SPN8902
N-Channel Enhancement Mode MOSFET

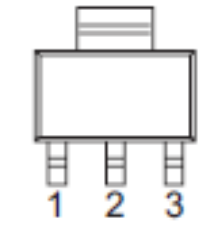
DESCRIPTION
The SPN8902 is the N-Channel logic enhancement mode power field effect transistor which is produced using super high cell density DMOS trench technology. The SPN8902 has been designed specifically to improve the overall efficiency of DC/DC converters using either synchronous or conventional switching PWM controllers. It has been optimized for low gate charge, low $R_{DS(ON)}$ and fast switching speed.

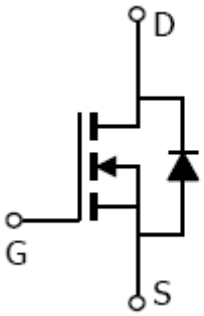
APPLICATIONS
- High Frequency Small Power Switching for MB/NB/VGA
- Network DC/DC Power System
- Load Switch

FEATURES
- 110V/2A, $R_{DS(ON)}$= 310mΩ@V_{GS}= 10V
- High density cell design for extremely low RDS (ON)
- Exceptional on-resistance and maximum DC current capability
- SOT-223 package design

PIN CONFIGURATION

SOT-223





PART MARKING

SPN8902
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
SPN8902S22RGB	SOT-223	8902

※ SPN8902S22RGB : Tape Reel ; Pb – Free ; Halogen – Free

※ Date code : YY (year 00~99) , WW(week 01~53)

ABSOULTE MAXIMUM RATINGS

(T_A=25℃ Unless otherwise noted)

Parameter		Symbol	Typical	Unit
Drain-Source Voltage		V_{DSS}	110	V
Gate –Source Voltage		V_{GSS}	±20	V
Continuous Drain Current(T_J=150℃)	T_A=25℃	I_D	2.2	A
	T_A=70℃		1.7	
Pulsed Drain Current		I_{DM}	5.5	A
Power Dissipation	T_A=25℃	P_D	1.5	W
Operating Junction Temperature		T_J	150	℃
Storage Temperature Range		T_{STG}	-55/150	℃
Thermal Resistance-Junction to Ambient		$R_{\theta JA}$	85	℃/W

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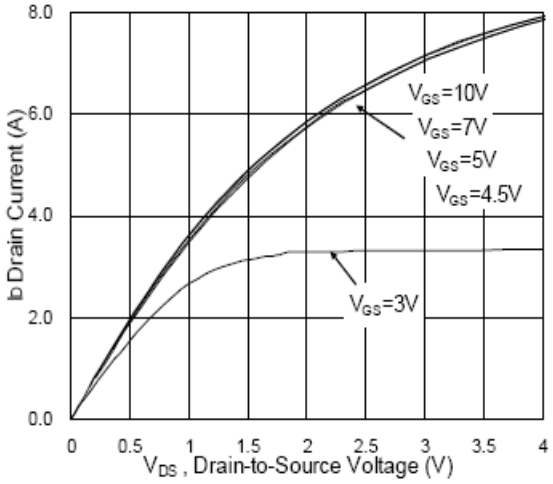
ELECTRICAL CHARACTERISTICS

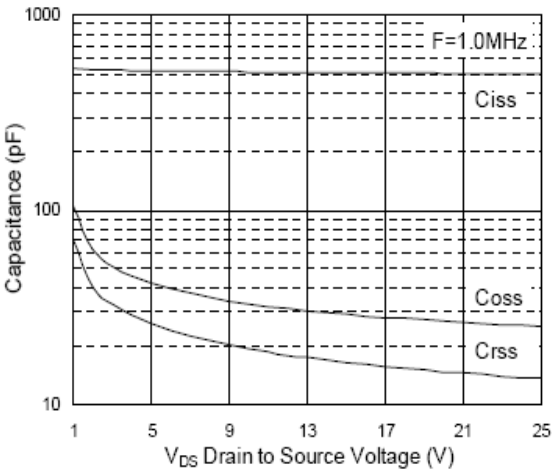
(T_A=25℃ Unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V,I_D=250uA	110			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=250uA	1	1.5	2.5	
Gate Leakage Current	I_{GSS}	V_{DS}=0V,V_{GS}=±20V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=80V,V_{GS}=0V			1	uA
		V_{DS}=80V,V_{GS}=0V T_J=125℃			5	
On-State Drain Current	$I_{D(on)}$	V_{DS}≥5V,V_{GS} =10V	2.2			A
Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS}= 10V,I_D=2A		0.26	0.31	Ω
		V_{GS}= 4.5V,I_D=1A		0.27	0.32	Ω
Forward Transconductance	gfs	V_{DS}=5V,I_D=2A		2.4		S
Diode Forward Voltage	V_{SD}	I_S=1A,V_{GS} =0V			1.2	V
Dynamic						
Total Gate Charge	Q_g	V_{DS}=50V,V_{GS}=10V I_D= 2A		9	13	nC
Gate-Source Charge	Q_{gs}			2		
Gate-Drain Charge	Q_{gd}			1.4		
Input Capacitance	C_{iss}	V_{DS}=15V,V_{GS}=0V f=1MHz		508		pF
Output Capacitance	C_{oss}			29		
Reverse Transfer Capacitance	C_{rss}			16.5		
Turn-On Time	$t_{d(on)}$	V_{DD}=50V, I_D=2A, V_{GEN}=10V, R_G=3.3Ω		2		nS
	t_r			21.5		
Turn-Off Time	$t_{d(off)}$			11.2		
	t_f			18.8		

