



SPN8919

N-Channel Enhancement Mode MOSFET

DESCRIPTION

The SPN8919 is the N-Channel enhancement mode power field effect transistor which is produced using super high cell density DMOS trench technology. The SPN8919 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.

FEATURES

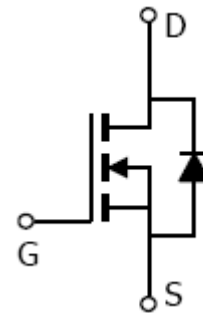
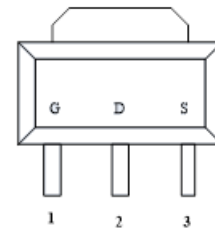
- ◆ 100V/2A, $R_{DS(ON)}=180m\Omega@V_{GS}=10V$
- ◆ High density cell design for extremely low $R_{DS(ON)}$
- ◆ Exceptional on-resistance and maximum DC current capability
- ◆ SOT-89 package design

APPLICATIONS

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

PIN CONFIGURATION

SOT-89



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
SPN8919S89RGB	SOT-89	SPN8919

※ SPN8919S89RGB : Tape Reel ; Pb – Free ; Halogen - Free

ABSOLUTE MAXIMUM RATINGS

(TA=25°C Unless otherwise noted)

Parameter	Symbol	Typical	Unit	
Drain-Source Voltage	V _{DSS}	100	V	
Gate –Source Voltage	V _{GSS}	±20	V	
Continuous Drain Current(T _J =150°C)	I _D	TA=25°C	2.8	A
		TA=70°C	2.2	
Pulsed Drain Current	I _{DM}	10	A	
Power Dissipation	P _D	1.5	W	
Operating Junction Temperature	T _J	150	°C	
Storage Temperature Range	T _{STG}	-55/150	°C	
Thermal Resistance-Junction to Ambient	R _{θJA}	85	°C/W	



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ELECTRICAL CHARACTERISTICS

(TA=25°C Unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit	
Static							
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	100			V	
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1		3.0	V	
Gate Leakage Current	I_{GSS}	$V_{DS}=0V, V_{GS}=\pm 20V$			± 100	nA	
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=80V, V_{GS}=0V$			25	uA	
		$V_{DS}=80V, V_{GS}=0V$ $T_J=125^\circ C$			250		
On-State Drain Current	$I_{D(on)}$	$V_{DS}\geq 5V, V_{GS}=10V$	2.2			A	
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=2A$		0.160	0.180	Ω	
Forward Transconductance	g_{fs}	$V_{DS}=5V, I_D=5A$		5.6		S	
Diode Forward Voltage	V_{SD}	$I_S=1A, V_{GS}=0V$			1.2	V	
Dynamic							
Total Gate Charge	Q_g	$V_{DS}=50V, V_{GS}=10V$ $I_D=2A$		10	16	nC	
Gate-Source Charge	Q_{gs}			2.5			
Gate-Drain Charge	Q_{gd}			4.5			
Input Capacitance	C_{iss}	$V_{DS}=15V, V_{GS}=0V$ $f=1MHz$		430		pF	
Output Capacitance	C_{oss}			56			
Reverse Transfer Capacitance	C_{rss}			35			
Turn-On Time	$t_{d(on)}$	$V_{DD}=50V, I_D=2A,$ $V_{GEN}=10V, R_G=3.3\Omega$		6.5		nS	
	t_r			10			
Turn-Off Time	$t_{d(off)}$				13		
	t_f				3.4		



