

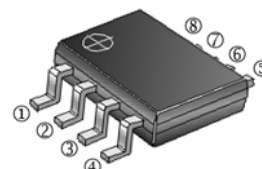
RoHS Compliant Product
A suffix of "-C" specifies halogen & lead-free

DESCRIPTION

The SSG13N06S-C is the Shielded Gate Technology 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 SSG13N06S-C meet the RoHS and Green Product requirement with full function reliability approved.

SOP-8



FEATURES

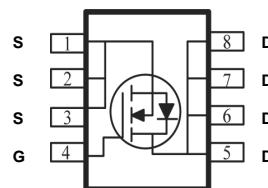
- Shielded Gate Trench Technology
- High Speed Power Switching
- Super Low Gate Charge
- Green Device Available

MARKING



PACKAGE INFORMATION

Package	MPQ	Leader Size
SOP-8	2.5K	13 inch



ORDER INFORMATION

Part Number	Type
SSG13N06S-C	Lead (Pb)-free and Halogen-free

ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	V_{DS}	68	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current ^{1 4} @ $V_{GS}=10V$	I_D	$T_A=25^\circ C$	13
		$T_A=100^\circ C$	9
Pulsed Drain Current ²	I_{DM}	56	A
Total Power Dissipation ⁴	P_D	3.1	W
Operating Junction & Storage Temperature Range	T_J, T_{STG}	-55~150	$^\circ C$
Thermal Resistance Ratings			
Thermal Resistance Junction-Ambient ¹	$R_{\theta JA}$	$t \leq 10s, 40$	$^\circ C/W$
		Steady State ,75	
Thermal Resistance Junction-Lead ¹	$R_{\theta JL}$	25	

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

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test conditions	
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	68	-	-	V	$V_{GS}=0V, I_D=250\mu A$	
Gate Threshold Voltage	$V_{GS(th)}$	1	-	2.4	V	$V_{DS}=V_{GS}, I_D=250\mu A$	
Forward Transfer Conductance	g_{fs}	-	29	-	S	$V_{DS}=5V, I_D=10A$	
Gate-Source Leakage Current	I_{GSS}	-	-	± 100	nA	$V_{GS}=\pm 20V, V_{DS}=0V$	
Drain-Source Leakage Current	I_{DSS}	$T_J=25^\circ\text{C}$	-	-	1	μA	$V_{DS}=60V, V_{GS}=0V$
		$T_J=100^\circ\text{C}$	-	-	100		
Static Drain-Source On-Resistance ³	$R_{DS(ON)}$	-	7.5	9	m Ω	$V_{GS}=10V, I_D=10A$	
		-	10.2	13		$V_{GS}=4.5V, I_D=5A$	
Gate Resistance	R_g	-	1.4	-	Ω	$f=1\text{MHz}$	
Total Gate Charge (4.5V)	Q_g	-	10.5	-	nC	$I_D=10A$ $V_{DD}=30V$ $V_{GS}=10V$	
Total Gate Charge		-	20.5	-			
Gate-Source Charge	Q_{gs}	-	2.5	-			
Gate-Drain Change	Q_{gd}	-	5.5	-			
Turn-on Delay Time	$T_{d(on)}$	-	7	-	nS	$V_{DD}=30V$ $I_D=10A$ $V_{GS}=10V$ $R_G=10\Omega$	
Rise Time	T_r	-	4	-			
Turn-off Delay Time	$T_{d(off)}$	-	22	-			
Fall Time	T_f	-	5	-			
Input Capacitance	C_{iss}	-	1170	-	pF	$V_{GS}=0V$ $V_{DS}=30V$ $f=1\text{MHz}$	
Output Capacitance	C_{oss}	-	518	-			
Reverse Transfer Capacitance	C_{rss}	-	31	-			
Source-Drain Diode							
Forward on Voltage ³	V_{SD}	-	0.9	1.2	V	$I_F=10A, V_{GS}=0V$	
Reverse Recovery Time	T_{rr}	-	33	-	nS	$I_F=10A, V_R=30V,$	
Reverse Recovery Charge	Q_{rr}	-	24	-	nC	$dI_F/dt=100A/\mu s$	

Notes:

1. The data tested by surface mounted on a 1 inch² FR-4 board with 2oz copper.
2. The Pulse width limited by maximum junction temperature, Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.
3. The Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.
4. $t\leq 10s$.

