Elektronische Bauelemente

SSG04N10-C

4.5A, 100V, $R_{DS(ON)}$ 112mΩ

N-Ch Enhancement Mode Power MOSFET

RoHS Compliant Product

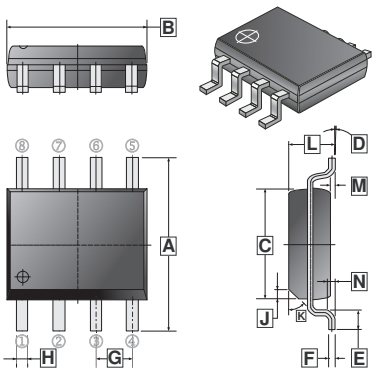
A suffix of "-C" specifies halogen & lead-free

DESCRIPTION

The SSG04N10-C is the highest performance 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 SSG04N10-C meet the RoHS and Green Product requirement with full function reliability approved.

SOP-8

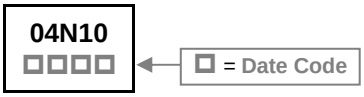


REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	5.79	6.20	H	0.33	0.51
B	4.70	5.11	J	0.375 REF.	
C	3.80	4.00	K	45° REF.	
D	0°	8°	L	1.3	1.752
E	0.40	1.27	M	0	0.25
F	0.10	0.25	N	0.25 REF.	
G	1.27 TYP.				

FEATURES

- High Speed Power Switching
- Super Low Gate Charge
- Green Device Available

MARKING

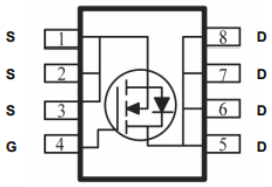


PACKAGE INFORMATION

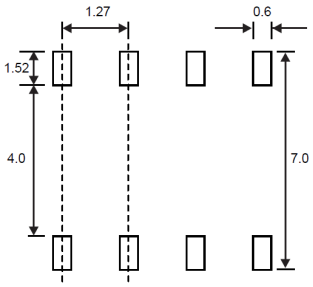
Package	MPQ	Leader Size
SOP-8	2.5K	13 inch

ORDER INFORMATION

Part Number	Type
SSG04N10-C	Lead (Pb)-free and Halogen-free



Mounting Pad Layout



*Dimensions in millimeters

ABSOLUTE MAXIMUM RATINGS

Parameter		Symbol	Ratings	Unit
Drain-Source Voltage		V_{DS}	100	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current [1] @ V_{GS}=10V	T_A=25℃	I_D	4.5	A
	T_A=70℃		3.1	
Pulsed Drain Current [2]		I_{DM}	20	A
Total Power Dissipation [3]	T_A=25℃	P_D	3.1	W
Operating Junction and Storage Temperature Range		T_J, T_{STG}	-55~150	℃
Thermal Resistance Ratings				
Thermal Resistance Junction-Ambient [1]		$R_{\theta JA}$	t≦10s, 40	℃/W
			Steady State, 75	
Thermal Resistance Junction-Case [1]		$R_{\theta JC}$	24	

ELECTRICAL CHARACTERISTICS (T_J=25℃ unless otherwise specified)

Parameter		Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Drain-Source Breakdown Voltage		BV_{DSS}	100	-	-	V	V_{GS}=0, I_D=250μA
Gate Threshold Voltage		$V_{GS(th)}$	1	-	2.5	V	V_{DS}=V_{GS}, I_D=250μA
Forward Transconductance		g_{fs}	-	20	-	S	V_{DS}=5V, I_D=2A
Gate-Source Leakage Current		I_{GSS}	-	-	±100	nA	V_{GS}= ±20V
Drain-Source Leakage Current	T_J=25℃	I_{DSS}	-	-	1	μA	V_{DS}=120V, V_{GS}=0
	T_J=55℃		-	-	5		
Static Drain-Source On-Resistance [2]		$R_{DS(ON)}$	-	90	112	mΩ	V_{GS}=10V, I_D=4.5A
			-	95	120		V_{GS}=10V, I_D=2A
Total Gate Charge		Q_g	-	26.2	-	nC	I_D=2A V_{DS}=80V V_{GS}=10V
Gate-Source Charge		Q_{gs}	-	3.8	-		
Gate-Drain Change		Q_{gd}	-	4.8	-		
Turn-on Delay Time		$T_{d(on)}$	-	4.2	-	nS	V_{DD}=50V I_D=2A V_{GS}=10V R_G=3.3Ω
Rise Time		T_r	-	7.6	-		
Turn-off Delay Time		$T_{d(off)}$	-	41	-		
Fall Time		T_f	-	14	-		
Input Capacitance		C_{iss}	-	1535	-	pF	V_{GS}=0 V_{DS}=15V f=1MHz
Output Capacitance		C_{oss}	-	60	-		
Reverse Transfer Capacitance		C_{rss}	-	37	-		
Source-Drain Diode							
Continuous Source Current [1]		I_S	-	-	4.5	A	V_G=V_D=0V, Force Current
Diode Forward Voltage [2]		V_{SD}	-	-	1.2	V	V_{GS}=0, I_S=1A
Reverse Recovery Time		t_{rr}	-	35	-	nS	I_F=2A, dI/dt=100A/μs T_J=25℃
Reverse Recovery Charge		Q_{rr}	-	17	-	nC	

