Elektronische Bauelemente

SSG9971A-C

5A, 60V, $R_{DS(ON)}$ 36mΩ

Dual-N Enhancement Mode Power MOSFET

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

DESCRIPTION

The SSG9971A is the highest performance trench dual N-ch MOSFETs with extreme high cell density, which provide excellent R_{DSON} and gate charge for most of the synchronous buck converter applications .

The SSG9971A meet the RoHS and Green Product requirement with full function reliability approved.

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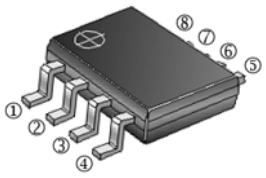
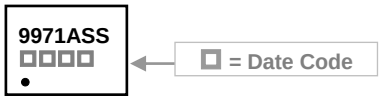


FEATURES

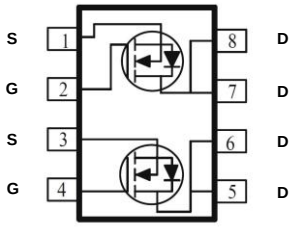
- Advanced High Cell Density Trench Technology
- Super Low Gate Charge
- Green Device Available
- Manufactured in IATF 16949 Certified Facilities

MARKING CODE



PACKAGE INFORMATION

Package	MPQ	Leader Size
SOP-8	2.5K	13 inch



ORDER INFORMATION

Part Number	Type
SSG9971A-C	Lead (Pb)-free and Halogen-free

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

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	60	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current [1]@ V_{GS}=10V	T_A=25°C	I_D	5	A
	T_A=70°C		4	
Pulsed Drain Current [3]		I_{DM}	14	A
Power Dissipation@ T_A=25°C		P_D	1.5	W
Operating Junction & Storage Temperature Range		T_J, T_{STG}	-55~150	°C
Thermal Resistance Rating				
Thermal Resistance Junction-Ambient [1]		$R_{\theta JA}$	85	°C/W
Thermal Resistance Junction-Ambient [2]		$R_{\theta JA}$	135	
Thermal Resistance Junction-Case [1]		$R_{\Theta jc}$	50	

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

Parameter		Symbol	Min.	Typ.	Max.	Unit	Test condition
Drain-Source Breakdown Voltage		BV_{DSS}	60	-	-	V	V_{GS}=0V, I_D=250μA
Breakdown Voltage Temp. Coefficient		$\triangle BV_{DS}/\triangle T_J$	-	0.063	-	V/°C	Reference to 25°C, I_D=1mA
Gate-Threshold Voltage		$V_{GS(th)}$	1	-	2.5	V	V_{DS}=V_{GS}, I_D=250μA
Forward Transfer Conductance		g_{fs}	-	20	-	S	V_{DS}=5V, I_D=5A
Gate-Source Leakage Current		I_{GSS}	-	-	±100	nA	V_{GS}=±20V
Drain-Source Leakage Current	T_J=25°C	I_{DSS}	-	-	1	μA	V_{DS}=48V, V_{GS}=0
	T_J=55°C		-	-	5		
Drain-Source On-Resistance [4]		$R_{DS(ON)}$	-	-	36	mΩ	V_{GS}=10V, I_D=5A
			-	-	45		V_{GS}=4.5V, I_D=2.5A
Total Gate Charge		Q_g	-	12.56	-	nC	I_D=5A V_{DS}=48V V_{GS}=4.5V
Gate-Source Charge		Q_{gs}	-	3.24	-		
Gate-Drain Charge		Q_{gd}	-	6.31	-		
Turn-On Delay Time		$T_{d(on)}$	-	8	-	nS	V_{DD}=30V I_D=5A V_{GS}=10V R_G=3.3Ω R_L=6Ω
Rise Time		T_r	-	14.2	-		
Turn-Off Delay Time		$T_{d(off)}$	-	24.4	-		
Fall Time		T_f	-	4.6	-		
Input Capacitance		C_{iss}	-	1345	-	pF	V_{GS}=0V V_{DS}=25V f=1MHz
Output Capacitance		C_{oss}	-	72.5	-		
Reverse Transfer Capacitance		C_{rss}	-	54.4	-		
Source-Drain Diode							
Continuous Source Current [1]		I_S	-	5	-	A	
Pulsed Source Current [3]		I_{SM}	-	14	-	A	
Forward On Voltage [4]		V_{SD}	-	-	1.2	V	I_S=1.6A, V_{GS}=0V

Notes:
1. Surface mounted on a 1 inch^2 FR-4 board with 2oz copper.
2. When mounted on Min. copper pad.
3. The power dissipation is limited by 150°C junction temperature.
4. The data tested by pulsed, pulse width≦ 300us, duty cycle≦ 2%.