TYPICAL CHARACTERISTICS CURVE

Fig 1. Typical Output Characteristics

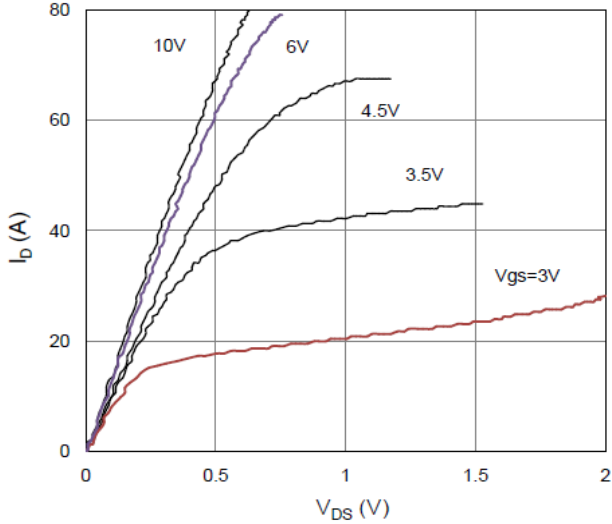


Figure 2. On-Resistance vs. Gate-Source Voltage

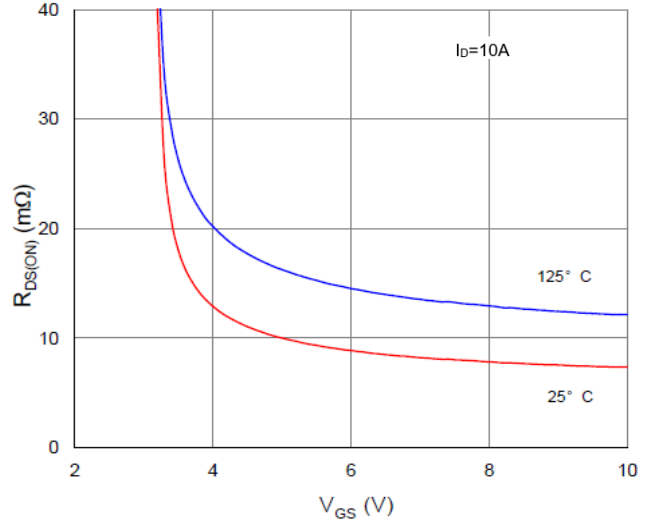


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

