

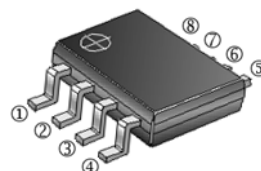
RoHS Compliant Product
A suffix of "-C" specifies halogen free

DESCRIPTION

The SSG19N04-C is the highest performance trench N-Ch MOSFETs with extreme high cell density, which provide excellent $R_{DS(ON)}$ and gate charge for most of the synchronous buck converter applications.

The SSG19N04-C meet the RoHS and Green Product requirement with full function reliability approved.

SOP-8



FEATURES

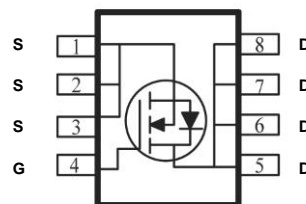
- Advanced High Cell Density Trench Technology
- Super Low Gate Charge

MARKING



ORDER INFORMATION

Part Number	Type
SSG19N04-C	Lead (Pb)-free and Halogen-free



ABSOLUTE MAXIMUM RATINGS (T_C=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 ¹ , @V _{GS} =10V	I _D	T _A =25°C	14
		T _A =70°C	11
Pulsed Drain Current ²	I _{DM}	115	A
Total Power Dissipation ³	P _D	T _A =25°C	2.15
		T _A =70°C	1.37
Operating Junction and Storage Temperature Range	T _J , T _{STG}	-55~150	°C
Thermal Resistance Ratings			
Maximum Thermal Resistance Junction-Ambient ⁴	R _{θJA}	58	°C/W
Maximum Thermal Resistance Junction-Lead ¹	R _{θJL}	20	

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

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test conditions	
Drain-Source Breakdown Voltage	BV _{DSS}	40	-	-	V	V _{GS} =0, I _D =250μA	
Gate Threshold Voltage	V _{GS(th)}	1	-	2.5	V	V _{DS} =V _{GS} , I _D =250μA	
Gate-Source Leakage Current	I _{GSS}	-	-	±100	nA	V _{GS} = ±20V	
Drain-Source Leakage Current	I _{DSS}	T _C =25°C	-	-	1	μA	V _{DS} =40V, V _{GS} =0
		T _C =55°C	-	-	10		V _{DS} =40V, V _{GS} =0
Static Drain-Source On-Resistance ²	R _{Ds(ON)}	-	5.7	6.9	mΩ	V _{GS} =10V, I _D =8A	
		-	8.8	10.6		V _{GS} =4.5V, I _D =6A	
Gate Resistance	R _g	-	1.68	-	Ω		
Forward Transconductance	g _{fs}	-	46	-	S	V _{DS} =10V, I _D =8A	
Total Gate Charge	Q _g	-	26	-	nC	V _{DS} =20V	
Gate-Source Charge	Q _{gs}	-	2.87	-		V _{GS} =10V	
Gate-Drain Change	Q _{gd}	-	9.40	-		I _D =8A	
Turn-on Delay Time	T _{d(on)}	-	14	-	nS	V _{DD} =20V V _{GS} =10V I _D =8A R _G =1Ω	
Rise Time	T _r	-	36	-			
Turn-off Delay Time	T _{d(off)}	-	40	-			
Fall Time	T _f	-	28	-			
Input Capacitance	C _{iss}	-	1070	-	pF	V _{DS} =20V V _{GS} =0 f=1MHz	
Output Capacitance	C _{oss}	-	190	-			
Reverse Transfer Capacitance	C _{rss}	-	182	-			
Source-Drain Diode							
Forward on Voltage ²	V _{SD}	-	0.79	-	V	I _S =8A, V _{GS} =0, T _J =25°C	
Continuous Source Current ^{1 5}	I _S	-	-	1.79	A		
Pulsed Source Current ^{2 5}	I _{SM}	-	-	115	A		
Reverse Recovery Time	T _{rr}	-	32	-	nS	I _S =8A, V _{GS} =0, T _J =25°C	
Reverse Recovery Charge	Q _{rr}	-	30	-	nC	I _S =8A, di/dt=100A/μs T _J =25°C	