Notes:
1. The data tested by surface mounted on a 1 inch^2 FR-4 board with 2oz copper.
2. The data tested by pulsed, pulse width≤300μs, duty cycle≤2%.
3. The power dissipation is limited by 150℃, junct ion temperature.

TYPICAL CHARACTERISTICS CURVE

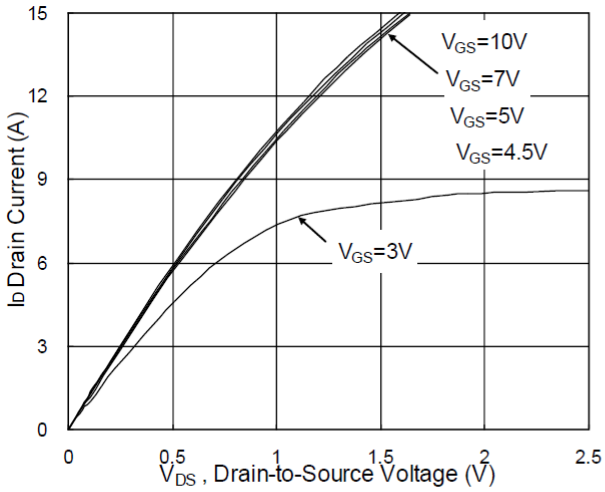


Fig.1 Typical Output Characteristics

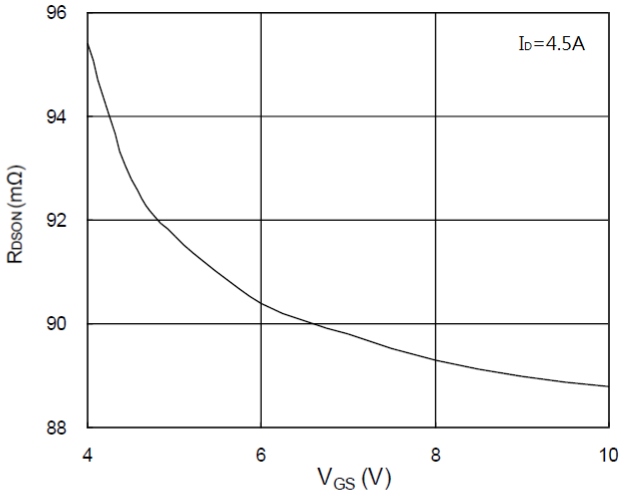