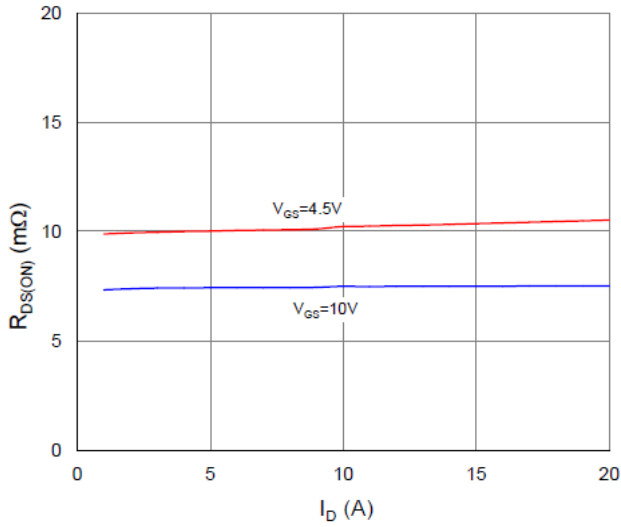


Figure 4. Normalized On-Resistance vs. Junction Temperature

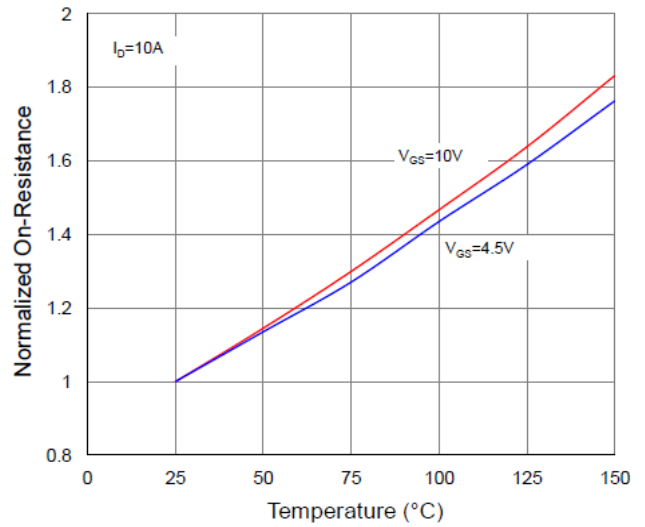


Figure 5. Typical Transfer Characteristics

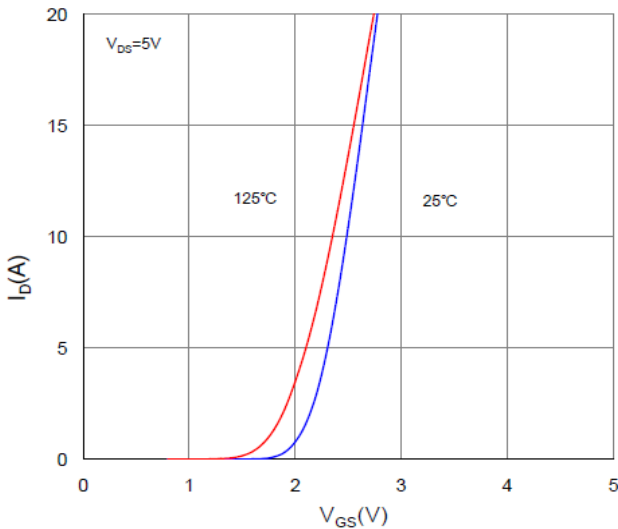
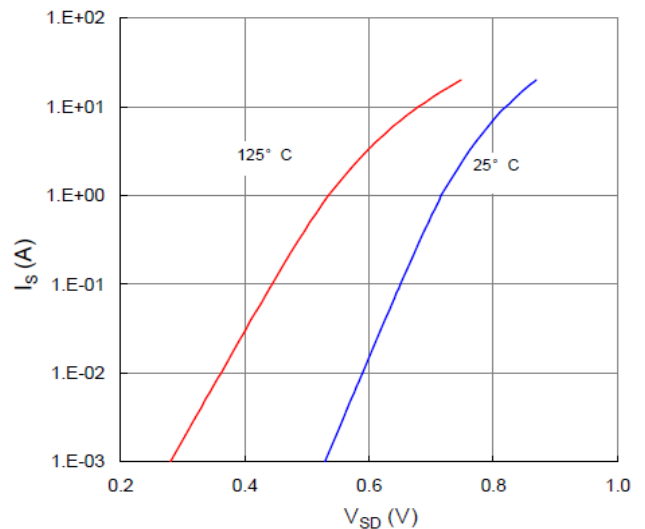