Notes:

1. The data tested by surface mounted on one inch² FR-4 board with 20Z copper.
2. The data tested by pulsed, pulse width ≤ 300μs, duty cycle ≤ 2%.
3. The power dissipation is limited by 150°C junction temperature.
4. Mounted on 1 inch square PCB
5. The data is theoretically the same as I_D and I_{DM}, in real applications, should be limited by total power dissipation.

TYPICAL CHARACTERISTICS CURVE

Fig 1. Output Characteristics, $T_J=25^\circ\text{C}$

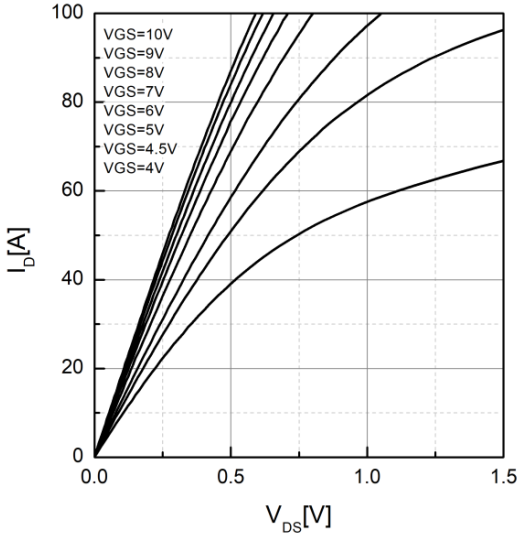


Fig 2. Drain-source on resistance, $T_J=25^\circ\text{C}$

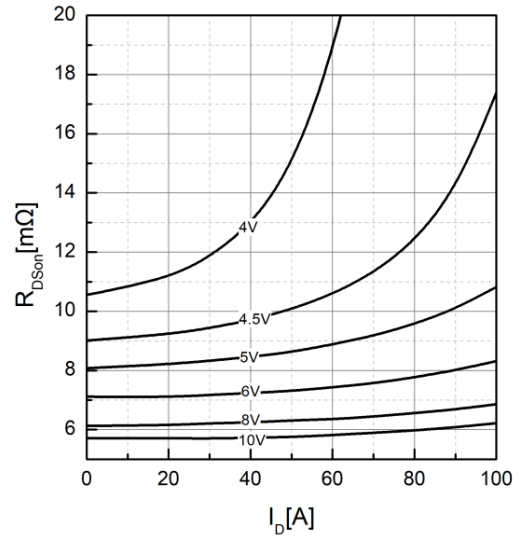


Fig 3. Forward characteristics of body diode

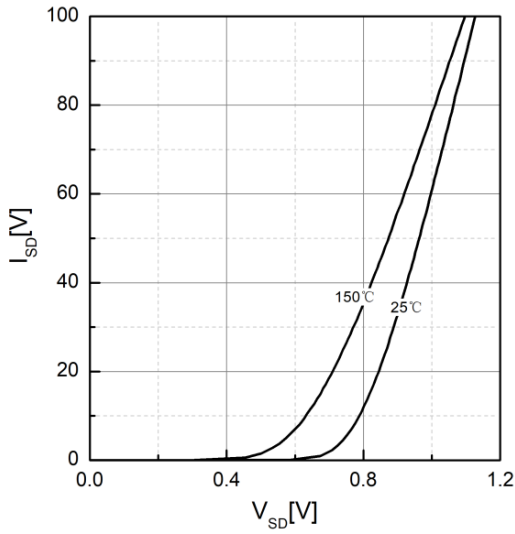


Fig 4. Gate Charge Characteristics

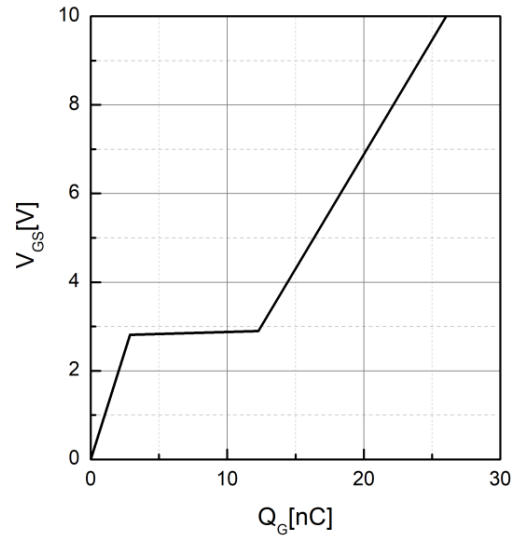


Fig 5. Capacitance Characteristics

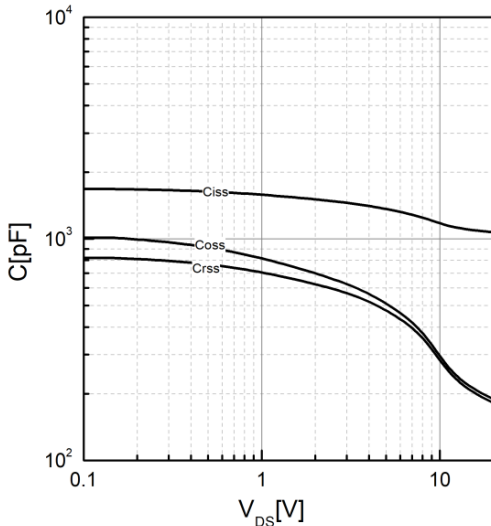
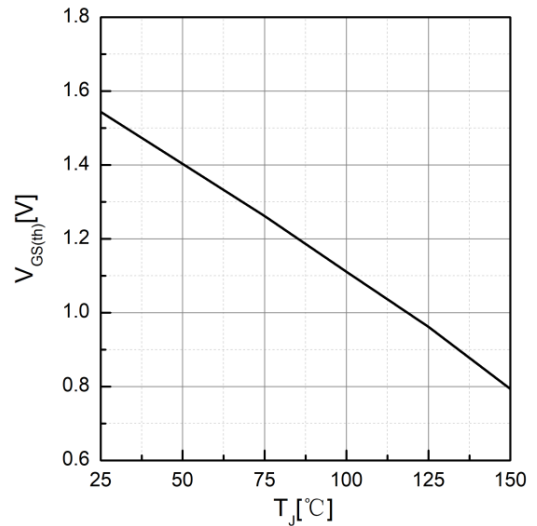