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TYPICAL CHARACTERISTICS

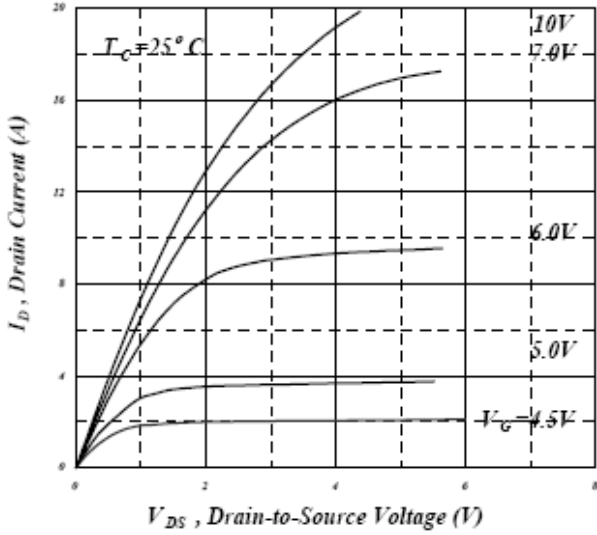


Fig 1. Typical Output Characteristics

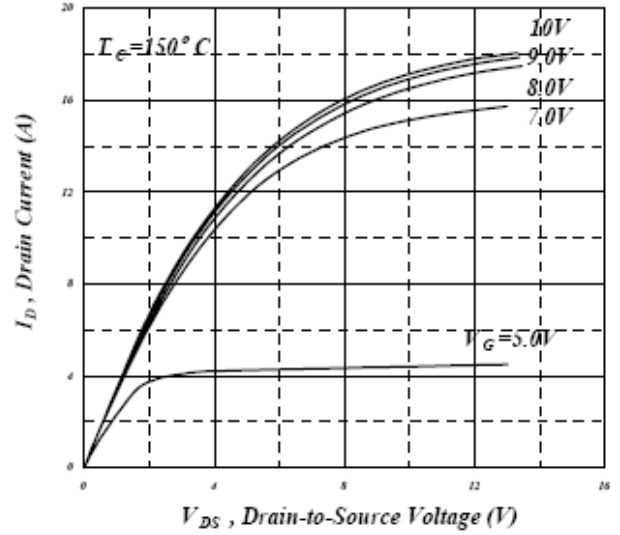


Fig 2. Typical Output Characteristics

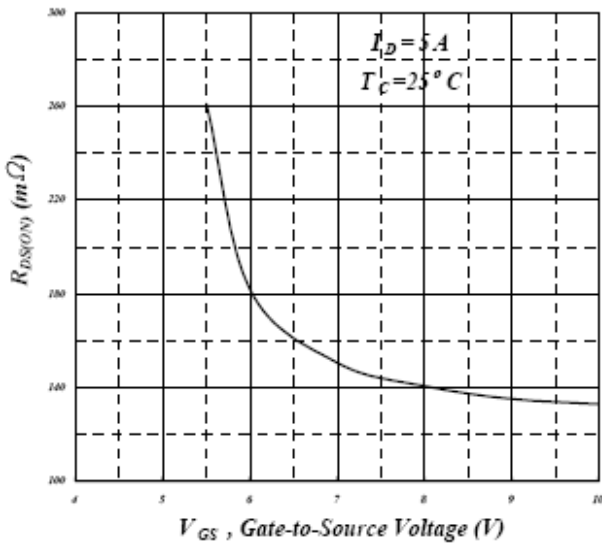


Fig 3. On-Resistance v.s. Gate Voltage

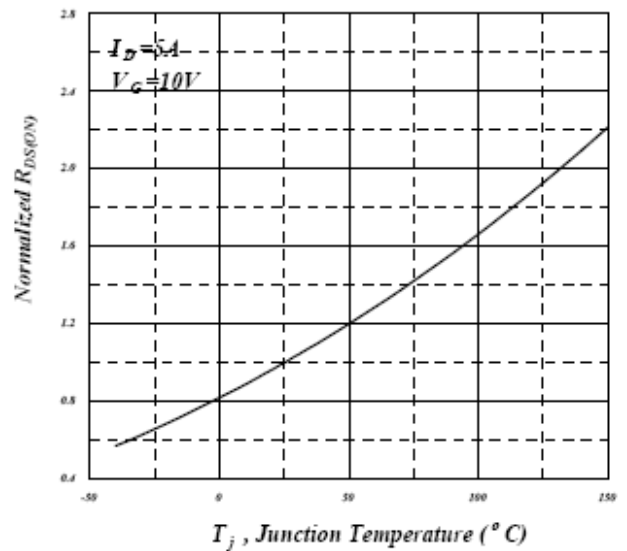


Fig 4. Normalized On-Resistance v.s. Junction Temperature



