Elektronische Bauelemente

SSG9904

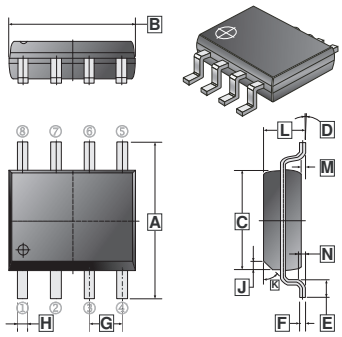
7.2A, 40V, $R_{DS(ON)}$ 26mΩ
Dual-N Enhancement Mode Power MOSFET

RoHS Compliant Product
A suffix of "-C" specifies halogen & lead-free

DESCRIPTION

The SSG9904 provide the designer with the best Combination of fast switching, ruggedized device design, Ultra low on-resistance and cost-effectiveness.

SOP-8

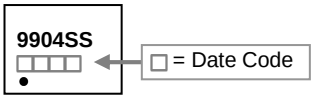


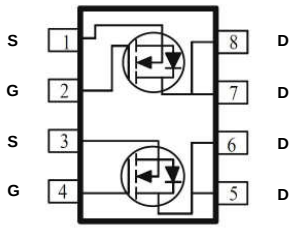
REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	5.80	6.20	H	0.35	0.49
B	4.80	5.00	J	0.375 REF.	
C	3.80	4.00	K	45°	
D	0°	8°	L	1.35	1.75
E	0.40	0.90	M	0.10	0.25
F	0.19	0.25	N	0.25 REF.	
G	1.27 TYP.				

FEATURES

- Low on-resistance
- Simple Drive Requirement
- Double-N MosFET Package

MARKING CODE





PACKAGE INFORMATION

Package	MPQ	Leader Size
SOP-8	3K	13' inch

ABSOLUTE MAXIMUM RATINGS (T_A = 25°C unless otherwise specified)

Parameter		Symbol	Ratings	Unit
Drain-Source Voltage		V_{DS}	40	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current@ V_{GS} =10V [1]	T_A = 25℃	I_D	7.2	A
	T_A = 70℃		5.6	
Pulsed Drain Current [2]		I_{DM}	14.5	A
Single Pulse Avalanche Energy [3]		EAS	28	mJ
Avalanche Current		I_{AS}	17.8	A
Power Dissipation@ T_C=25℃ [4]		P_D	2.5	W
Operating Junction & Storage Temperature Range		T_J, T_{STG}	-55~150	℃
Thermal Resistance Ratings				
Thermal Resistance Junction-ambient (Max.) [1]		$R_{\theta JA}$	85	℃ / W
Thermal Resistance Junction-Case (Max.) [1]		$R_{\theta JC}$	50	℃ / W

ELECTRICAL CHARACTERISTICS (T_j = 25°C unless otherwise specified)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test condition
Static						
Drain-Source Breakdown Voltage	BV_{DSS}	40	-	-	V	V_{GS}=0V, I_D=250μA
Breakdown Voltage Temp. Coefficient	$\triangle BV_{DS}/\triangle T_j$	-	0.034	-	V / ℃	Reference to 25℃, I_D =1mA
Gate-Threshold Voltage	$V_{GS(th)}$	1	-	2.5	V	V_{DS}=V_{GS}, I_D =250μA
Forward Transconductance	G_{fs}	-	14	-	S	V_{DS}=5V, I_D =6A
Gate-Body Leakage	I_{GSS}	-	-	±100	nA	V_{GS}=±20V
Zero Gate Voltage Drain Current	I_{DSS}	-	-	1	μA	V_{DS}=32V,V_{GS}=0, T_J=25℃
		-	-	5		V_{DS}=32V,V_{GS}=0, T_J=55℃
Drain-Source On-Resistance [2]	$R_{DS(ON)}$	-	-	26	mΩ	V_{GS}=10V, I_D =6A
		-	-	35		V_{GS}=4.5V, I_D =4A
Total Gate Charge	Q_g	-	5.5	-	nC	I_D= 6A V_{DS}= 20V V_{GS}= 4.5V
Gate-Source Charge	Q_{gs}	-	1.25	-		
Gate-Drain (“Miller”) Charge	Q_{gd}	-	2.5	-		
Turn-On Delay Time	$T_{d(on)}$	-	8.9	-	nS	V_{DS}= 20V I_D= 1A V_{GS}= 10V R_G= 3.3Ω R_D= 20Ω
Rise Time	T_r	-	2.2	-		
Turn-Off Delay Time	$T_{d(off)}$	-	41	-		
Fall Time	T_f	-	2.7	-		
Input Capacitance	C_{iss}	-	593	-	pF	V_{GS}=0V V_{DS}=15V f=1.0MHz
Output Capacitance	C_{oss}	-	76	-		
Reverse Transfer Capacitance	C_{rss}	-	56	-		
Guaranteed Avalanche Characteristics						
Single Pulse Avalanche Energy [5]	EAS	9	-	-	mJ	V_{DD}= 25V, L=0.1mH, I_{AS}= 10A
Source-Drain Diode						
Forward On Voltage [2]	V_{DS}	-	-	1.2	V	I_S=1A, V_{GS}=0V
Continuous Source Current[1,6]	I_S	-	7.2	-	A	V_{GS} = V_{DS}=0V, Force Current
Pulsed Source Current[2,6]	I_{SM}	-	14.5	-	A	

