

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

DESCRIPTION

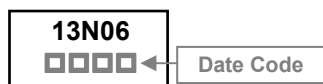
The SSG13N06-C is the highest performance trench N-Ch MOSFETs with extreme high cell density, which provide excellent $R_{DS(ON)}$ and gate charge for most of the synchronous buck converter applications.

The SSG13N06-C meet the RoHS and Green Product requirement with full function reliability approved.

FEATURES

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

MARKING



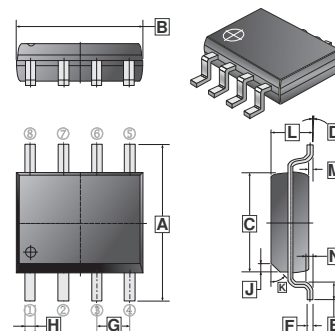
PACKAGE INFORMATION

Package	MPQ	Leader Size
SOP-8	2.5K	13 inch

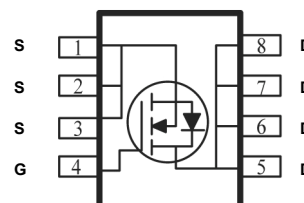
ORDER INFORMATION

Part Number	Type
SSG13N06-C	Lead (Pb)-free and Halogen-free

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.				



ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current ¹ , @ $V_{GS}=10V$	I_D	$T_A=25^\circ C$	13
		$T_A=100^\circ C$	8
Pulsed Drain Current ³	I_{DM}	60	A
Total Power Dissipation ²	P_D	2.7	W
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55~150	$^\circ C$
Thermal Resistance Ratings			
Maximum Thermal Resistance Junction-Ambient ¹	$R_{\theta JA}$	$t \leq 10s, 45$	$^\circ C/W$
Maximum Thermal Resistance Junction-Ambient ¹		Steady State ,80	

ELECTRICAL CHARACTERISTICS ($T_J=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test conditions	
Drain-Source Breakdown Voltage	BV_{DSS}	60	-	-	V	$V_{GS}=0, I_D=250\mu\text{A}$	
Gate Threshold Voltage	$V_{GS(th)}$	1	-	2.5	V	$V_{DS}=V_{GS}, I_D=250\mu\text{A}$	
Forward Transconductance	g_{fs}	-	50	-	S	$V_{DS}=5\text{V}, I_D=10\text{A}$	
Gate-Source Leakage Current	I_{GSS}	-	-	± 100	nA	$V_{GS}=\pm 20\text{V}$	
Drain-Source Leakage Current	I_{DSS}	$T_J=25^\circ\text{C}$	-	-	1	μA	$V_{DS}=48\text{V}, V_{GS}=0$
		$T_J=55^\circ\text{C}$	-	-	5		$V_{DS}=48\text{V}, V_{GS}=0$
Static Drain-Source On-Resistance ³	$R_{DS(ON)}$	-	-	8.5	m Ω	$V_{GS}=10\text{V}, I_D=10\text{A}$	
		-	-	12		$V_{GS}=4.5\text{V}, I_D=8\text{A}$	
Total Gate Charge	Q_g	-	57	-	nC	$I_D=10\text{A}$ $V_{DS}=48\text{V}$ $V_{GS}=10\text{V}$	
Gate-Source Charge	Q_{gs}	-	8.7	-			
Gate-Drain Change	Q_{gd}	-	14	-			
Turn-on Delay Time	$T_{d(on)}$	-	16.2	-	nS	$V_{DD}=30\text{V}$ $I_D=10\text{A}$ $V_{GS}=10\text{V}$ $R_G=3.3\Omega$	
Rise Time	T_r	-	41.2	-			
Turn-off Delay Time	$T_{d(off)}$	-	56.4	-			
Fall Time	T_f	-	16.2	-			
Input Capacitance	C_{iss}	-	3307	-	pF	$V_{GS}=0$ $V_{DS}=25\text{V}$ $f=1\text{MHz}$	
Output Capacitance	C_{oss}	-	201	-			
Reverse Transfer Capacitance	C_{rss}	-	151	-			
Source-Drain Diode							
Forward on Voltage ³	V_{SD}	-	-	1.2	V	$I_S=1\text{A}, V_{GS}=0$	
Continuous Source Current ¹	I_S	-	-	13	A		
Pulsed Source Current ³	I_{SM}	-	-	60	A		
Reverse Recovery Time	T_{rr}	-	24	-	nS	$I_S=10\text{A}, V_{GS}=0,$ $dI/dt=100\text{A}/\mu\text{s}, T_J=25^\circ\text{C}$	
Reverse Recovery Charge	Q_{rr}	-	15	-	nC		

Notes:

1. Surface mounted on a 1 inch² FR-4 board with 2OZ copper.
2. Pulse width limited by maximum junction temperature, pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$.
3. The data tested by pulsed, pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$.