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TYPICAL CHARACTERISTICS

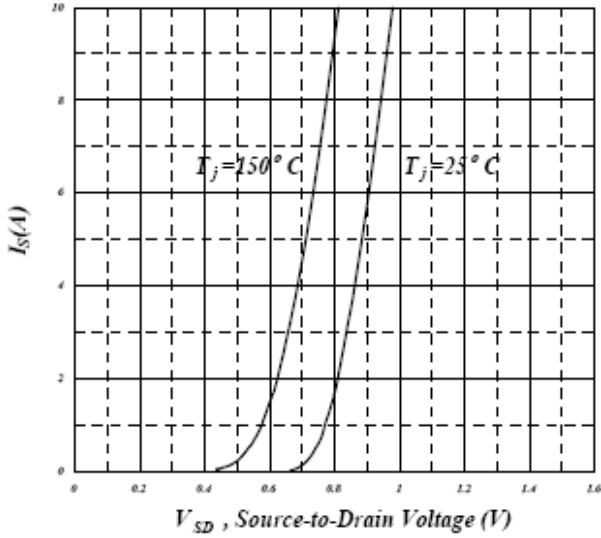


Fig 5. Forward Characteristic of Reverse Diode

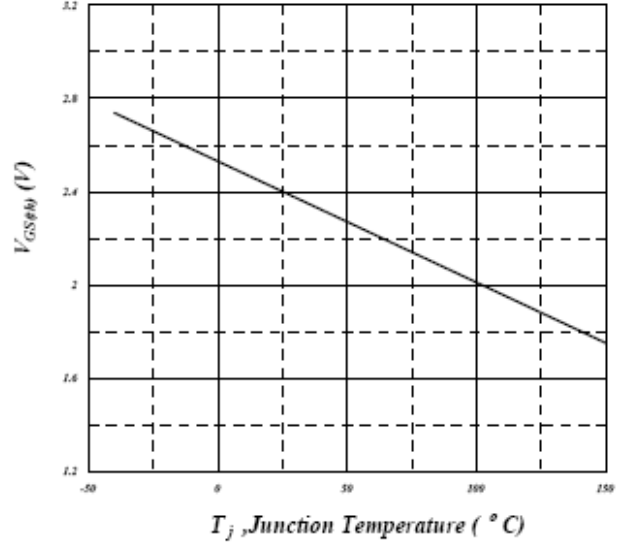


Fig 6. Gate Threshold Voltage v.s. Junction Temperature

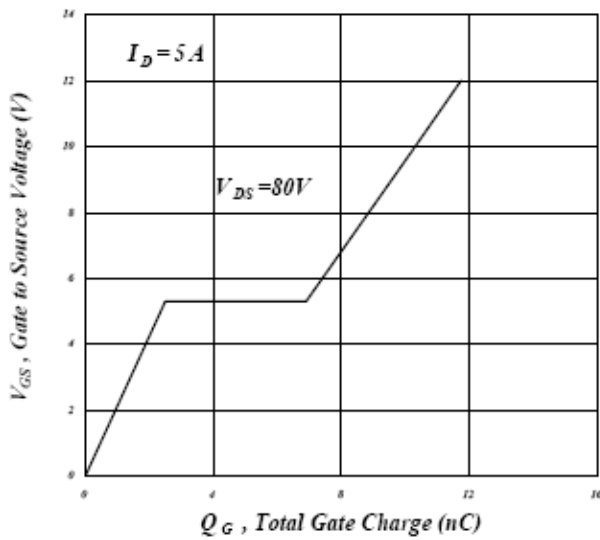


Fig 7. Gate Charge Characteristics

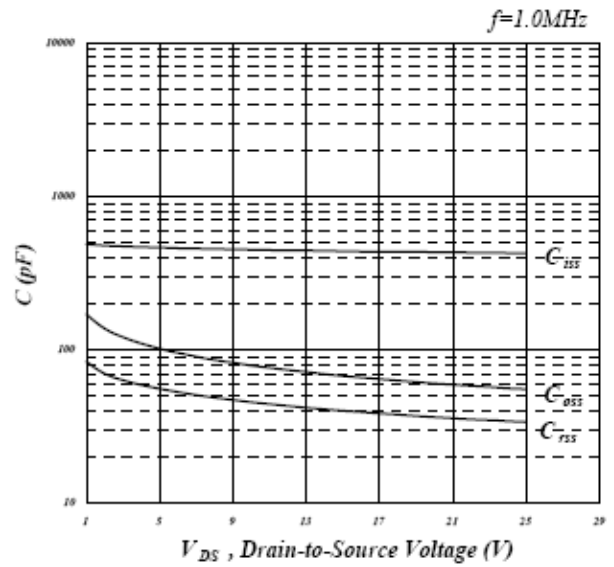


Fig 8. Typical Capacitance Characteristics