Fig 6. Threshold Voltage Vs. Temperature



TYPICAL CHARACTERISTICS CURVE

Fig 7. Drain-source on-state resistance

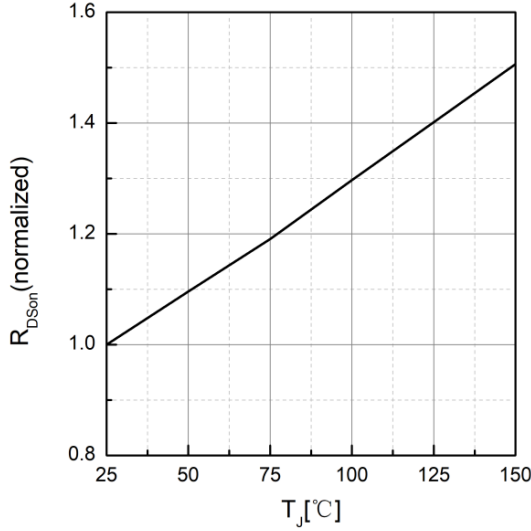


Fig 8. Maximum Safe Operating Area

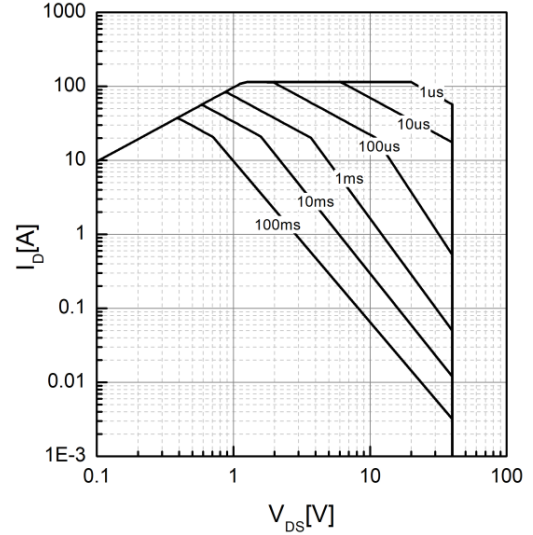


Fig 9. Avalanche characteristics

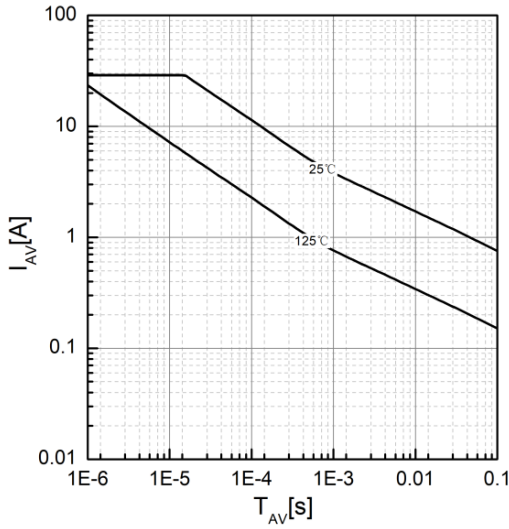


Fig 10. Drain-source breakdown voltage

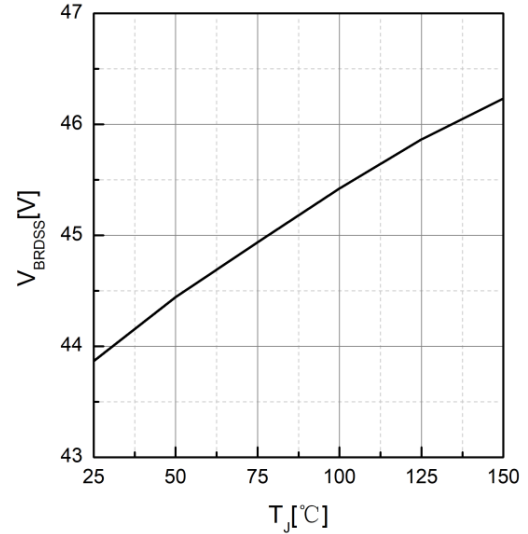


Fig 11. Transfer characteristics

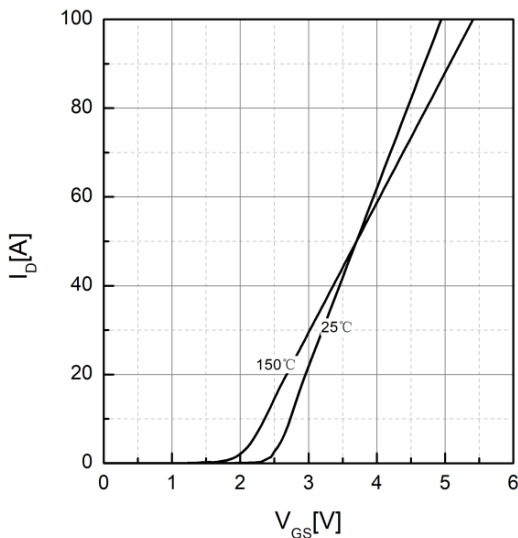
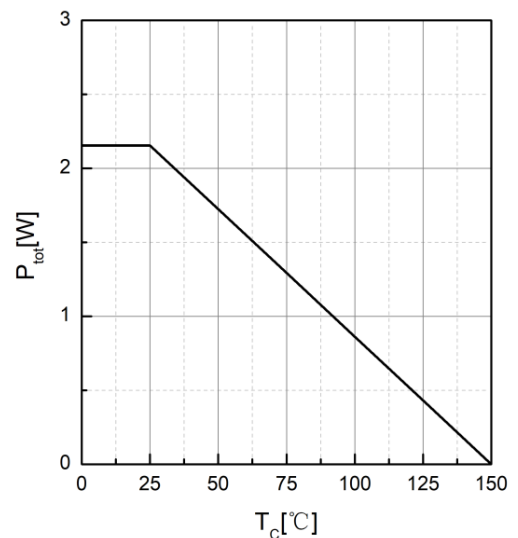