TYPICAL CHARACTERISTICS CURVE

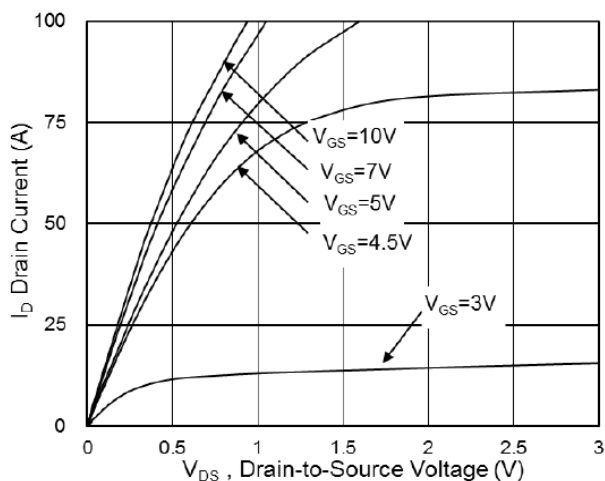


Fig.1 Typical Output Characteristics

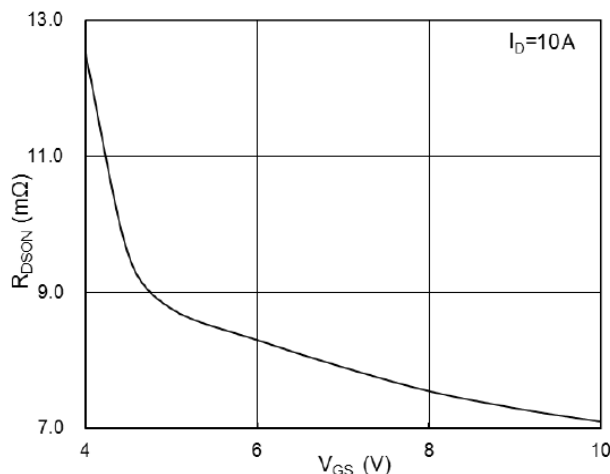


Fig.2 On-Resistance vs G-S Voltage

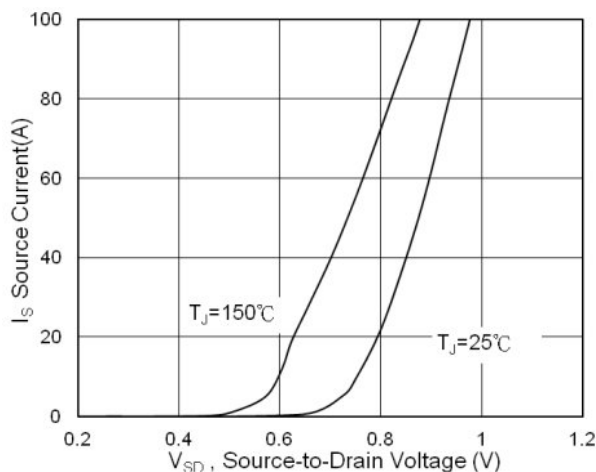


Fig.3 Forward Characteristics of Reverse

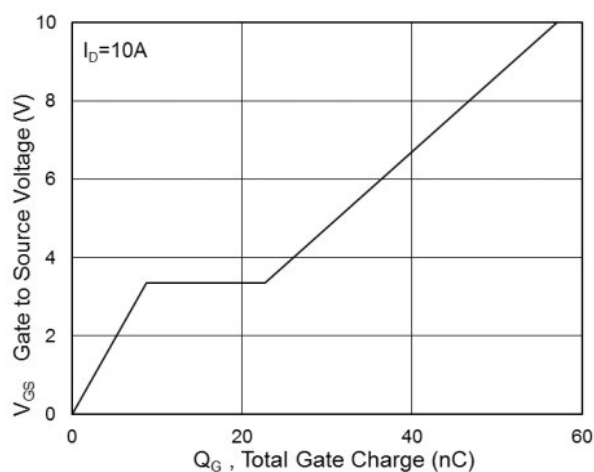