Notes:

1. Surface mounted on a 1 inch^2 FR-4 board with 2OZ copper. 135℃/W when mounted on Min. copper pad.
2. The data tested by pulsed, pulse width ≦ 300us, duty cycle ≦ 2%.
3. The EAS data shows Max. rating. The test condition is VDD=25V, VGS=10V, L=0.1mH, IAS=17.8A.
4. The power dissipation is limited by 150℃ junction temperature.
5. The Min. value is 100% EAS tested guarantee.
6. The data is theoretically the same as ID and IDM, in real applications, should be limited by total power dissipation.

CHARACTERISTICS CURVE

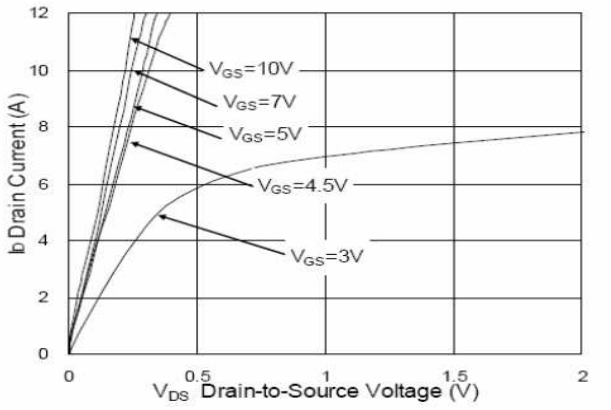


Fig.1 Typical Output Characteristics

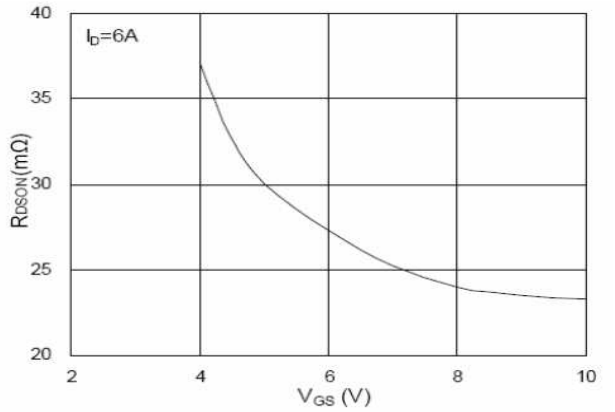


Fig.2 On-Resistance vs. G-S Voltage

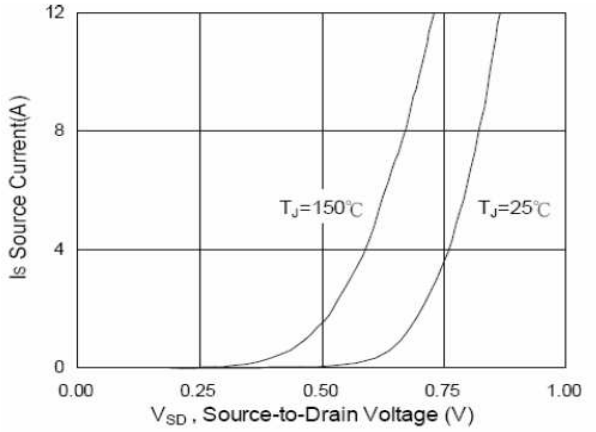


Fig.3 Forward Characteristics of Reverse

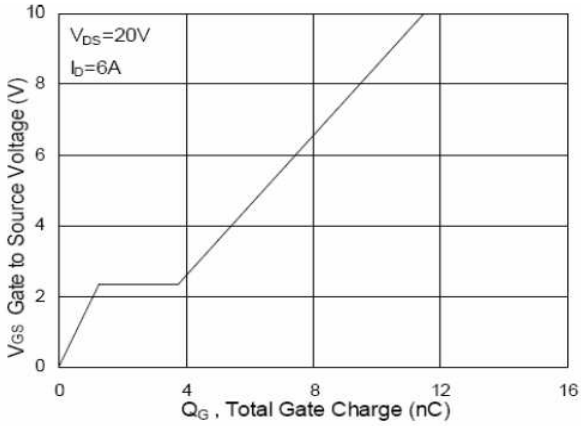


Fig.4 Gate-Charge Characteristics

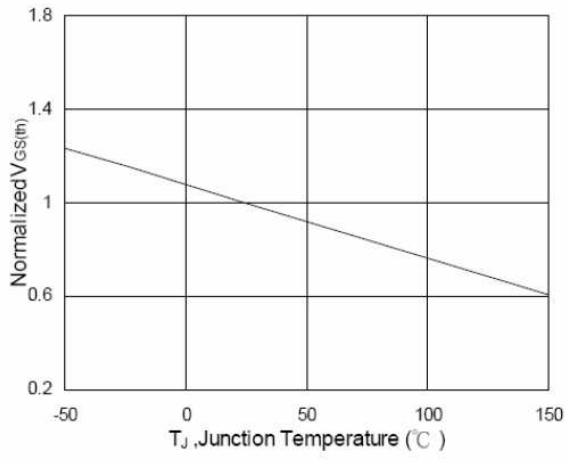


Fig.5 Normalized $V_{GS(th)}$ vs. T_J