Fig 12. Power dissipation



TYPICAL CHARACTERISTICS CURVE

Fig 13. Drain current

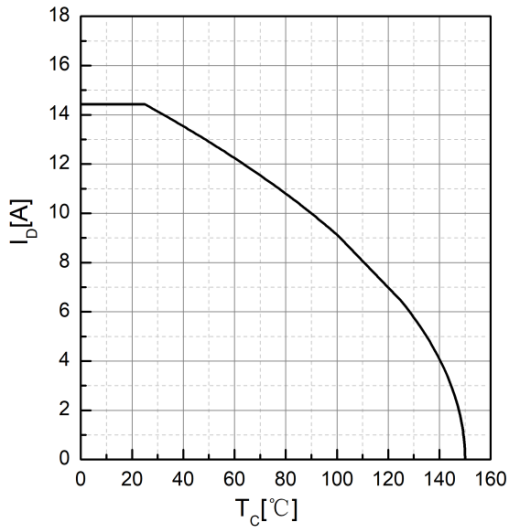


Fig 14. Effective Transient Thermal Impedance

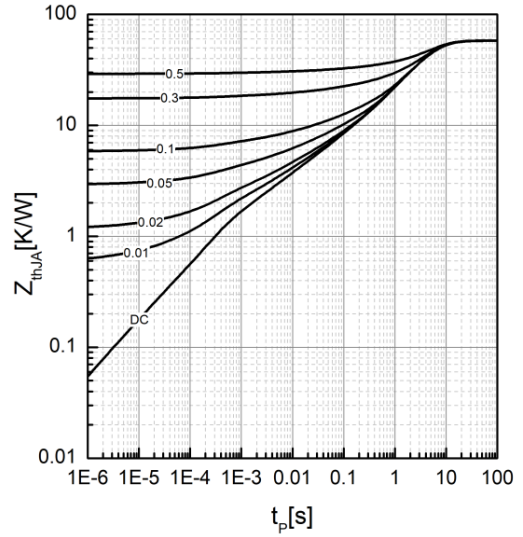


Fig 15. Gate Charge Test Circuit & Waveform

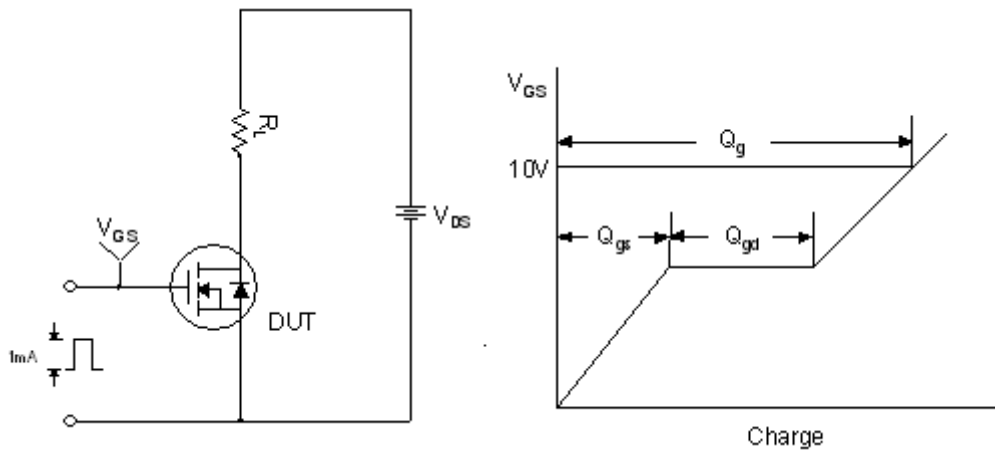
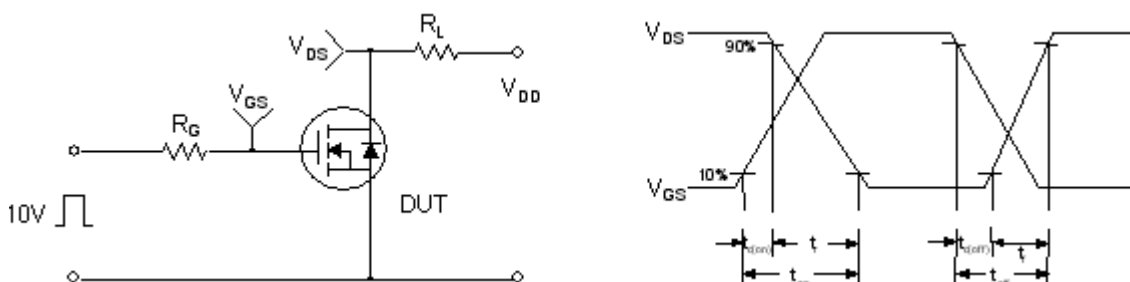
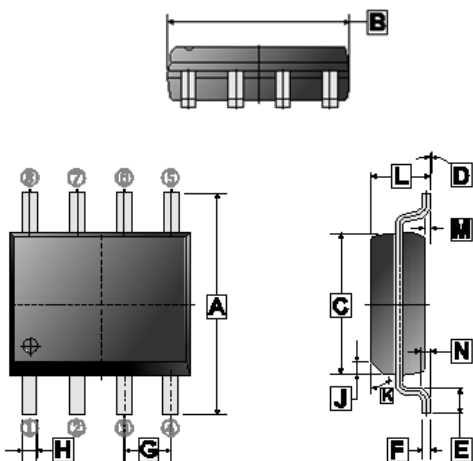


Fig 16. Resistive Switching Test Circuit & Waveforms



PACKAGE OUTLINE DIMENSIONS

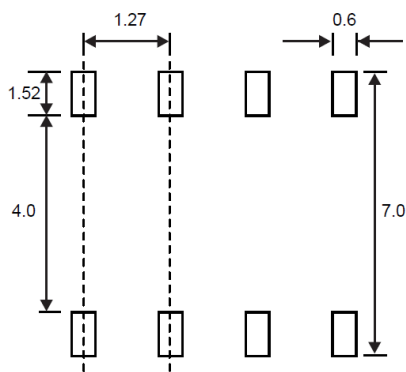
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REF.	Millimeter	
	Min.	Max.
A	5.80	6.20
B	4.38	5.20
C	3.70	4.10
D	0°	8°
E	0.40	1.27
F	0.10	0.26
G	1.27 TYP.	
H	0.30	0.51
J	0.375 REF.	
K	45° REF.	
L	1.30	1.80
M	0	0.25
N	0.25 REF.	

MOUNTING PAD LAYOUT

SOP-8



*Dimensions in millimeters