Fig.4 Gate-Charge Characteristics

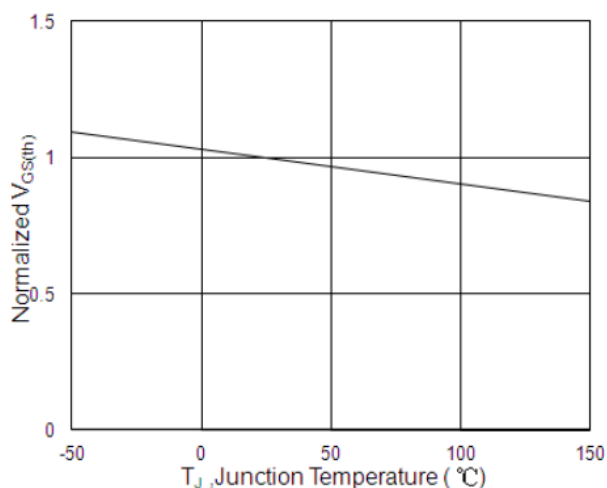


Fig.5 Normalized $V_{GS(th)}$ vs. T_J

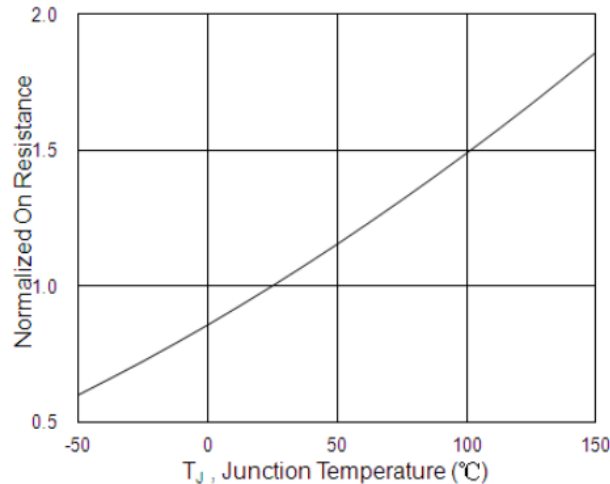


Fig.6 Normalized $R_{DS(ON)}$ vs. T_J

TYPICAL CHARACTERISTICS CURVE

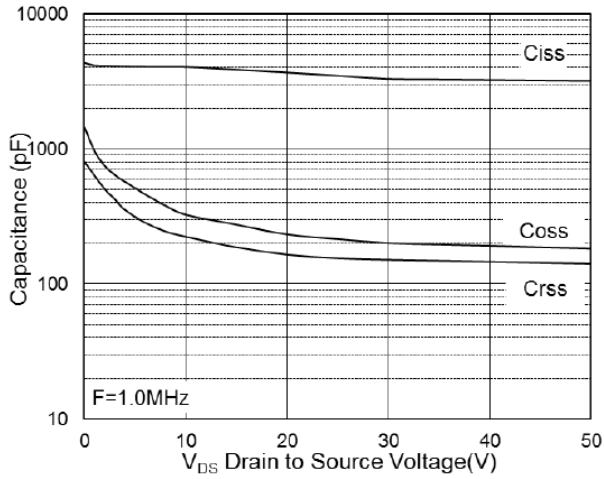


Fig.7 Capacitance