CHARACTERISTICS CURVE

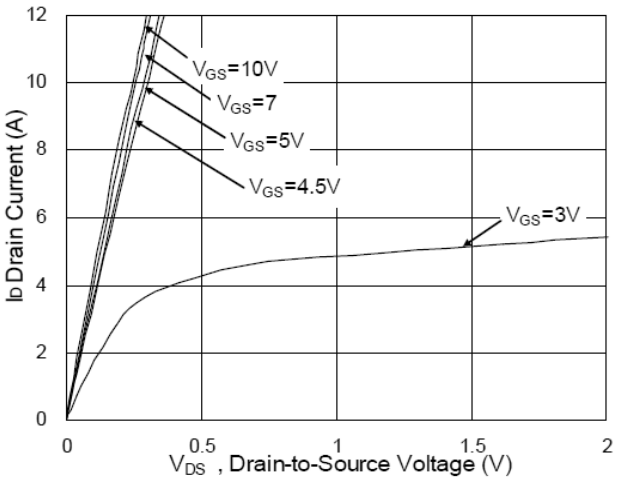


Fig.1 Typical Output Characteristics

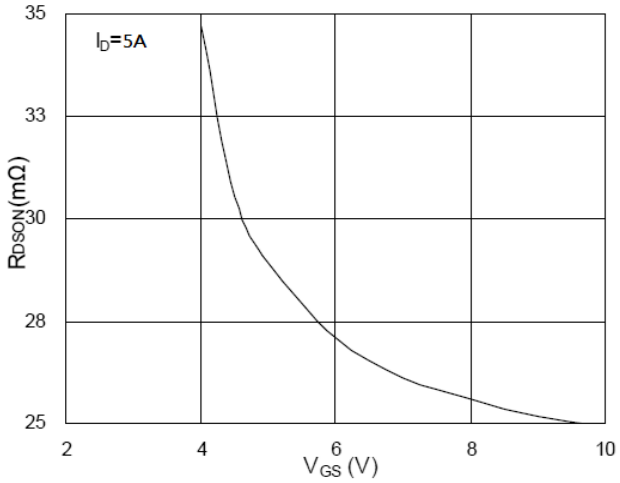


Fig.2 On-Resistance v.s Gate-Source

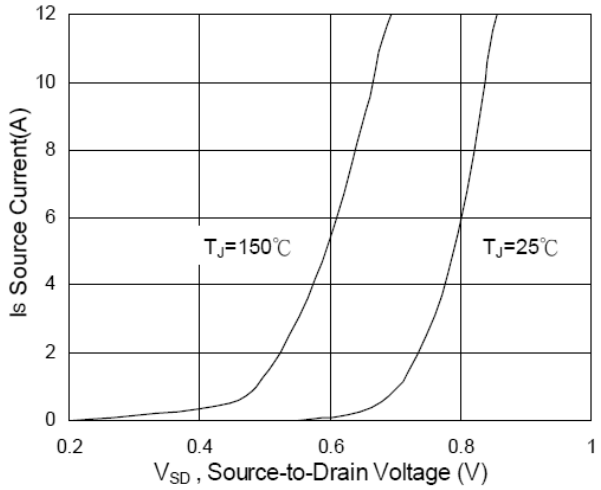


Fig.3 Forward Characteristics of Reverse

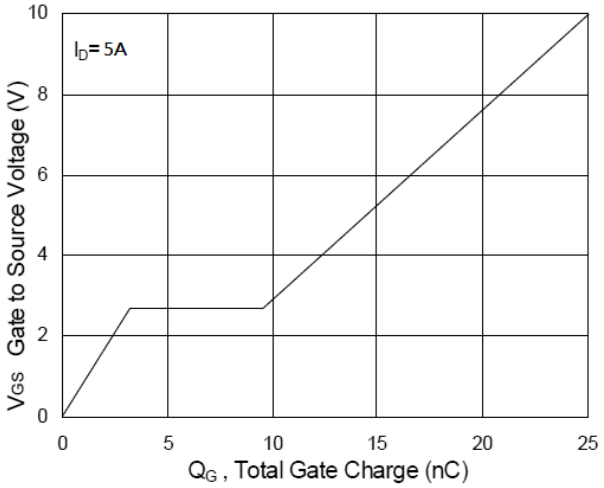


Fig.4 Gate-Charge Characteristics

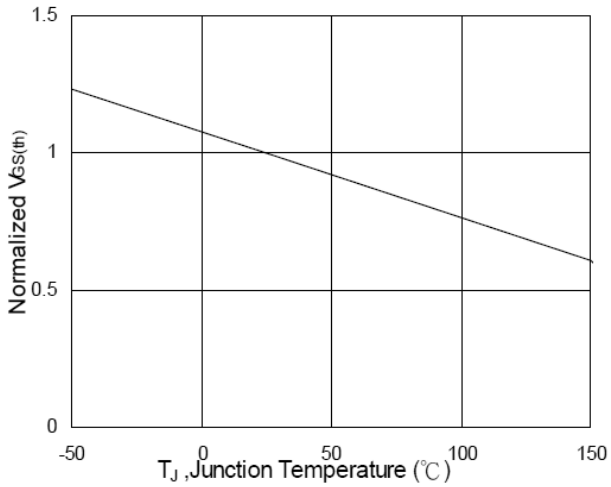


Fig.5 Normalized $V_{GS(th)}$ v.s T_J

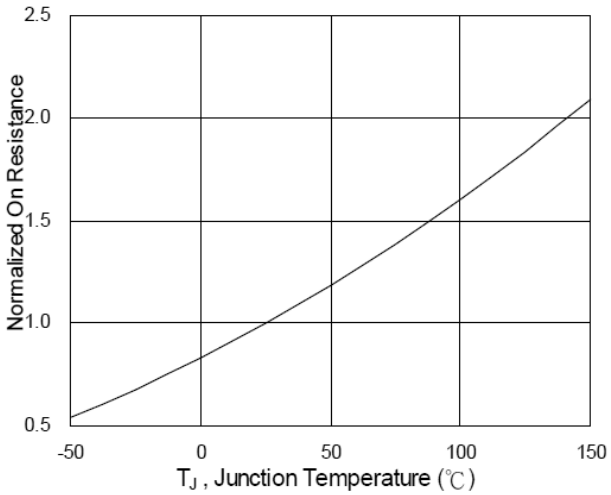


