

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

DESCRIPTION

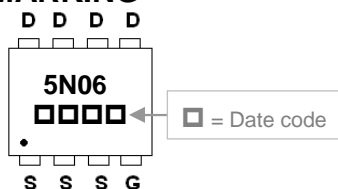
The SSG5N06-C is the highest performance trench N-Ch MOSFETs with extreme high cell density, which provide excellent $R_{DS(ON)}$ and gate charge for most of the synchronous buck converter applications.

The SSG5N06-C meet the RoHS and Green Product requirement with full function reliability approved.

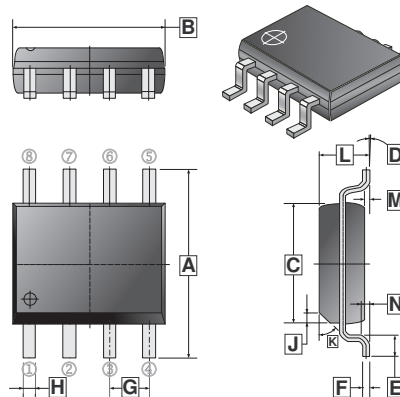
FEATURES

- Advanced High Cell Density Trench Technology
- Super Low Gate Charge
- Green Device Available

MARKING



SOP-8



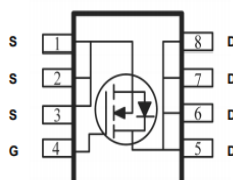
REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	5.79	6.20	H	0.33	0.51
B	4.70	5.11	J	0.375	REF.
C	3.80	4.00	K	45°	REF.
D	0°	8°	L	1.3	1.752
E	0.40	1.27	M	0	0.25
F	0.10	0.25	N	0.25	REF.
G	1.27	TYP.			

PACKAGE INFORMATION

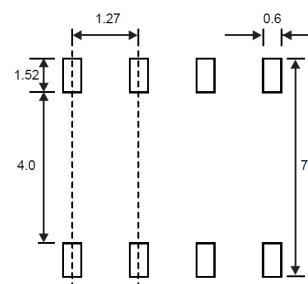
Package	MPQ	Leader Size
SOP-8	2.5K	13 inch

ORDER INFORMATION

Part Number	Type
SSG5N06-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}	60	V	
Gate-Source Voltage	V_{GS}	± 20	V	
Continuous Drain Current ¹ @ $V_{GS}=10V$	$T_A=25^\circ C$	5	A	
	$T_A=70^\circ C$	4		
Pulsed Drain Current ²	I_{DM}	20	A	
Total Power Dissipation ³	$T_A=25^\circ C$	P_D	3.1	W
Operating Junction & Storage Temperature	T_J, T_{STG}	-55~150	$^\circ C$	
Thermal Resistance Ratings				
Thermal Resistance Junction-Ambient ¹	$R_{\theta JA}$	$\leq 10s, 40$	$^\circ C/W$	
		Steady State, 75		
Thermal Resistance Junction-Case ¹	$R_{\theta JC}$	24		

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}	-	28.3	-	S	$V_{DS}=5\text{V}, I_D=5\text{A}$	
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 ²	$R_{DS(ON)}$	-	35	45	m Ω	$V_{GS}=10\text{V}, I_D=5\text{A}$	
		-	40	55		$V_{GS}=4.5\text{V}, I_D=2.5\text{A}$	
Total Gate Charge	Q_g	-	19	-	nC	$I_D=5\text{A}$ $V_{DS}=48\text{V}$ $V_{GS}=10\text{V}$	
Gate-Source Charge	Q_{gs}	-	2.6	-			
Gate-Drain ("Miller") Charge	Q_{gd}	-	4.1	-			
Turn-on Delay Time	$T_{d(on)}$	-	3	-	nS	$V_{DD}=30\text{V}$ $I_D=5\text{A}$ $V_{GS}=10\text{V}$ $R_G=3.3\Omega$	
Rise Time	T_r	-	34	-			
Turn-off Delay Time	$T_{d(off)}$	-	23	-			
Fall Time	T_f	-	6	-			
Input Capacitance	C_{iss}	-	1027	-	pF	$V_{GS}=0$ $V_{DS}=15\text{V}$ $f=1\text{MHz}$	
Output Capacitance	C_{oss}	-	65	-			
Reverse Transfer Capacitance	C_{rss}	-	46	-			
Source-Drain Diode							
Continuous Source Current ¹	I_S	-	-	5	A		
Pulsed Source Current ³	I_{SM}	-	-	20	A		
Diode Forward Voltage ²	V_{SD}	-	-	1.2	V	$I_S=1\text{A}, V_{GS}=0$	
Reverse Recovery Time	t_{rr}	-	12.2	-	nS	$I_F=5\text{A}, dI/dt=100\text{A}/\mu\text{s}$	
Reverse Recovery Charge	Q_{rr}	-	7.3	-	nC	$T_J=25^\circ\text{C}$	