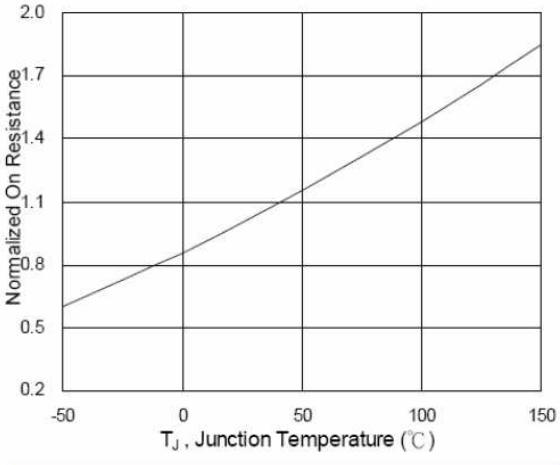


Fig.6 Normalized R_{DSON} vs. T_J

CHARACTERISTICS CURVE

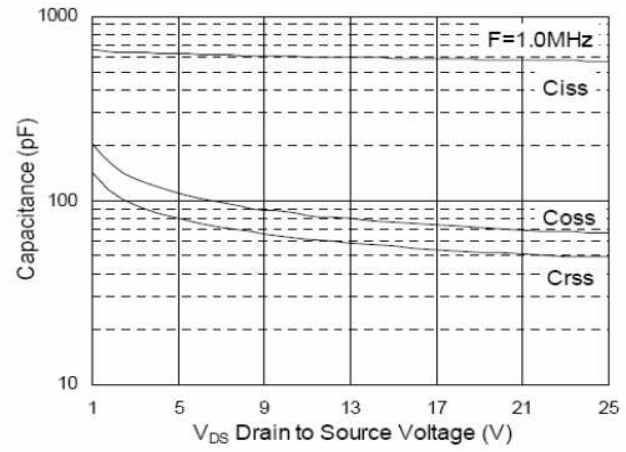


Fig.7 Capacitance

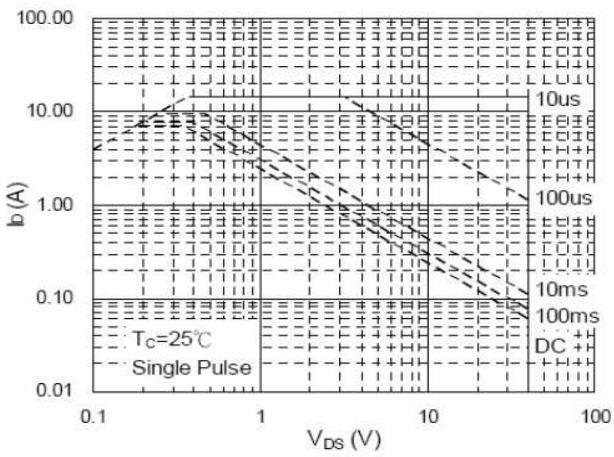


Fig.8 Safe Operating Area

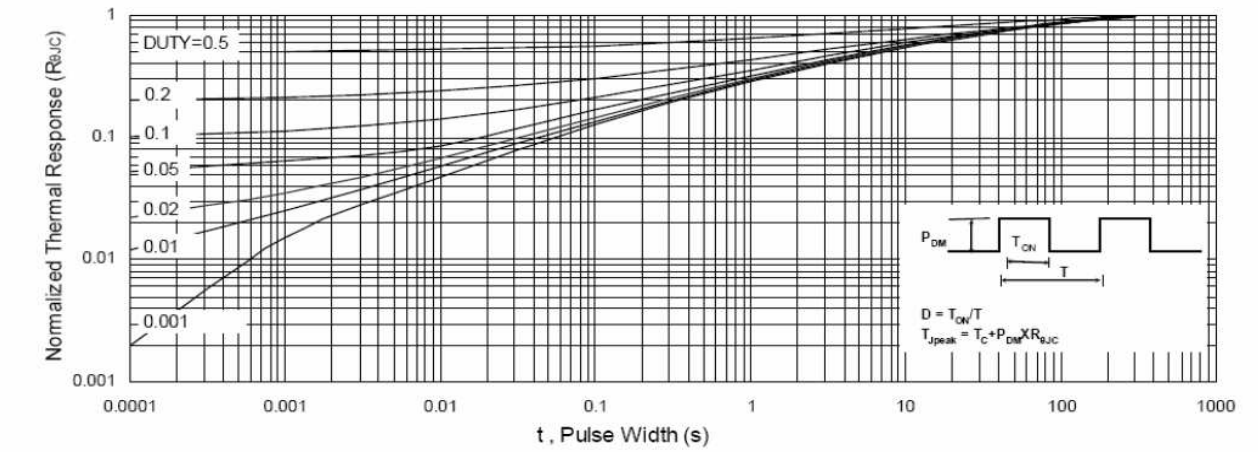


Fig.9 Normalized Maximum Transient Thermal Impedance

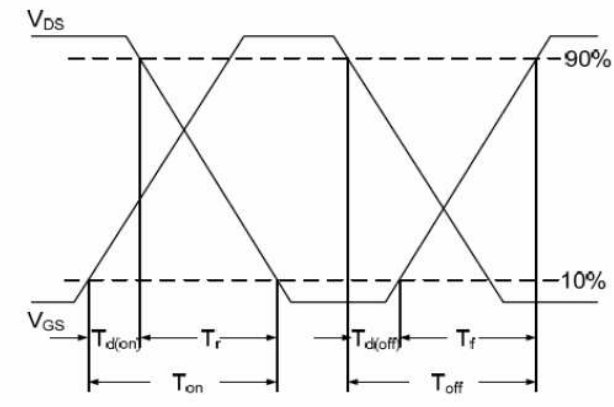


Fig.10 Switching Time Waveform

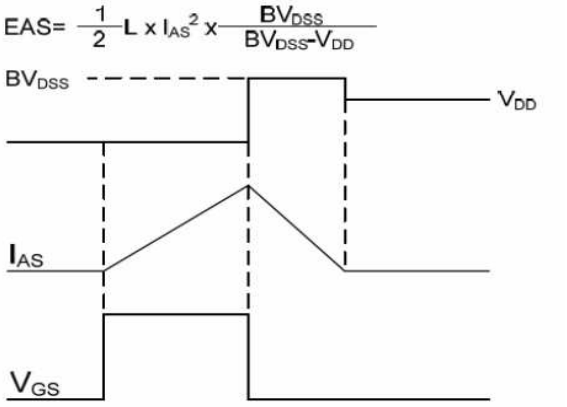


Fig.11 Unclamped Inductive Switching Wave