Figure 6. Typical Source-Drain Diode Forward Voltage



TYPICAL CHARACTERISTICS CURVE

Figure 7. Typical Gate-Charge vs. Gate-to-Source Voltage

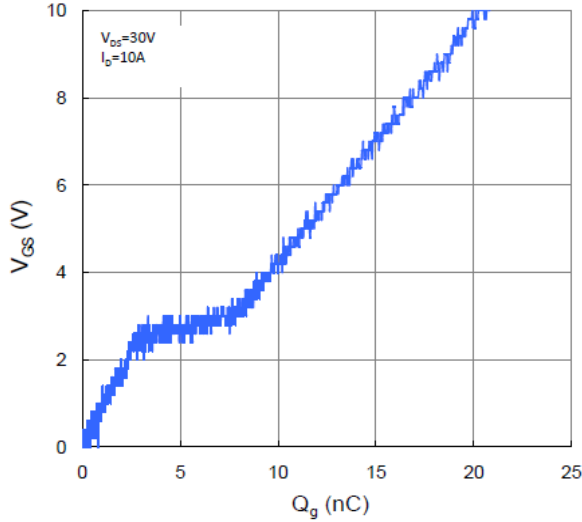


Figure 8. Typical Capacitance vs. Drain-to-Source Voltage

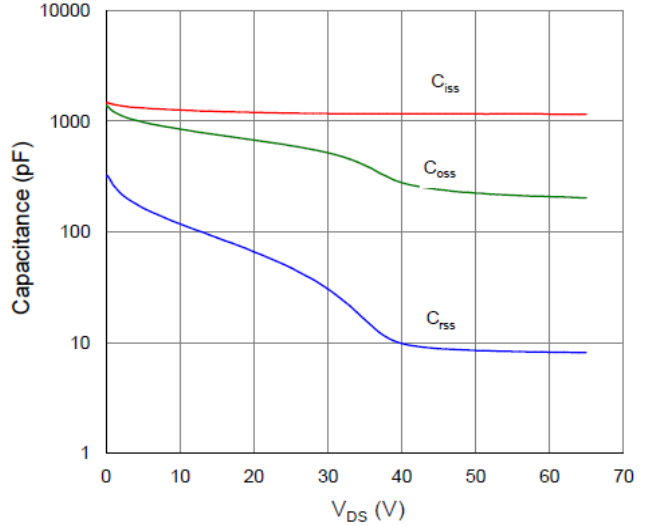


Figure 9. Maximum Safe Operating Area

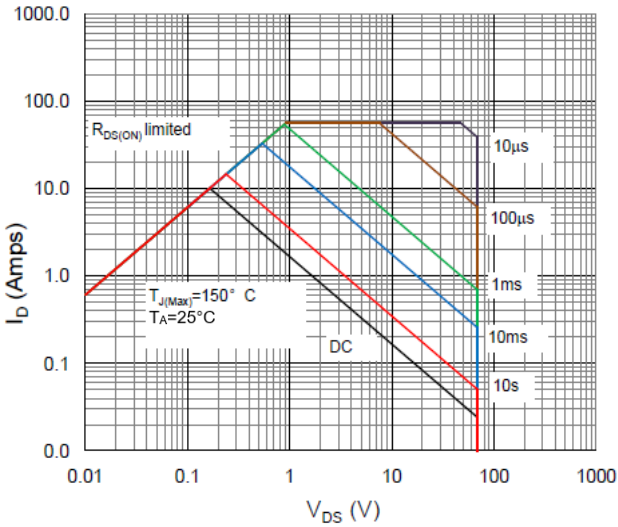


Figure 10. Maximum Drain Current vs. Case Temperature

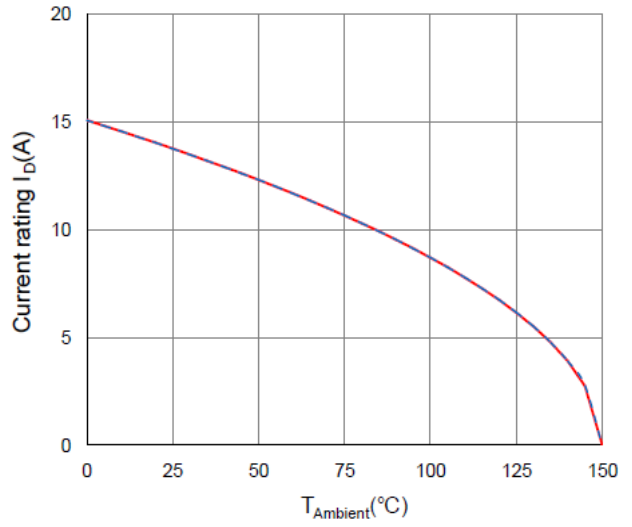
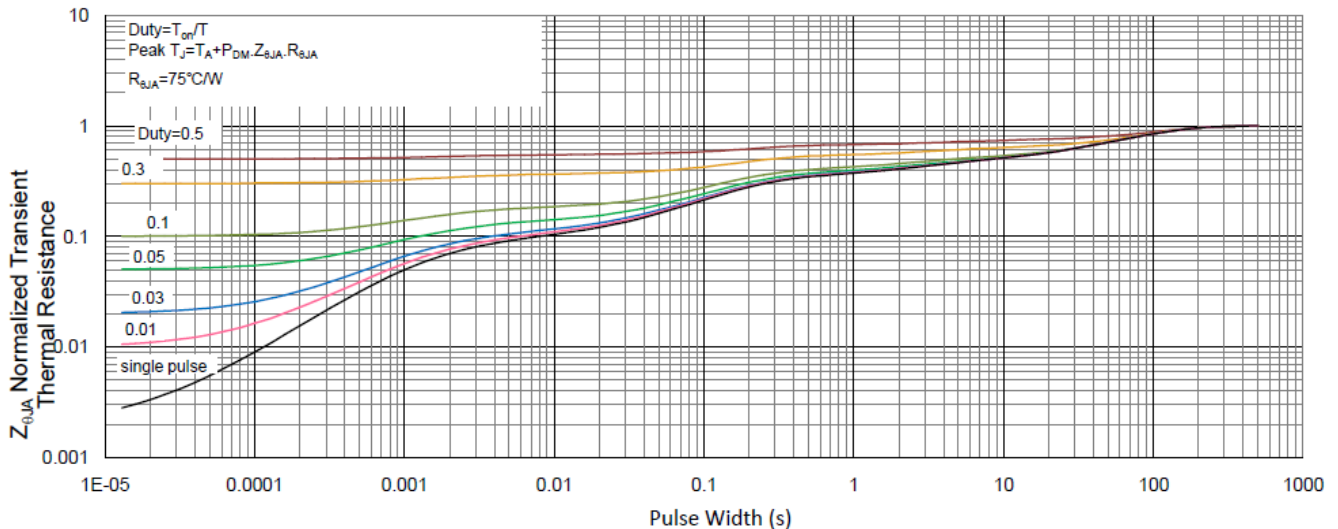
