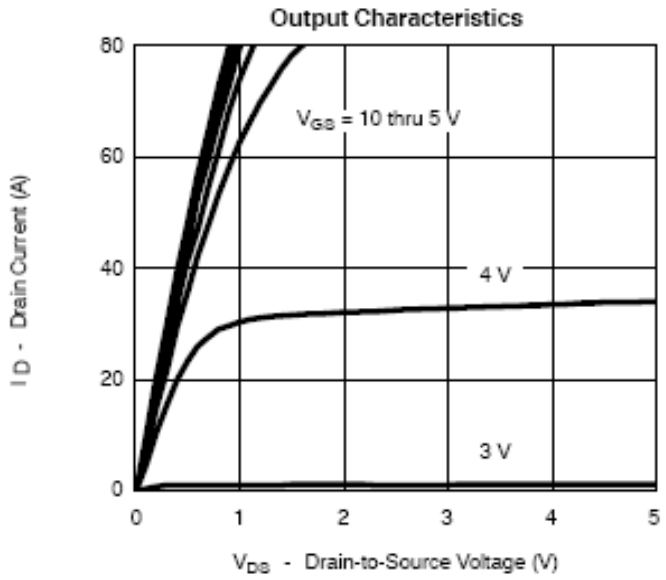
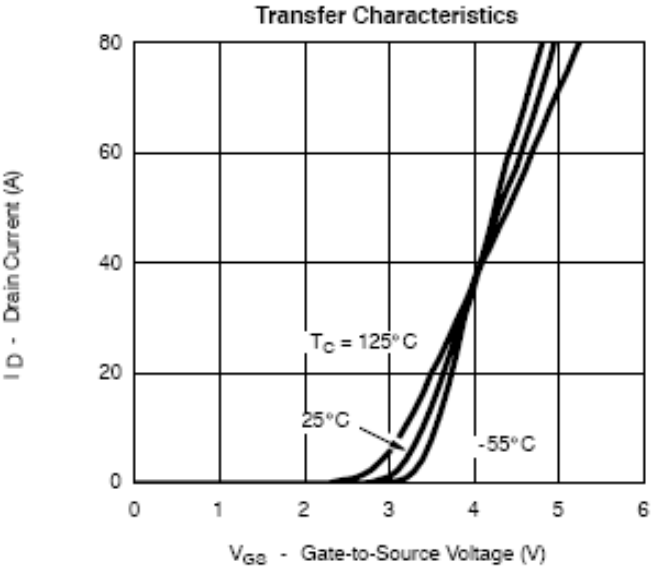
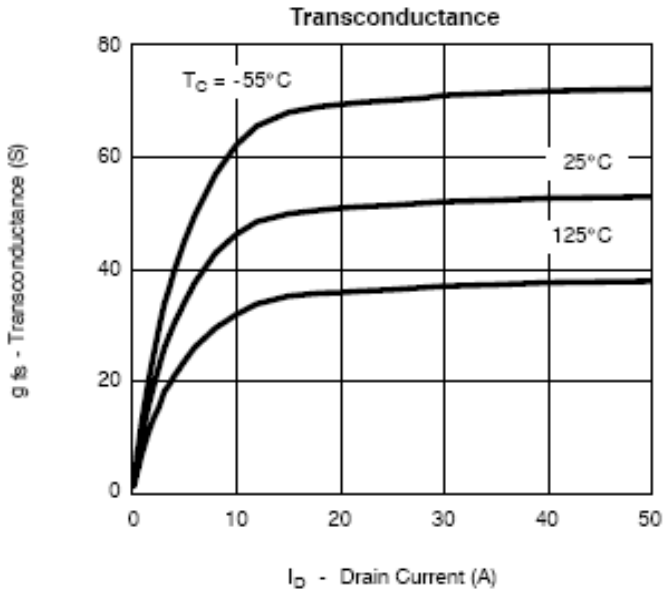
(T_A=25℃ Unless otherwise noted)