Fig.6 Normalized R_{DSON} v.s T_J

CHARACTERISTICS CURVE

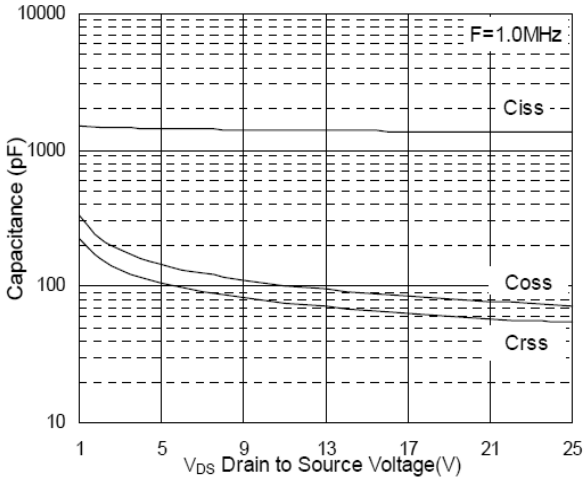


Fig.7 Capacitance

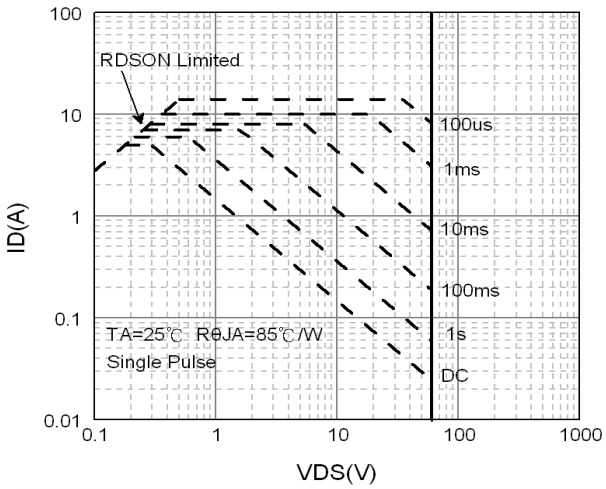


Fig.8 Safe Operating Area

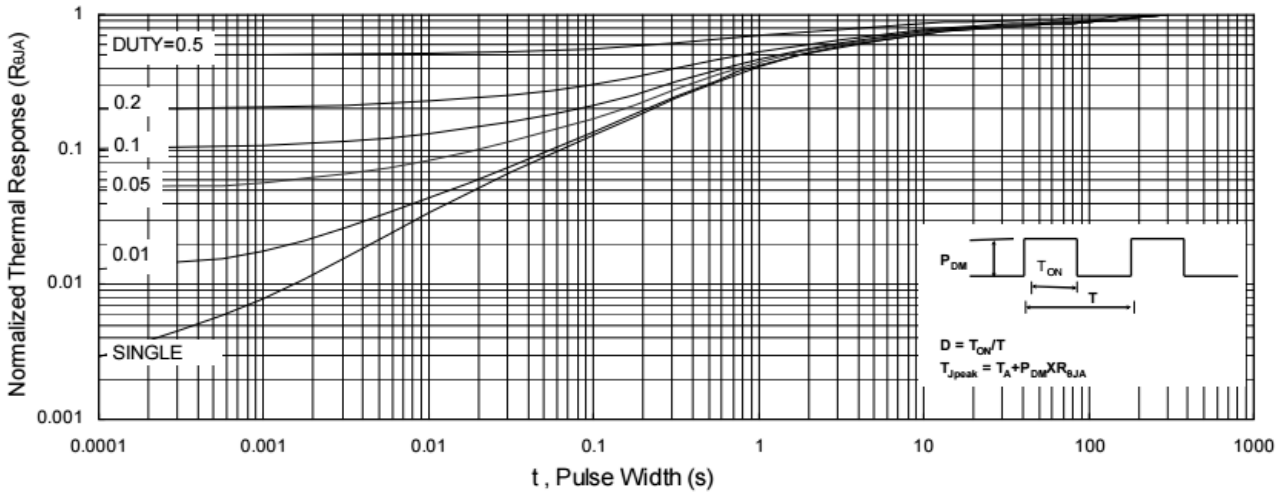


Fig.9 Normalized Maximum Transient Thermal Impedance

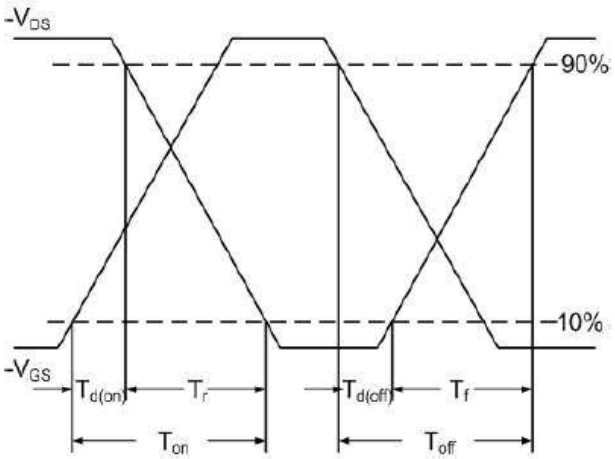


Fig.10 Switching Time Waveform

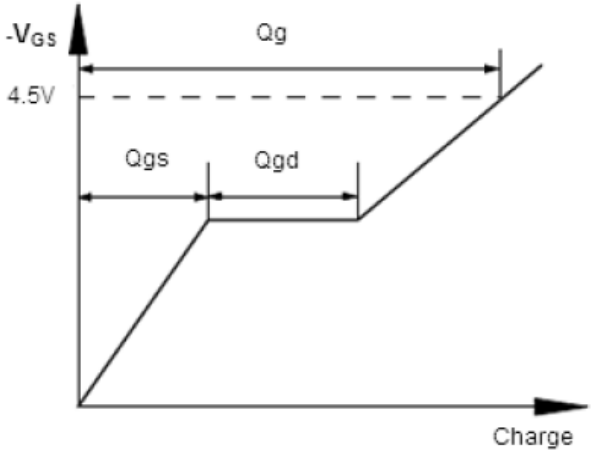


Fig.11 Gate Charge Waveform