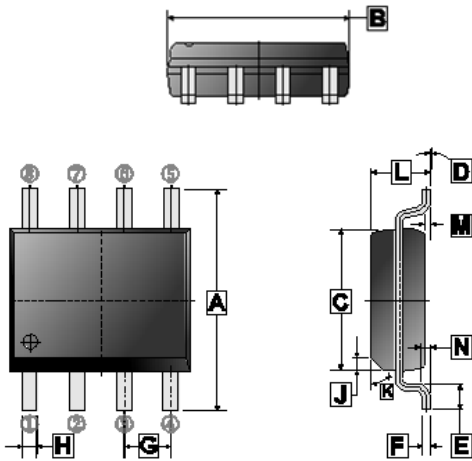


Figure 11. Normalized Maximum Transient Thermal Impedance, Junction-to-Ambient



PACKAGE OUTLINE DIMENSIONS

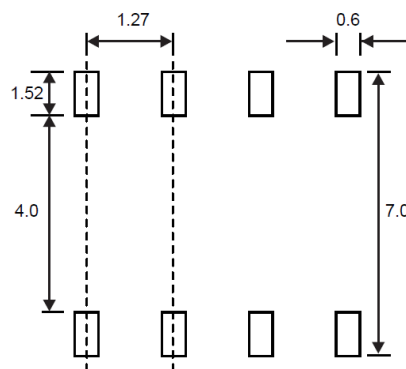
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REF.	Millimeter	
	Min.	Max.
A	5.79	6.20
B	4.70	5.11
C	3.80	4.00
D	0°	8°
E	0.40	1.27
F	0.10	0.25
G	1.27 TYP.	
H	0.33	0.51
J	0.375 REF.	
K	45° REF.	
L	1.30	1.752
M	0	0.25
N	0.25 REF.	

MOUNTING PAD LAYOUT

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*Dimensions in millimeters