Fig.2 On-Resistance vs. Gate-Source

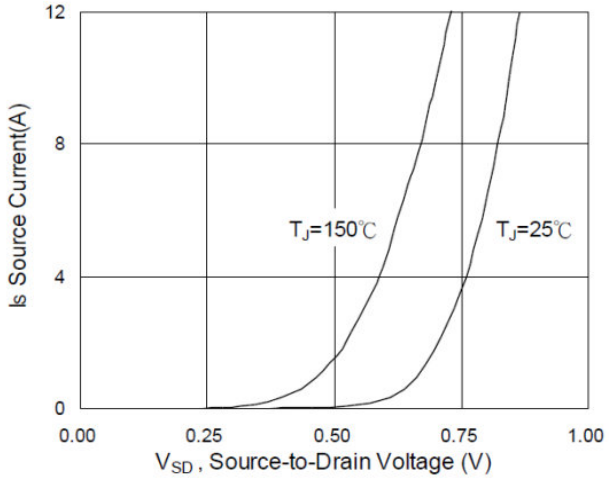


Fig.3 Forward Characteristics of Reverse

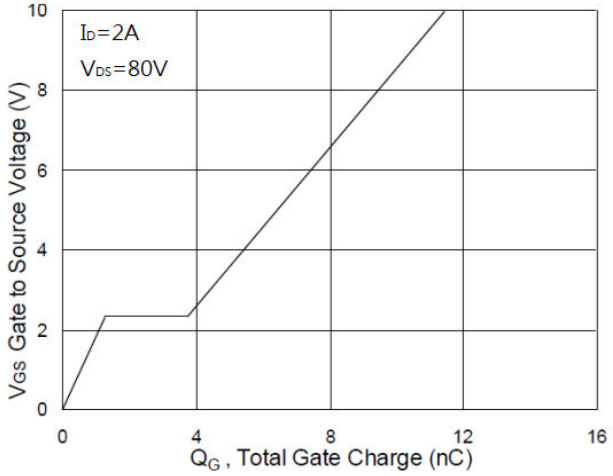


Fig.4 Gate-Charge Characteristics

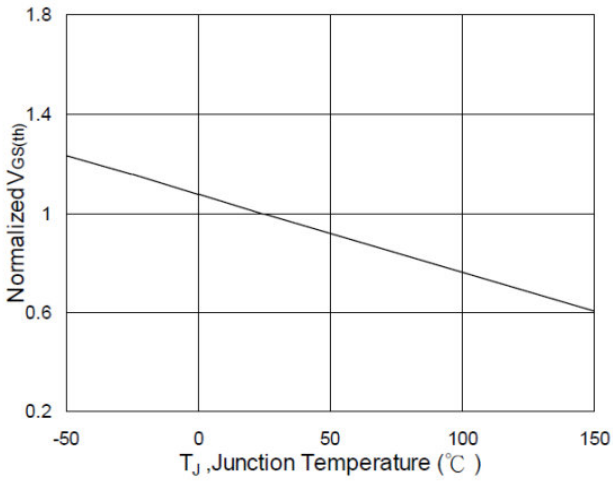


Fig.5 Normalized $V_{GS(th)}$ vs. T_J

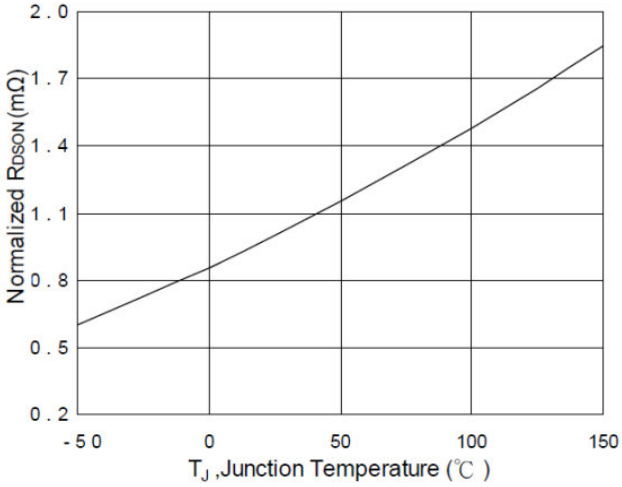


Fig.6 Normalized R_{DSON} vs. T_J

TYPICAL CHARACTERISTICS CURVE