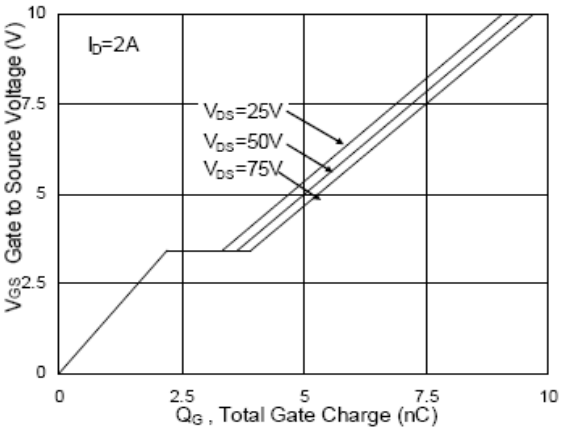
TYPICAL CHARACTERISTICS



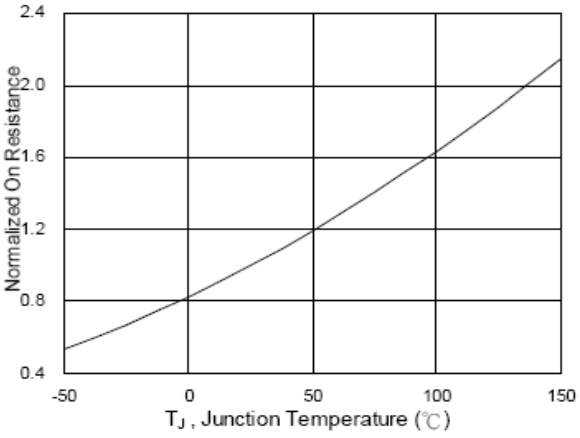
Output Characteristics



Capacitance

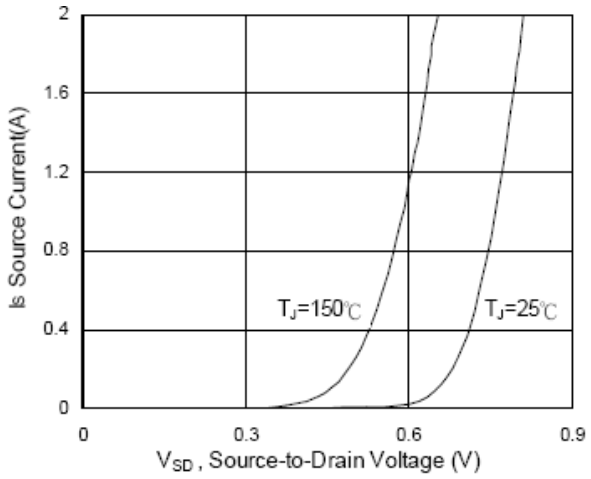


Gate Charge

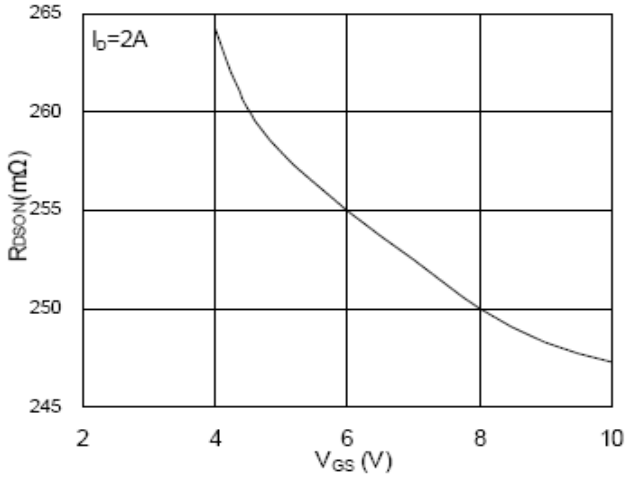


On-Resistance vs. Junction Temperature

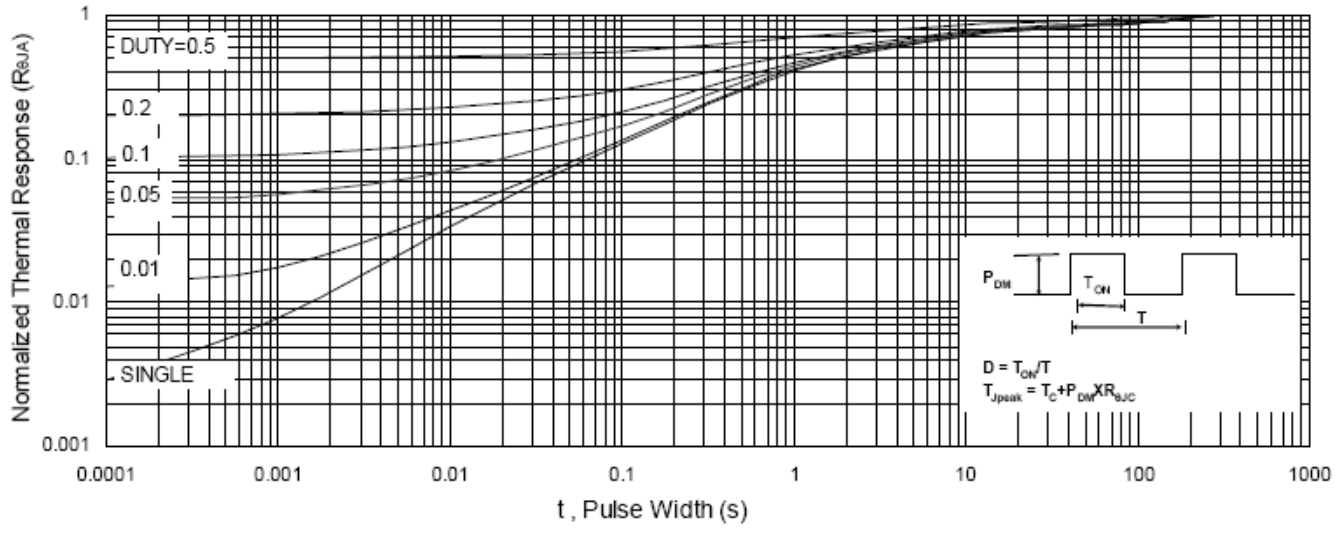
TYPICAL CHARACTERISTICS



Source-Drain Diode Forward Voltage

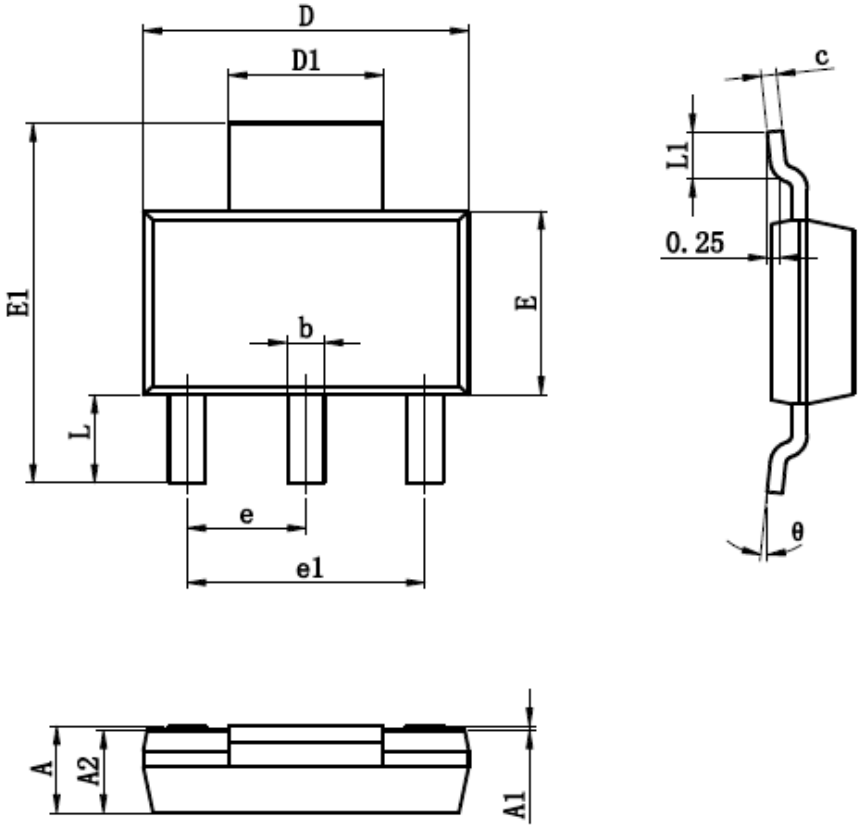


On-Resistance vs. Gate-Source Voltage



Normalized Thermal Transient Impedance, Junction to Foot

SOT-223 PACKAGE OUTLINE



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.520	1.800	0.060	0.071
A1	0.020	0.100	0.001	0.004
A2	1.500	1.700	0.059	0.067
b	0.610	0.810	0.024	0.032
c	0.250	0.350	0.010	0.014
D	6.300	6.700	0.248	0.264
D1	2.900	3.100	0.114	0.122
E	3.300	3.700	0.130	0.146
E1	6.700	7.300	0.264	0.287
e	2.300TYP		0.091TYP	
e1	4.500	4.700	0.177	0.185
L	1.750TYP		0.069TYP	
L1	0.900		0.035	
θ	0°	10°	0°	10°

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