PACKAGE OUTLINE DIMENSIONS

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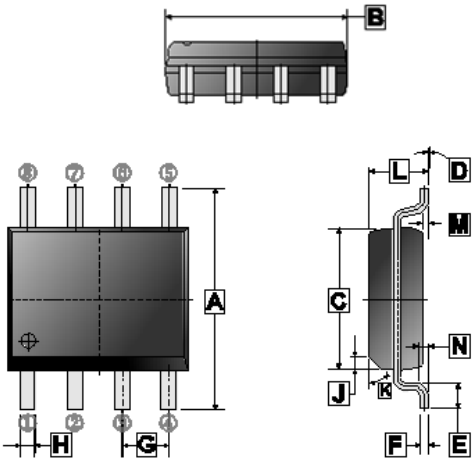

REF.	Millimeter	
	Min.	Max.
A	5.79	6.20
B	4.70	5.11
C	3.80	4.00
D	0°	8°
E	0.40	1.27
F	0.10	0.25
G	1.27 TYP.	
H	0.33	0.51
J	0.375 REF.	
K	45° REF.	
L	1.30	1.752
M	0	0.25
N	0.25 REF.	

MOUNTING PAD LAYOUT

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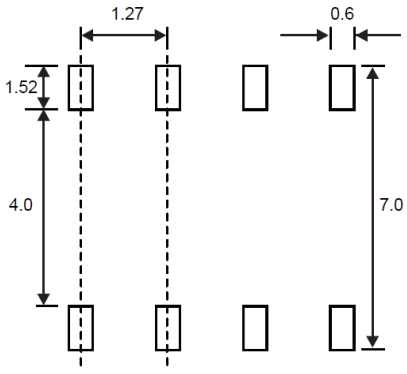

*Dimensions in millimeters