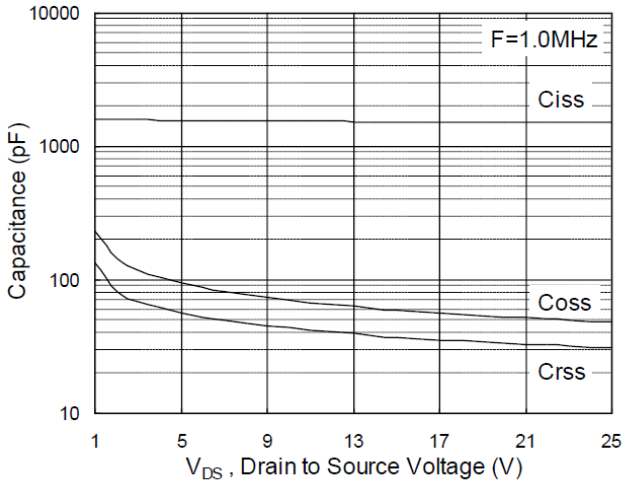


Fig.7 Capacitance

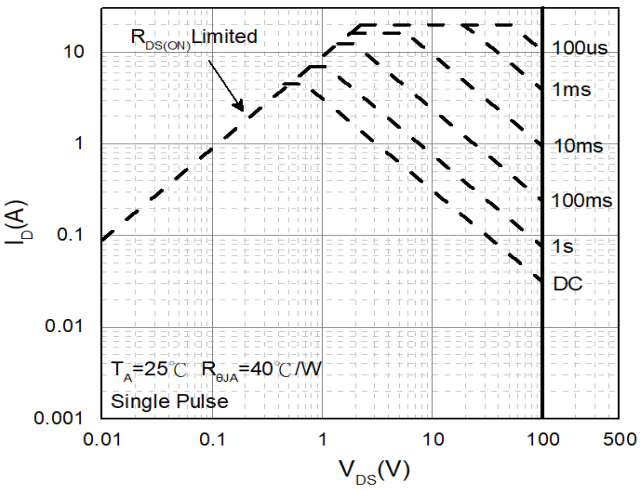


Fig.8 Safe Operating Area

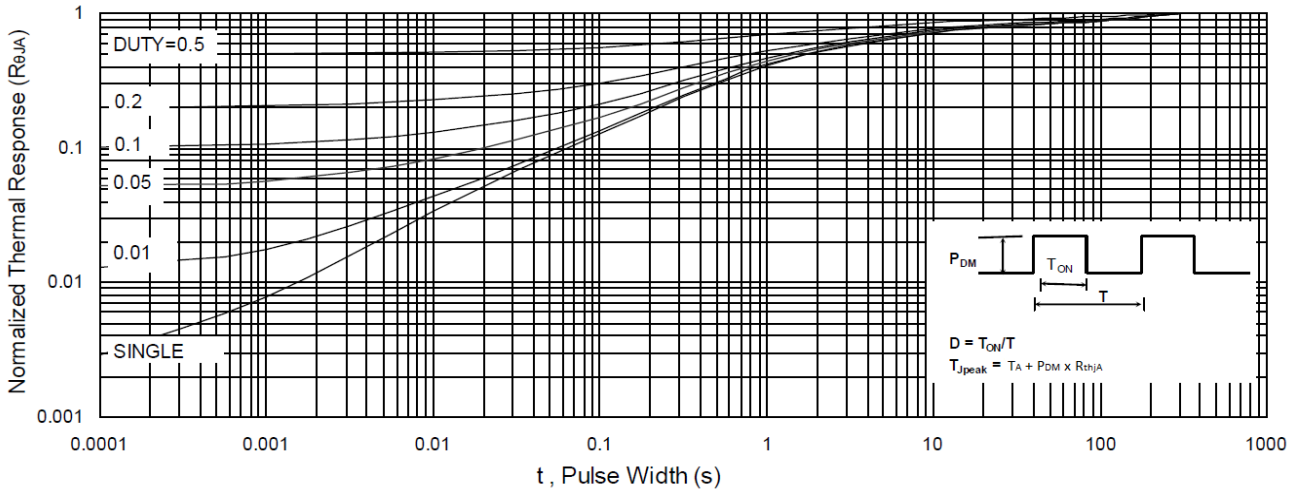


Fig.9 Normalized Maximum Transient Thermal Impedance

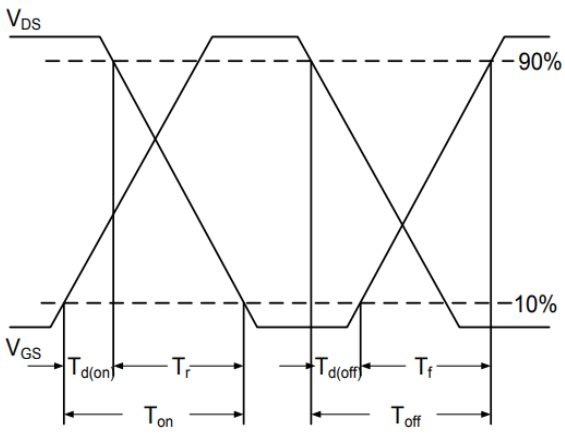


Fig.10 Switching Time Waveform

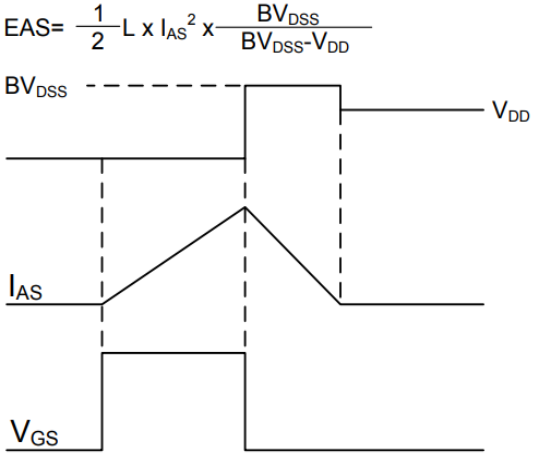


Fig.11 Unclamped Inductive Switching Waveform