Notes:

1. Surface mounted on a 1inch² FR-4 board with 2OZ copper.
2. The data tested by pulsed, pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$.
3. The power dissipation is limited by 150 $^\circ\text{C}$ junction temperature.

CHARACTERISTIC CURVES

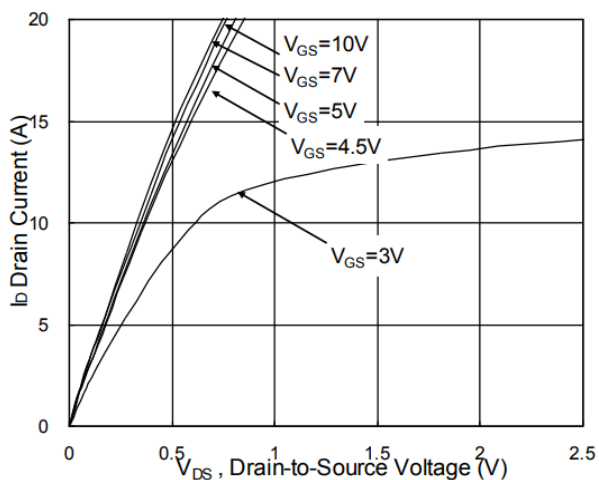


Fig.1 Typical Output Characteristics

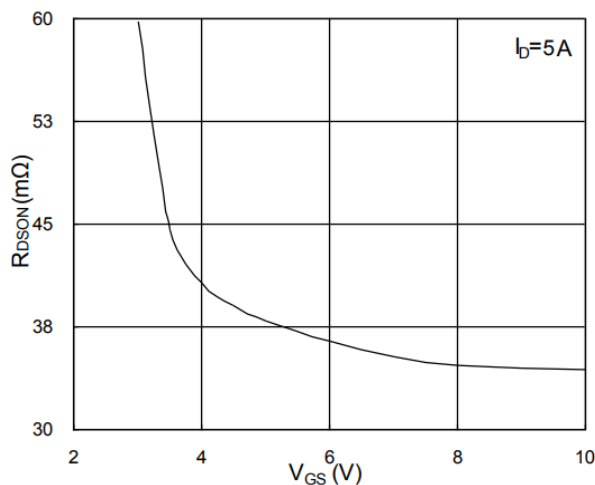