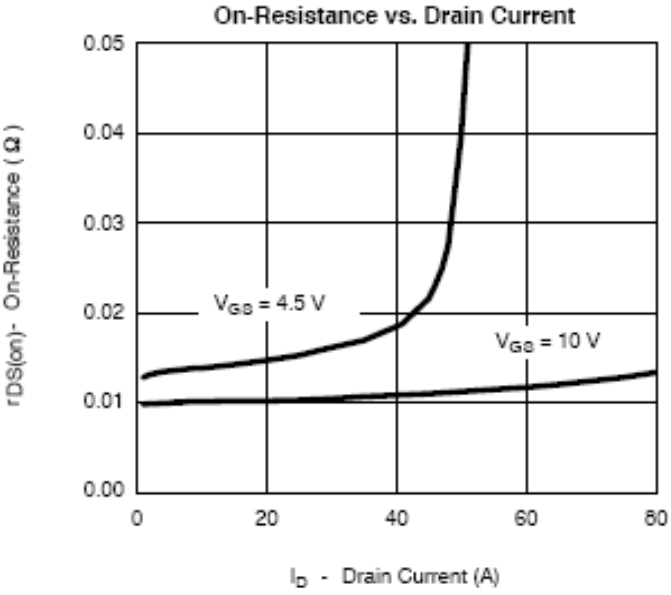
Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V,I_D=250uA	30			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=250uA	1.0		3.0	
Gate Leakage Current	I_{GSS}	V_{DS}=0V,V_{GS}=±20V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=24V,V_{GS}=0V			1	uA
		V_{DS}=24V,V_{GS}=0V T_J=85℃			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		0.010	0.012	Ω
		V_{GS}=4.5V,I_D=15A		0.013	0.017	
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		28	42	nC
Gate-Source Charge	Q_{gs}			6		
Gate-Drain Charge	Q_{gd}			5		
Input Capacitance	C_{iss}	V_{DS}=15VG_S=0V f=1MHz		1600		pF
Output Capacitance	C_{oss}			285		
Reverse Transfer Capacitance	C_{rss}			140		
Turn-On Time	$t_{d(on)}$	V_{DD}=15V,R_L=0.3Ω I_D≡50A,V_{GEN}=10V R_G=1Ω		9	15	nS
	t_r			15	25	
Turn-Off Time	$t_{d(off)}$			20	30	
	t_f			12	20	