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TYPICAL CHARACTERISTICS

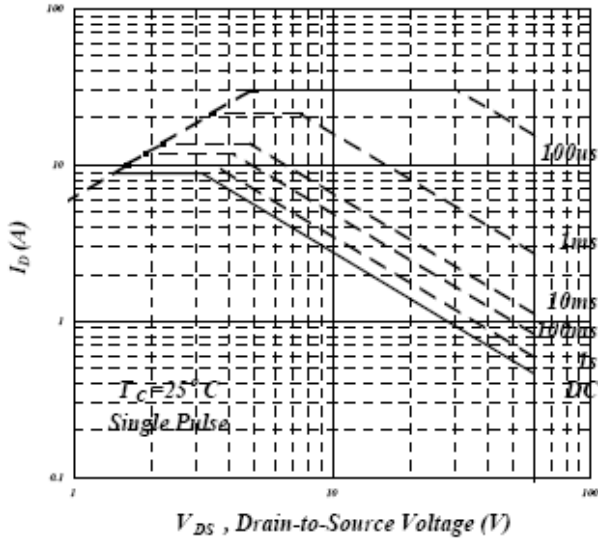


Fig 9. Maximum Safe Operating Area

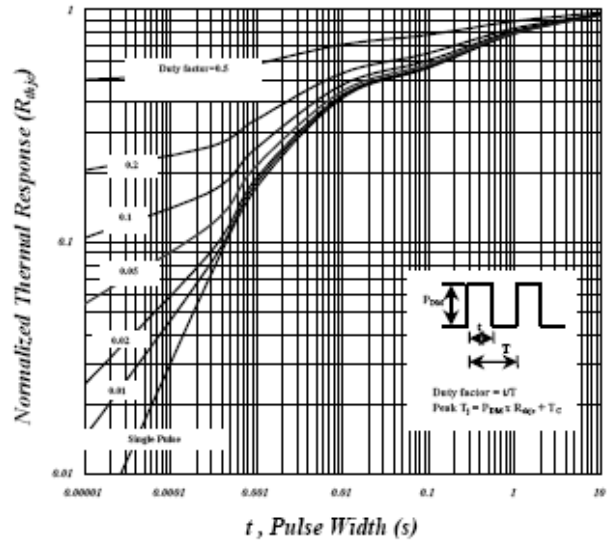


Fig 10. Effective Transient Thermal Impedance

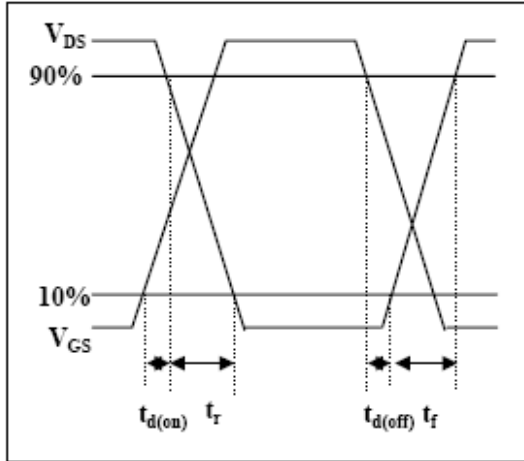


Fig 11. Switching Time Waveform

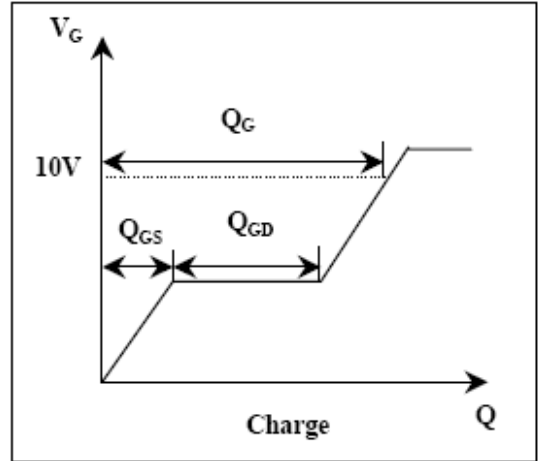


Fig 12. Gate Charge Waveform



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