Fig.2 On-Resistance vs. Gate-Source

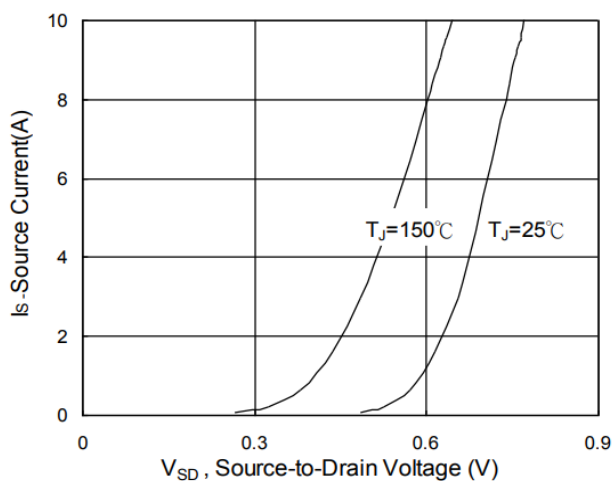


Fig.3 Forward Characteristics Of Reverse

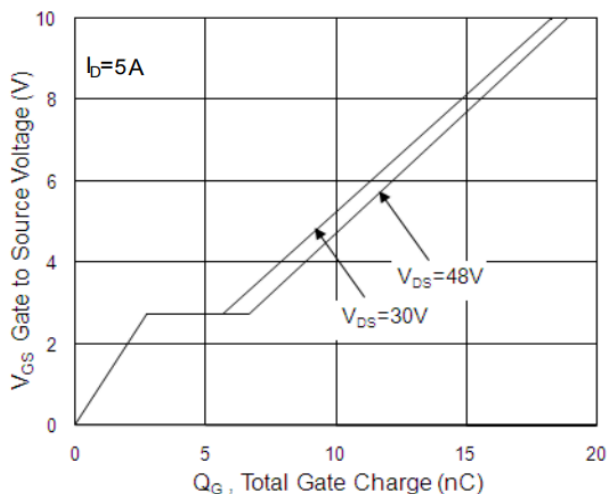


Fig.4 Gate-Charge Characteristics

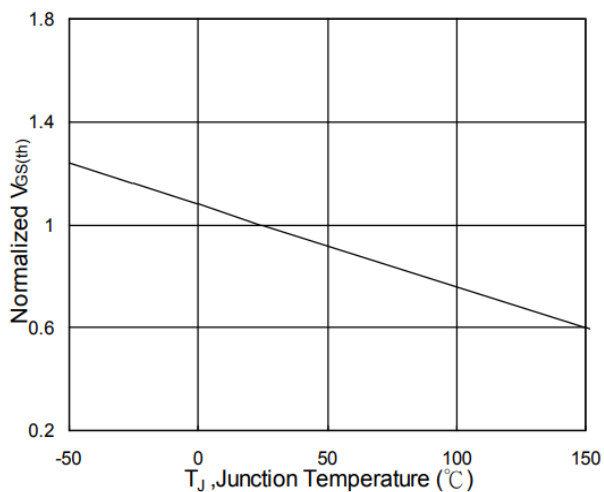


Fig.5 Normalized $V_{GS(th)}$ vs. T_J

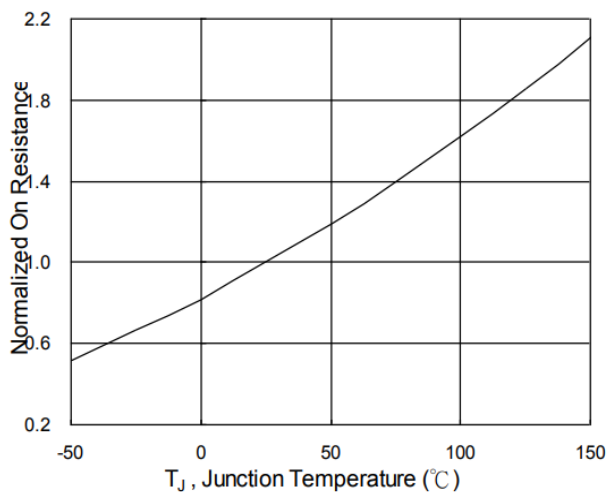


Fig.6 Normalized $R_{DS(on)}$ vs. T_J

CHARACTERISTIC CURVES