TYPICAL CHARACTERISTICS

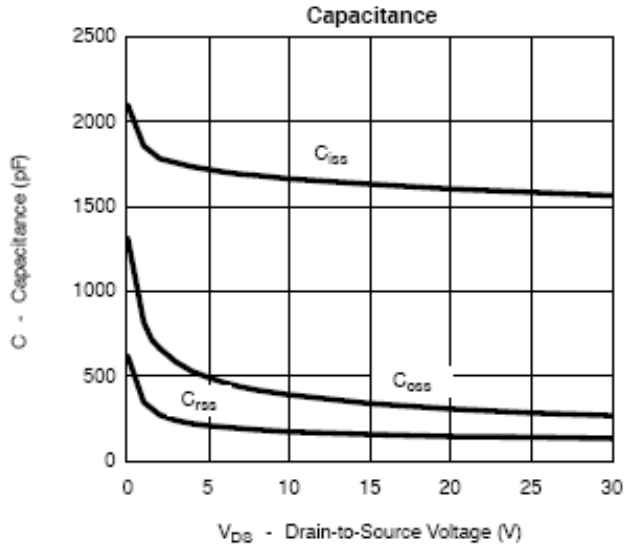


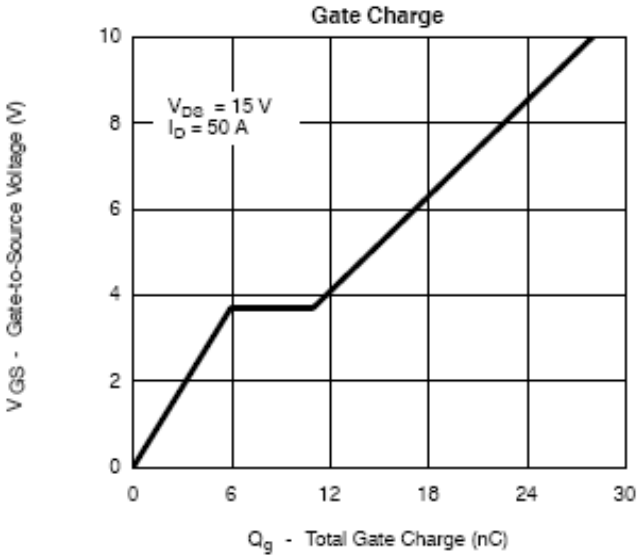


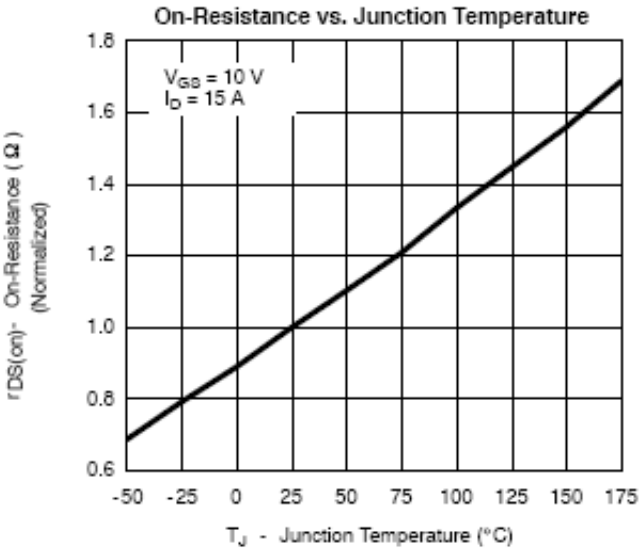


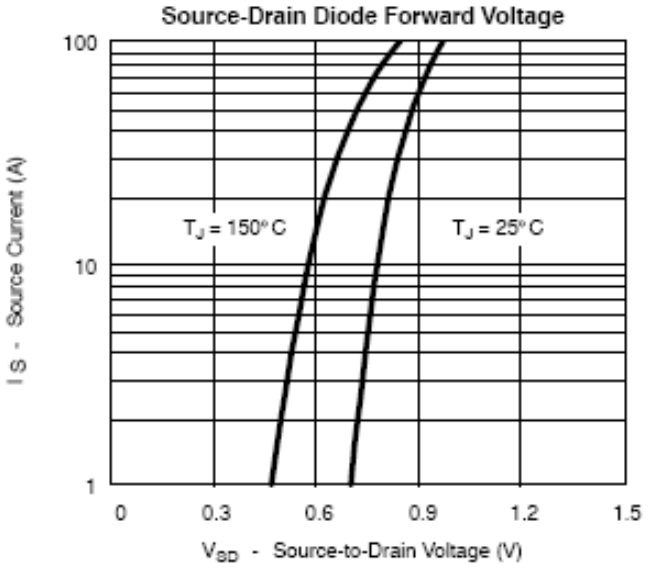


TYPICAL CHARACTERISTICS

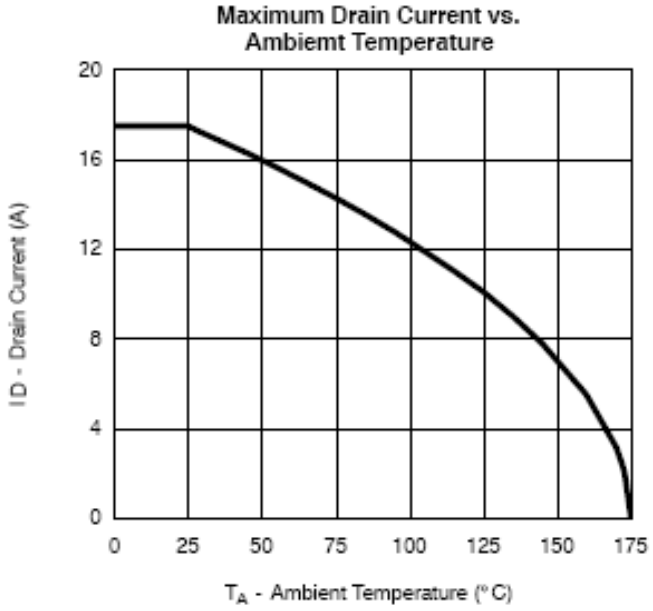


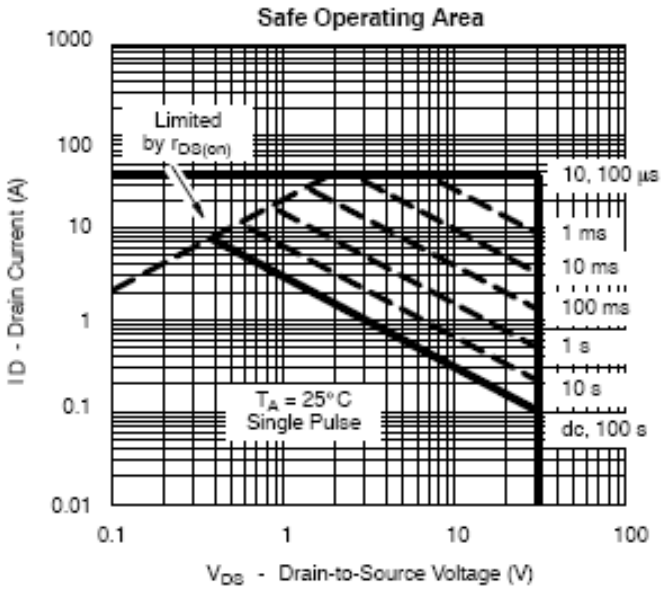


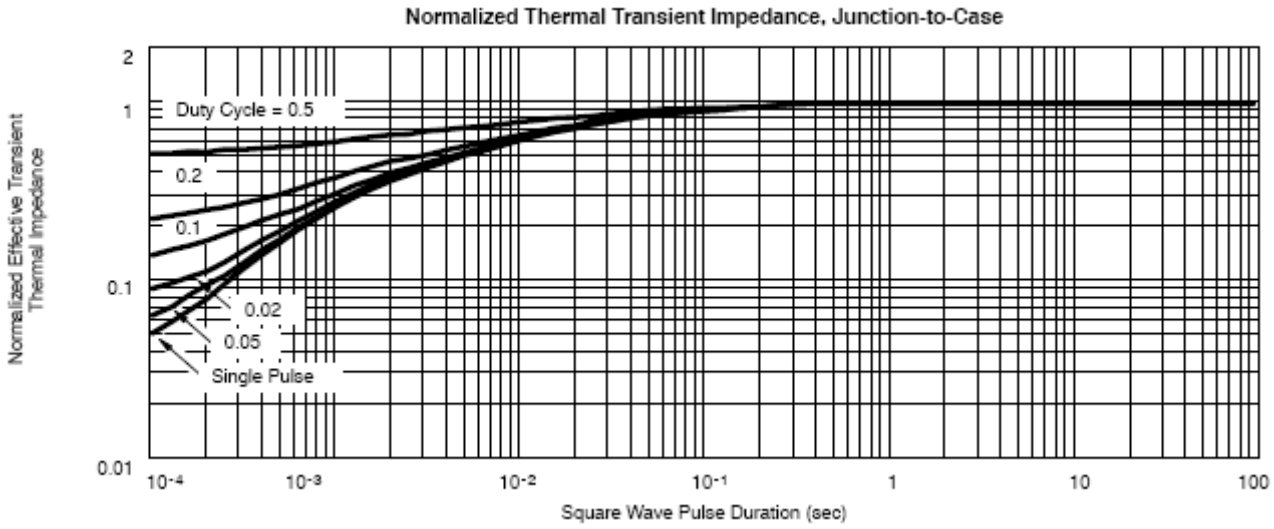




TYPICAL CHARACTERISTICS







TO-252 PACKAGE OUTLINE

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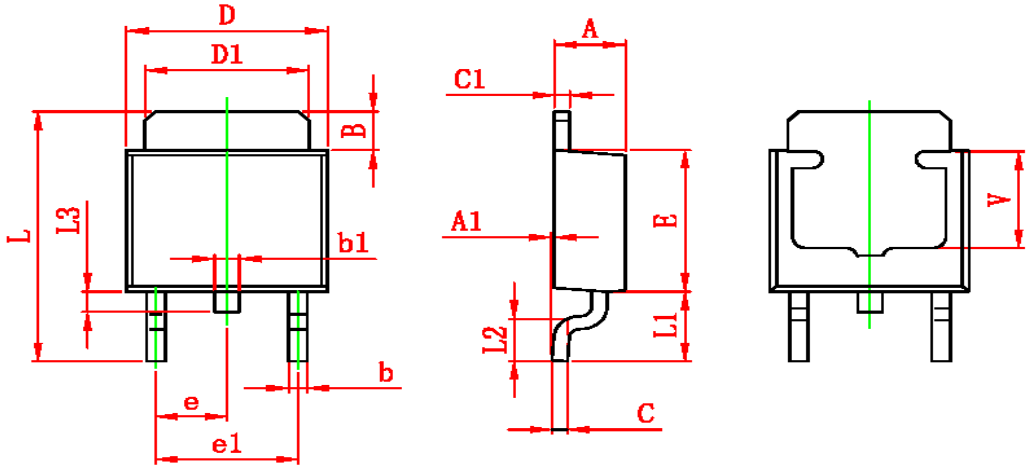

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	2.200	2.400	0.087	0.094
A1	0.000	0.127	0.000	0.005
B	1.350	1.650	0.053	0.065
b	0.500	0.700	0.020	0.028
b1	0.700	0.900	0.028	0.035
c	0.430	0.580	0.017	0.023
c1	0.430	0.580	0.017	0.023
D	6.350	6.650	0.250	0.262
D1	5.200	5.400	0.205	0.213
E	5.400	5.700	0.213	0.224
e	2.300 TYP		0.091 TYP	
e1	4.500	4.700	0.177	0.185
L	9.500	9.900	0.374	0.390
L1	2.550	2.900	0.100	0.114
L2	1.400	1.780	0.055	0.070
L3	0.350	0.650	0.014	0.026
V	3.80 REF		0.150 REF	

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