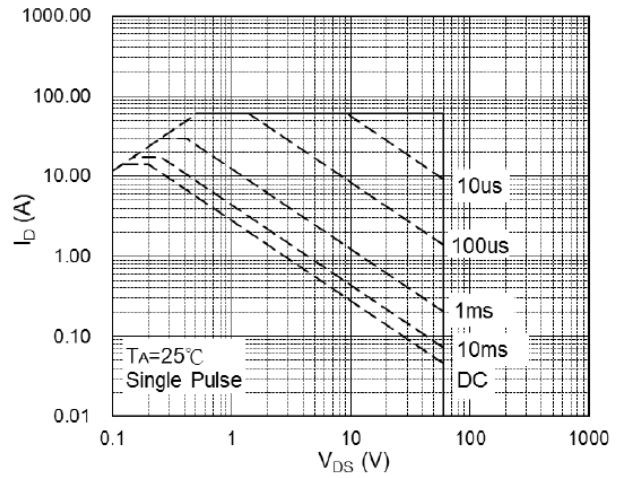


Fig.8 Safe Operating Area

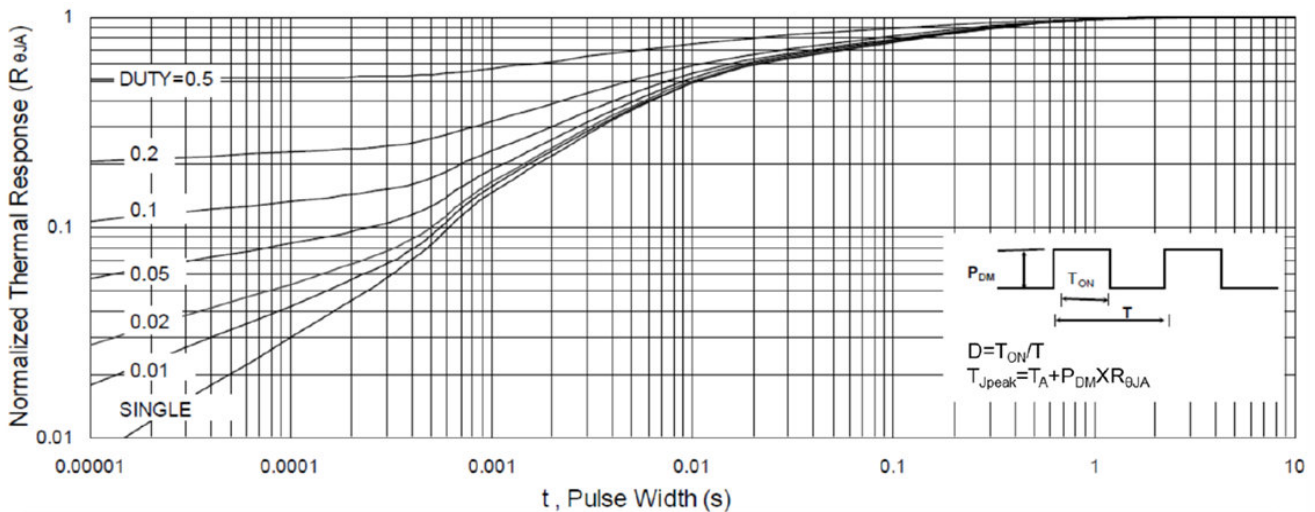


Fig.9 Normalized Maximum Transient Thermal Impedance

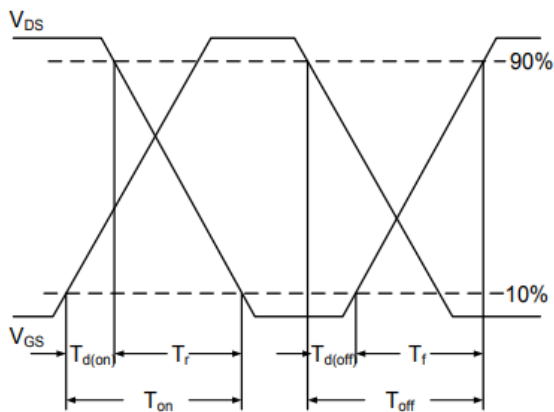


Fig.10 Switching Time Waveform

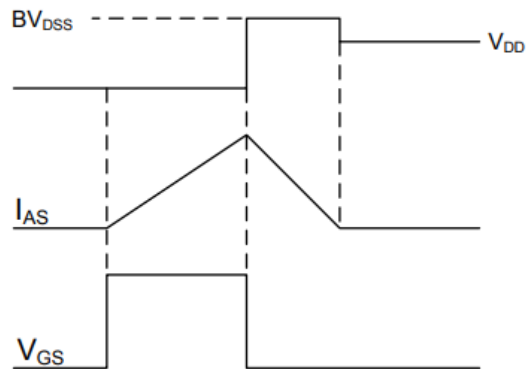


Fig.11 Unclamped Inductive Switching Waveform