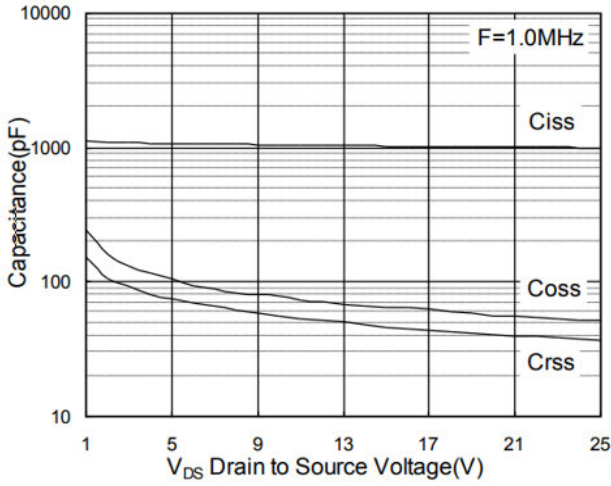


Fig.7 Capacitance

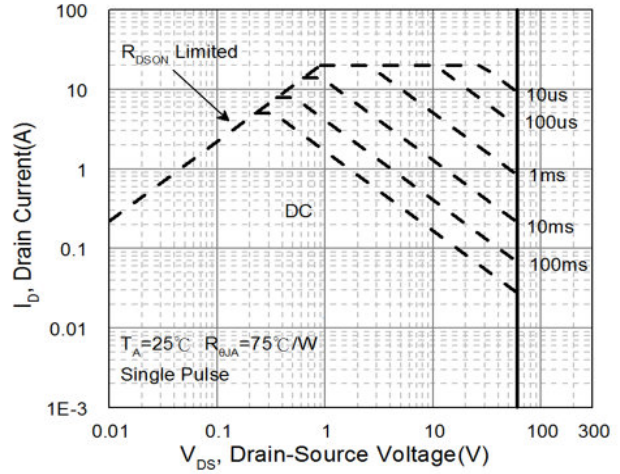


Fig.8 Safe Operating Area

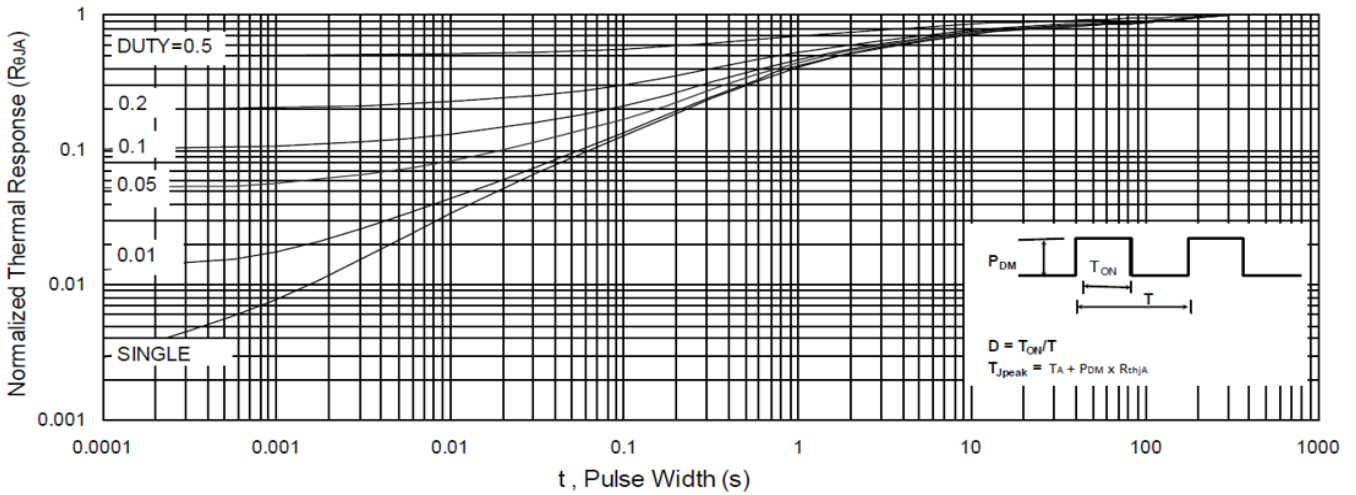


Fig.9 Normalized Maximum Transient Thermal Impedance

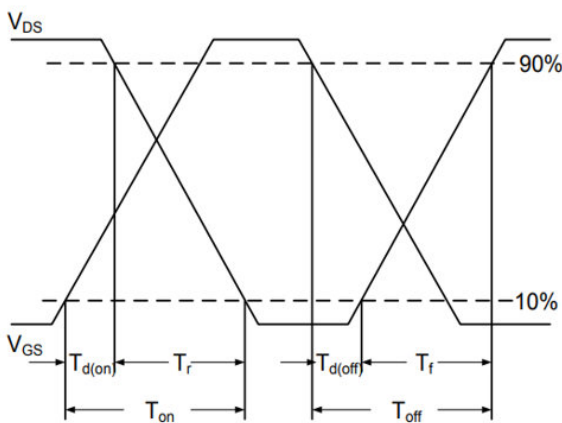


Fig.10 Switching Time Waveform

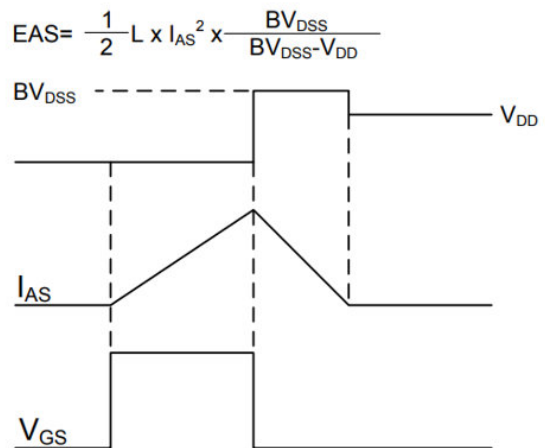


Fig.11 Unclamped Inductive Switching Waveform